

Florida Department of Environmental Protection

Memorandum

TO: Trina Vielhauer, Chief, Bureau of Air Regulation
THROUGH: Al Linero, Administrator, Permitting South *all*
FROM: Teresa Heron, Permitting South
DATE: December 24, 2007
SUBJECT: Draft Air Permit No. 0570005-023-AC
CF Industries Plant City Phosphate Complex
BART Project

Attached for your review are the following items:

- Cover letter;
- Written Notice of Intent to Issue Permit;
- Public Notice of Intent to Issue Permit;
- Technical Evaluation and Preliminary Determination;
- Draft Permit with Appendices; and
- PE Certification.

The Technical Evaluation and Preliminary Determination provides a detailed description of the project, rule applicability, and emissions standards. The P.E. certification briefly summarizes the proposed project. I recommend your approval of the attached draft permit for this project.

Attachments

PROFESSIONAL ENGINEER CERTIFICATION STATEMENT

PERMITTEE
CF Industries, Inc.
Post Office Drawer L
Plant City, Florida 33567-9007

Draft Air Permit No. 05700005-023-AC
Plant City Phosphate Complex
BART Project
Hillsborough County, Florida

PROJECT DESCRIPTION

Project: On February 1, 2007, CF Industries, Inc. submitted an application to satisfy the requirements of Best Available Retrofit Technology (BART) in Rule 62-296.340, Florida Administrative Code (F.A.C.) for the existing Plant City Phosphate Complex. The purpose of the BART regulation is to improve visibility in and around the Class I areas, which include six national parks and federal wildlife areas in Florida. The BART provisions apply to emissions units built between 1962 and 1977 at 26 specified industrial categories that have the potential to emit more than 250 tons a year of visibility-impairing pollutants, which are defined as nitrogen oxides (NO_x), particulate matter (PM₁₀), and sulfur dioxide (SO₂). Many of these units previously have been exempt from pollution control requirements under the Clean Air Act. The BART provisions do not apply to ammonia (NH₃) emissions although the visibility effects of NO_x and SO₂ are modeled as ammoniated nitrates and sulfates. They do apply to direct emissions of ammoniated sulfates because these constitute PM/PM₁₀ emissions as emitted and after being heated and collected on an EPA Method 5 sampling filter.

The BART regulation requires a control technology review to establish a BART standard, which is an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by a BART-eligible source. The emission limitation must be established, on a case-by case basis, taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. In addition, air dispersion modeling analysis is conducted to evaluate the visibility improvement.

The existing complex is a phosphate rock processing facility, which is one of the 26 specified categories subject to regulation. The BART-eligible units at this facility include four sulfuric acid plants (SAP), two diammonium/monoammonium (DAP/MAP) fertilizer plants, and two shipping units with baghouses. The Department of Environmental Protection (Department) reviewed the application and, with the exceptions indicated below, made a preliminary determination that existing processes, air pollution control equipment and emission limits constitute BART at this facility.

The following changes are proposed for units that do not yet meet the requirements of BART:

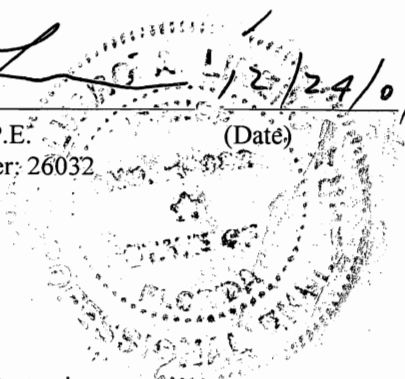
- Installation of cesium promoted catalyst in the final (fourth) converter bed of SAP A and reduction of the SO₂ emission limit to 3.5 pounds per ton of 100 percent (%) sulfuric acid produced (lb/ton of acid).
- Reduction of the sulfuric acid mist (SAM) limitation to 0.075 lb/ton of acid from SAP A as a surrogate to control direct PM/PM₁₀ emissions (ammoniated sulfites/sulfates).
- Reduction of the PM/PM₁₀ limits from the four DAP/MAP plants to 0.18 lb/ton of phosphate feed (lb/ton P₂O₅).

The draft air construction permit establishes BART standards based on these control methods. The Technical Evaluation and Preliminary Determination issued concurrently with the draft permit provides the project details and rationale for the BART determinations.

I HEREBY CERTIFY that the air pollution control engineering features described in the above referenced application and subject to the proposed permit conditions provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including, but not limited to, the electrical, mechanical, structural, hydrological, geological, and meteorological features).

Alvaro A. Linero 1/24/07

Alvaro A. Linero, P.E. (Date)
Registration Number: 26032





Florida Department of Environmental Protection

Bob Martinez Center
2600 Blairstone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor
Jeff Kottkamp
Lt. Governor
Michael W. Sole
Secretary

December 24, 2007

Electronically sent – Received Receipt Requested

hmorris@cfifl.com

Mr. Herschel Morris, Vice President, Phosphate Operations
General Manager, Plant City Phosphate Complex
CF Industries, Inc.
Post Office Drawer L
Plant City, Florida 33567-9007

Re: DEP File No. 0570005-023-AC
CF Industries Plant City Phosphate Complex
Best Available Retrofit (BART) Project

Dear Mr. Morris:

On February 2, 2007 you submitted an application to satisfy the requirements of BART in Rule 62-296.340, Florida Administrative Code for the eligible units at the facility identified above. Enclosed are the following documents:

- The Technical Evaluation and Preliminary Determination summarizes the Permitting Authority's technical review of the application and provides the rationale for making the preliminary determination to issue a Draft Permit.
- The proposed Draft Permit includes the specific conditions that regulate the emissions units covered by the proposed project.
- The Written Notice of Intent to Issue Air Permit provides important information regarding: the Permitting Authority's intent to issue an air permit for the proposed project; the requirements for publishing a Public Notice of the Permitting Authority's intent to issue an air permit; the procedures for submitting comments on the Draft Permit; the process for filing a petition for an administrative hearing; and the availability of mediation.
- The Public Notice of Intent to Issue Air Permit is the actual notice that you must have published in the legal advertisement section of a newspaper of general circulation in the area affected by this project.

If you have any questions, please contact the Project Engineer, Teresa Heron, at 850-921-9529.

Sincerely,

Trina Vielhauer, Chief
Bureau of Air Regulation

Enclosures

TLV/aal/th

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

*In the Matter of an
Application for Air Permit by:*

Mr. Herschel E. Morris, Vice President Phosphate Operations
General Manager, Plant City Phosphate Complex
CF Industries, Inc.
Post Office Drawer L
Plant City, Florida 33567

DEP File No. 0570005-023-AC
Plant City Phosphate Complex
Best Available Retrofit Technology Project
Hillsborough County, Florida

Facility Location: The applicant, CF Industries, Inc. operates the existing Plant City Phosphate Complex, which is located in Hillsborough County at 10608 Paul Buchman Highway in Plant City, Florida.

Project: On February 2, 2007, CF Industries, Inc. submitted an application to satisfy the requirements of Best Available Retrofit Technology (BART) in Rule 62-296.340, Florida Administrative Code (F.A.C.) for the eligible units at the facility identified above. Details of the project are provided in the application and the enclosed Technical Evaluation and Preliminary Determination.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and Chapters F.A.C. 62-4, 62-210, and 62-212. The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing address is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/488-0114.

Project File: A complete project file is available for public inspection during the normal business hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at the address indicated above for the Permitting Authority. The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address or phone number listed above. In addition, electronic copies of these documents are available by entering the file number provided above where indicated on the following web site: <http://www.dep.state.fl.us/air/eproducts/apds/default.asp>

Notice of Intent to Issue Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of the proposed equipment will not adversely impact air quality and that the project will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Public Notice: Pursuant to Section 403.815, F.S. and Rules 62-110.106 and 62-210.350, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Permit (Public Notice). The Public Notice shall be published one time only as soon as possible in the legal advertisement section of a newspaper of general circulation in the area affected by this project. The newspaper used must meet the requirements of Sections 50.011 and 50.031, F.S. in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Permitting Authority at above address or phone number. Pursuant to Rule 62-110.106(5) and (9), F.A.C., the applicant shall provide

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

proof of publication to the Permitting Authority at the above address within 7 days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rule 62-110.106(11), F.A.C.

Comments: The Permitting Authority will accept written comments concerning the proposed Draft Permit for a period of 30 days from the date of publication of the Public Notice. Written comments must be postmarked by the Permitting Authority by close of business (5:00 p.m.) on or before the end of this 30-day period. If written comments received result in a significant change to the Draft Permit, the Permitting Authority shall revise the Draft Permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the applicant or any of the parties listed below must be filed within 14 days of receipt of this Written Notice of Intent to Issue Air Permit. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of the attached Public Notice or within 14 days of receipt of this Written Notice of Intent to Issue Air Permit, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

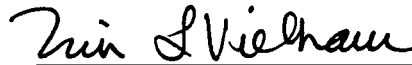
A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner; the name, address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of when and how each petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Written Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

Mediation: Mediation is not available in this proceeding.

Executed in Tallahassee, Florida.



Trina Vielhauer, Chief
Bureau of Air Regulation

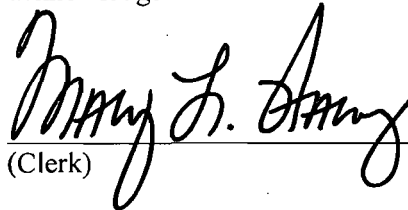
CERTIFICATE OF SERVICE

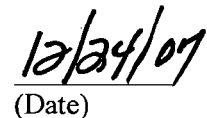
The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Intent to Issue Air Permit package (including the Written Notice of Intent to Issue Air Permit, Public Notice of Intent to Issue Air Permit, the Technical Evaluation and Preliminary Determination, and the Draft Permit) was sent by electronic mail with received receipt requested before the close of business on **December 24, 2007** to the persons listed below.

Herschel E. Morris, CF Industries, Inc. hmorris@cfifl.com
Ron Brunk, CF Industries rbrunk@cfifl.com
Jim Little, EPA little.james@epa.gov
Kathleen Forney, EPA forney.kathleen@epa.gov
Dean Gillam, FWS Dean_Gillam@fws.gov
Dee Morse, NPS dee_morse@nps.gov
Cindy Zhang-Torres, DEP-SWD cindy.zhang-torres@dep.state.fl.us
Diana Lee, HCEPC lee@epchc.org
David Buff, Golder Associates, Inc. dbuff@golder.com
Joseph Marini, RMT, Inc. joseph.marini@rmtinc.com

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.


(Clerk)


(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

Florida Department of Environmental Protection
Division of Air Resource Management, Bureau of Air Regulation

Project No. 0570005-023-AC
Best Available Retrofit Technology (BART)
CF Industries, Inc., Plant City Phosphate Complex
Hillsborough County, Florida

Applicant: The applicant for this project is CF Industries, Inc. The applicant's authorized representative and mailing address is: Mr. Herschel E. Morris, Vice President Phosphate Operations and General Manager of the Plant City Phosphate Complex, CF Industries, Inc., Post Office Drawer L, Plant City, Florida 33564.

Facility Location: CF Industries, Inc. (CFI), operates the existing Plant City Phosphate Complex, which is located in Hillsborough County at 10608 Paul Buchman Highway in Plant City, Florida 33565. CFI produces ammoniated phosphate fertilizers using locally mined phosphate rock and ammonia (NH₃) and sulfur from outside sources. The sulfuric acid is produced on-site by burning elemental sulfur, catalytically converting the resulting sulfur dioxide (SO₂) to sulfur trioxide, and absorbing it into a recirculating sulfuric acid solution. Phosphoric acid is made by acidulation of phosphate rock with sulfuric acid. Waste gypsum is produced and stacked on-site. The phosphoric acid is reacted with NH₃ to make monoammonium phosphate (MAP) and diammonium phosphate (DAP) that are subsequently granulated, dried, screened and shipped.

Project: On February 2, 2007, CFI submitted an application to satisfy the requirements of Best Available Retrofit Technology (BART) in Rule 62-296.340, Florida Administrative Code (F.A.C.) for the existing Plant City Phosphate Complex. The purpose of the BART regulation is to improve visibility in and around the Class I areas, which include six national parks and federal wildlife areas in Florida. The BART provisions apply to emissions units built between 1962 and 1977 at one of the 26 specified industrial categories that have the potential to emit more than 250 tons a year of visibility-impairing pollutants, which are defined as nitrogen oxides (NO_x), particulate matter (PM₁₀), and SO₂. Many of these units previously have been exempt from pollution control requirements under the Clean Air Act.

The BART regulation requires a control technology review to establish a BART standard, which is an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by a BART-eligible source. The emission limitation must be established, on a case-by case basis, taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. In addition, air dispersion modeling analysis is conducted to evaluate the visibility improvement.

The existing facility is a Phosphate Complex, which is one of the 26 specified categories subject to regulation. The BART-eligible units at this facility include: Sulfuric Acid Plants (SAP) A, B, C and D; DAP/MAP Plants A, X, Y and Z; and the Shipping Units A and B Baghouses.

With the exception of SAP A, the Department has determined that the existing controls and techniques together with the present emissions limitations constitute BART for the SAP at this facility. These controls, techniques and limits were implemented or improved pursuant to recent permits, most of which were issued with determinations of best available control technology (BACT). The Department has determined that a lower limit of 3.5 pounds of SO₂ per ton of sulfuric acid produced (lb/ton of acid) is achievable by installation of cesium promoted catalyst in the final converter and constitutes BART for SAP A. The Department has determined that a limit of 0.075 lb of sulfuric acid mist (SAM)/ton of acid constitutes BART for SAP A as a surrogate for PM/PM₁₀. The BART NO_x limit for SAP A is 0.12 lb/ton of acid.

With the exception of the PM/PM₁₀ limits, the Department has determined that the existing controls and techniques together with the present emissions limitations constitute BART for the DAP/MAP plants. The Department has determined that the presently installed process and pollution control equipment consisting of various wet scrubbers together with a lower limit of 0.18 lb PM/PM₁₀ constitutes BART for DAP/MAP plants A, X, Y and Z.

The Department has determined that the existing controls and PM/PM₁₀ emission limits on Shipping Units A and B Baghouses constitute BART for those units.

Permitting Authority: Applications for air construction permits are subject to review in accordance with the provisions of Chapter 403, Florida Statutes (F.S.) and F.A.C. Chapters 62-4, 62-210, and 62-212. The proposed project is not exempt from air permitting requirements and an air permit is required to perform the proposed work. The Bureau of Air Regulation is the Permitting Authority responsible for making a permit determination for this project. The Permitting Authority's physical address is: 111 South Magnolia Drive, Suite #4, Tallahassee, Florida. The Permitting Authority's mailing address

(Public Notice to be Published in the Newspaper)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

is: 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. The Permitting Authority's telephone number is 850/488-0114.

Project File: A complete project file is available for public inspection during the normal business hours of 8:00 a.m. to 5:00 p.m., Monday through Friday (except legal holidays), at address indicated above for the Permitting Authority. The complete project file includes the Draft Permit, the Technical Evaluation and Preliminary Determination, the application, and the information submitted by the applicant, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Permitting Authority's project review engineer for additional information at the address and phone number listed above. In addition, electronic copies of these documents are available by entering the file number provided above where indicated on the following web site: <http://www.dep.state.fl.us/air/eproducts/apds/default.asp> .

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice of its intent to issue an air permit to the applicant for the project described above. The applicant has provided reasonable assurance that operation of proposed equipment will not adversely impact air quality and that the project will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. The Permitting Authority will issue a Final Permit in accordance with the conditions of the proposed Draft Permit unless a timely petition for an administrative hearing is filed under Sections 120.569 and 120.57, F.S. or unless public comment received in accordance with this notice results in a different decision or a significant change of terms or conditions.

Comments: The Permitting Authority will accept written comments concerning the proposed Draft Permit for a period of 30 days from the date of publication of the Public Notice. Written comments must be postmarked by the Permitting Authority by close of business (5:00 p.m.) on or before the end of this 30-day period. If written comments received result in a significant change to the Draft Permit, the Permitting Authority shall revise the Draft Permit and require, if applicable, another Public Notice. All comments filed will be made available for public inspection.

Petitions: A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed with (received by) the Department's Agency Clerk in the Office of General Counsel of the Department of Environmental Protection at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by any persons other than those entitled to written notice under Section 120.60(3), F.S. must be filed within 14 days of publication of this Public Notice or receipt of a written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who asked the Permitting Authority for notice of agency action may file a petition within 14 days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above, at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

A petition that disputes the material facts on which the Permitting Authority's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address and telephone number of the petitioner; the name address and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial rights will be affected by the agency determination; (c) A statement of when and how the petitioner received notice of the agency action or proposed decision; (d) A statement of all disputed issues of material fact. If there are none, the petition must so state; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action including an explanation of how the alleged facts relate to the specific rules or statutes; and, (g) A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the agency to take with respect to the agency's proposed action. A petition that does not dispute the material facts upon which the Permitting Authority's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301, F.A.C.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Public Notice of Intent to Issue Air Permit. Persons whose substantial interests will be affected by any such final decision of the Permitting Authority on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation: Mediation is not available for this proceeding.

(Public Notice to be Published in the Newspaper)

**TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION**

PROJECT

Draft Permit No. 0570005-023-AC
Best Available Retrofit Technology (BART)

CF Industries

Hillsborough County, Florida

APPLICANT

CF Industries, Inc.
Post Office Drawer L
Plant City, Florida 33564

PERMITTING AUTHORITY

Air Permitting South Section
Bureau of Air Regulation
Division of Air Resource Management
Florida Department of Environmental Protection



December 24, 2007

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

1. GENERAL PROJECT INFORMATION

Facility Description and Location

The applicant, CF Industries, Inc. (CFI), operates a phosphate fertilizer manufacturing complex in Plant City, Florida. The facility is located at 10608 Paul Buchman Highway, Plant City, Hillsborough County. The project site is located about 70 kilometers from the Chassahowitzka National Wildlife Refuge, a Class I Area. The UTM coordinates of this facility are Zone 17; 388.0 km E; 3116.0 km N.

The following figures show the location of Plant City, near Lakeland, Florida as well as aerial photographs of the facility including the plant equipment, phosphogypsum stacks, and process/cooling ponds.



Figure 1. Plant City

Figure 2. Aerial and Satellite Views of the CF Industries Plant City Fertilizer Complex

The Standard Industrial Classification (SIC) code for this type of plant is SIC No. 2874.

CFI converts liquid sulfur, imported by ship and rail from out-of-state gas and oil processing plants, and water into sulfuric acid (H_2SO_4). Locally mined phosphate rock (fluorapatite) and (H_2SO_4) are mixed, forming phosphoric acid (H_3PO_4) and gypsum ($CaSO_4$). (H_3PO_4) is reacted with anhydrous ammonia in a two-step process to produce granules of Diammonium Phosphate (DAP) or Monoammonium Phosphate (MAP), the most-used phosphate fertilizer products. DAP and MAP are shipped from the Plant City facility by rail and truck.

The facility includes: four sulfuric acid plants (SAP); two phosphoric acid plants (PAP), four MAP/DAP plants; molten sulfur storage and handling operations; product storage and shipping operations; and ancillary equipment.

Regulatory Categories

This project is subject to the applicable environmental laws in Section 403 of the Florida Statutes (F.S.). The Florida Statutes authorize the Department of Environmental Protection (Department) to establish rules regarding air quality in the Florida Administrative Code (F.A.C.). The facility is classified according to the following major regulatory categories.

- The facility is a major source of hazardous air pollutants (HAP).
- The facility does not operate units subject to the acid rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source pursuant to Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.
- The facility operates Best Available Retrofit Technology (BART) eligible units subject to Rule 62-296.340, F.A.C.

Project Description

CFI submitted an application for the Plant City facility to satisfy the requirements of Rule 62-296.340 (BART), F.A.C., which addresses the following BART-eligible emissions units (EU).

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Table 1. BART Eligible Emissions Units at the CFI Plant City Facility

EU No.	Emissions Unit Description
002	Sulfuric Acid Plant A
003	Sulfuric Acid Plant B
007	Sulfuric Acid Plant C
008	Sulfuric Acid Plant D
010	Diammonium Phosphate/Monoammonium Phosphate Plant A
011	Diammonium Phosphate/Monoammonium Phosphate Plant X
012	Diammonium Phosphate/Monoammonium Phosphate Plant Y
013	Diammonium Phosphate/Monoammonium Phosphate Plant Z
015	Shipping Baghouse A
018	Shipping Baghouse B

This Technical Evaluation and Preliminary Determination details the project, provides the top-down BART analysis, and identifies the preliminary BART determinations.

Processing Schedule

February 2, 2007: Department received the BART application for an air pollution construction permit.
March 1, 2007: Department requested additional information.
July 12, 2007: Department received additional information.
August 10, 2007: Department requested additional information.
September 10, 2007: Department received additional information; application complete.
December 5, 2007: CFI waived processing clock until December 24, 2007.
December 24, 2007 Department distributed draft BART permit and associated documents.

2. APPLICABLE BART REGULATIONS

Regulatory Authority

This project is subject to the applicable regulatory requirements in the following Chapters of the F.A.C.: 62-4 (Permitting Requirements); 62-204 (Ambient Air Quality Requirements, PSD Increments, and Federal Regulations Adopted by Reference); 62-210 (Permits Required, Public Notice, Reports, Stack Height Policy, Circumvention, Excess Emissions, and Forms); 62-212 (Preconstruction Review, PSD Review and BACT, and Non-attainment Area Review and LAER); 62-296 (Emission Limiting Standards); and 62-297 (Test Methods and Procedures, Continuous Monitoring Specifications, and Alternate Sampling Procedures). It is also subject to the applicable provisions in Title 40 of the Code of Federal Regulations (CFR) as adopted in Chapter 62-204 and 62-296, F.A.C.

Specifically, this project is subject to Rule 62-296.340 (BART), F.A.C. , which requires a BART determination for each BART-eligible source as defined in 40 CFR 51.301. The Department previously identified all BART-eligible sources through a series of notifications, workshops, and rule making efforts. The state rule implements the federal provisions of Appendix Y in 40 CFR Part 51, "Guidelines for BART Determinations Under the Regional Haze Rule".

Affected Pollutants

In accordance with Appendix Y in 40 CFR 51, the affected visibility-impairing pollutants include the following: nitrogen oxides (NO_x), particulate matter (PM) and sulfur dioxide (SO₂). Although ammoniated nitrates and sulfates are among the key species contributing to regional haze, BART does not directly address or require a review of ammonia (NH₃) as a visibility-impairing pollutant.

With respect to particulate emissions, Rule 62-210.200, F.A.C. defines PM as, "... all finely divided solid or liquid material, other than uncombined water, emitted to the atmosphere as measured by applicable reference methods, or an equivalent or alternative method ..." Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers is defined as PM₁₀ and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers is defined as PM_{2.5}. Emissions of PM, PM₁₀ and PM_{2.5} are all regulated pollutants. For the existing emissions units and air pollution control equipment, the control strategy specified in the BART determinations directly reduces PM emissions, which serves as a surrogate to also reduce PM₁₀ and PM_{2.5} emissions.

BART Definition

Pursuant to 40 CFR 51.301, *Best Available Retrofit Technology (BART)* means, "... an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by ... [a BART-eligible source]. The emission limitation must be established, on a case-by case basis, taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology." In accordance with Rule 62-296.340(3), F.A.C., the Department shall determine BART for each affected source in an air construction permit.

BART Analysis Procedure

There are five basic steps in the case-by-case BART analysis:

- Step 1. Identify all available retrofit control technologies. A comprehensive list of available technologies for analysis must be identified that includes the most stringent option and a reasonable set of available options. It is not necessary to list all permutations of available control levels that exist for a given technology. The list is complete if it includes the maximum level of control each technology is capable of achieving.
- Step 2. Eliminate technically infeasible options. Control technologies are technically feasible if either (1) they have been installed and operated successfully for the type of source under review under similar conditions, or (2) the technology could be applied to the source under review. "Availability" and "applicability" are two key concepts in determining whether a technology could be applied. A technology is considered "available" if the source owner may obtain it through commercial channels, or it is otherwise available within the common sense meaning of the term. An available technology is "applicable" if it can reasonably be installed and operated on the source type under consideration. A technology that is available and applicable is technically feasible.
- Step 3. Evaluate control effectiveness of remaining control technologies. There are two key issues in this process, including (1) expressing the degree of control in consistent terms to ensure an "apples-to-apples" comparison of emissions performance levels among options, and (2) giving appropriate treatment and consideration of control techniques that can operate over a wide range of emission performance levels.
- Step 4. Evaluate the impacts and document the results. The evaluation will consider the costs of compliance, energy impacts, non-air quality environmental impacts, and remaining useful life.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Step 5. Evaluate visibility impacts. Use CALPUFF or other appropriate dispersion model to determine the visibility improvement expected at a Class I area from the potential BART control technology applied to the source. Note that if the most stringent BART control option available is selected, it is not necessary to conduct an air quality modeling analysis for the purpose of determining its visibility impacts.

BART Determination: In making a final BART determination, the following will be considered: (1) technically feasible options; (2) the average and incremental costs of each option; (3) the energy and non-air quality environmental impacts of each option; (4) the remaining useful life; and (5) the modeled visibility impacts. A justification for selecting a technology as the “best” level of control must be provided and include an explanation of these factors that led to the BART determination. When a BART determination is made for two regulated pollutants on the same source, if the result is two different BART technologies that do not work well together, it may be reasonable to substitute a different technology or combination of technologies.

Summary of Applicant’s Initial Modeling Analysis

The CF Industries Plant City BART analysis methodology was based on an air modeling protocol, revised January 2007. The modeling protocol was reviewed by the Department and is based on guidance from the VISTAS (Visibility Improvement State and Tribal Association of the Southeast) common modeling protocol, Version 3.2. Further, the Department determined the protocol to be the basis for the modeling methodologies used for this BART analysis.

The BART-eligible emission units for the CF facility are subject to the visibility impairment analysis as dictated by the modeling protocol. The analysis includes visibility impairment at all PSD Class I areas within 300 km of the Plant City facility. These Class I areas are the Chassahowitzka National Wildlife Refuge (CNWR), the Everglades National Park (ENP), the Okefenokee National Wildlife Refuge (ONWR) and the St. Marks National Wildlife Refuge (SNWR). These Class I areas are 70, 261, 263 and 273 kilometers (km) away from CF Industries Plant City respectively.

The CALPUFF modeling system (Version 5.756) was used to predict the maximum visibility impairment. The Department provided the applicant with 4-km “CALPUFF-ready” CALMET meteorological data for the period 2001-2003. Class I receptor locations were obtained from the National Park Service (NPS) and a Lambert Conformal Conic (LCC) coordinate system was used. Modeling results are based on the 8th highest 24-hour average impairment value in one year, for 3 years.

The applicant performed initial modeling to determine if the Plant City facility contributes to visibility impairment. Modeled concentrations were then compared to the visibility impairment threshold of 0.5 deciviews (dv), based on the final BART federal regulation 70 FR 39118. A deciview is a standard visibility index. The Interagency Monitoring of Protected Visual Environments (IMPROVE) states that the deciview scale is linear to humanly-perceived changes in visual air quality. A dv near zero is considered a “pristine” atmosphere. Deciviews increase with visibility impairment. This initial analysis concluded that the Plant City facility contributes to visibility impairment at the CNWR only and therefore, all BART-eligible sources are subject to a BART determination analysis for the CNWR.

The BART-eligible sources (emission units) for the Plant City facility are: SAP A, B, C and D; DAP/MAP Plants A, X, Y and Z; and the A and B Shipping Baghouses. As indicated by the applicant, the visibility impacts from the DAP/MAP plants and the shipping baghouses are only 0.016 dv and 0.004 dv respectively compared to a maximum impact of 0.237 dv from the C SAP, therefore a complete reduction of the impact from the MAP/DAP plants and baghouses would not result in a significant improvement of visibility. Due to this conclusion by the applicant, the applicant suggested that current controls on the DAP/MAP and the existing baghouses are BART; therefore, no further modeling was completed with regards to these sources.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

Table 2. CF Industries, Plant City – Existing Visibility Impacts at CNWA. Contribution of Visibility Impairing Particle Species Types

Emission Unit	Percent Contribution to 8th Highest Visibility Impacts (dv)											
	2001				2002				2003			
	Visibility	Contribution of ^a			Visibility	Contribution of ^a			Visibility	Contribution of ^a		
	Impact (dv)	SO ₄ (%)	NO ₃ (%)	PM ₁₀ (%)	Impact (dv)	SO ₄ (%)	NO ₃ (%)	PM ₁₀ (%)	Impact (dv)	SO ₄ (%)	NO ₃ (%)	PM ₁₀ (%)
SAP A	0.145	99.0	1.0	0.0	0.112	99.6	0.4	0.0	0.128	99.1	0.9	0.0
SAP B	0.174	98.7	1.3	0.0	0.120	99.7	0.3	0.0	0.149	99.7	0.3	0.0
SAP C	0.202	99.6	0.4	0.0	0.180	99.2	0.8	0.0	0.237	99.3	0.7	0.0
SAP D	0.199	99.6	0.4	0.0	0.174	98.6	1.4	0.0	0.232	99.3	0.7	0.0
DAP/MAP A	0.016	2.4	5.2	92.4	0.014	0.0	11.9	88.1	0.016	2.3	5.0	92.7
DAP/MAP X	0.012	3.2	10.4	86.4	0.011	3.5	23.1	73.4	0.013	12.4	6.7	80.9
DAP/MAP Y	0.015	2.5	8.1	89.4	0.014	5.4	5.9	88.7	0.016	9.9	5.4	84.7
DAP/MAP Z	0.013	12.5	3.4	84.1	0.012	3.3	21.6	75.0	0.014	2.7	11.9	85.4
Ship Baghouse A	0.004	0.0	0.0	100.0	0.003	0.0	0.0	100.0	0.004	0.0	0.0	100.0
Ship Baghouse B	0.004	0.0	0.0	100.0	0.003	0.0	0.0	100.0	0.004	0.0	0.0	100.0

The SAP contribute to visibility impairment primarily by emitting sulfate particles; therefore, the applicant provided a BART analysis for the SAP regarding SO₂ only. Emission rates used in the BART modeling analysis were from recently permitted 24-hr emission limits for SAP A and B and continuous emissions monitoring system (CEMS) data for SAP C and D, which reflect the maximum actual concentrations during normal operation.

As shown above, based on the 24-hour visibility impairment values for 2001 to 2003, the 8th highest (98th percentile) were determined. The maximum pre-control predicted impacts are 0.145, 0.174, 0.237 and 0.232 for SAP A, B, C and D respectively.

3. BART ANALYSIS AND PRELIMINARY BART DETERMINATION FOR SAP A, B, C AND D

This section provides the control technology review and BART determination for the following emissions units.

Table 3. CF Industries, Plant City – List of Sulfuric Acid Plants

EU No.	Emission Unit Description
002	SAP A – 1300 tons per day (TPD) of 100% H ₂ SO ₄ produced
003	SAP B – 1600 tons per day (TPD) of 100% H ₂ SO ₄ produced
007	SAP C – 2,962 tons per day (TPD) of 100% H ₂ SO ₄ produced
008	SAP D – 2,962 tons per day (TPD) of 100% H ₂ SO ₄ produced

Process Description and Pollutants from SAP A, B, C and D

The following diagram is useful for the discussion of SO₂ emissions control. At CFI molten elemental sulfur is combusted to produce the source of the gaseous SO₂ used to manufacture sulfuric acid. Thus SO₂ is a valuable important intermediate raw material for the process.

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Conversion of SO_2 to sulfur trioxide (SO_3) takes place in several vanadium catalyst beds within a converter tower. The specific type of catalyst greatly affects the reactions and the emissions. The progressively more concentrated SO_3 is absorbed into a recirculating stream of sulfuric acid in one or two absorbers (single or double staged absorption processes). The following figure from a European Commission document shows the keys steps (with the exception of the sulfur combustion part) involved in the contact sulfuric acid process used at CFI.

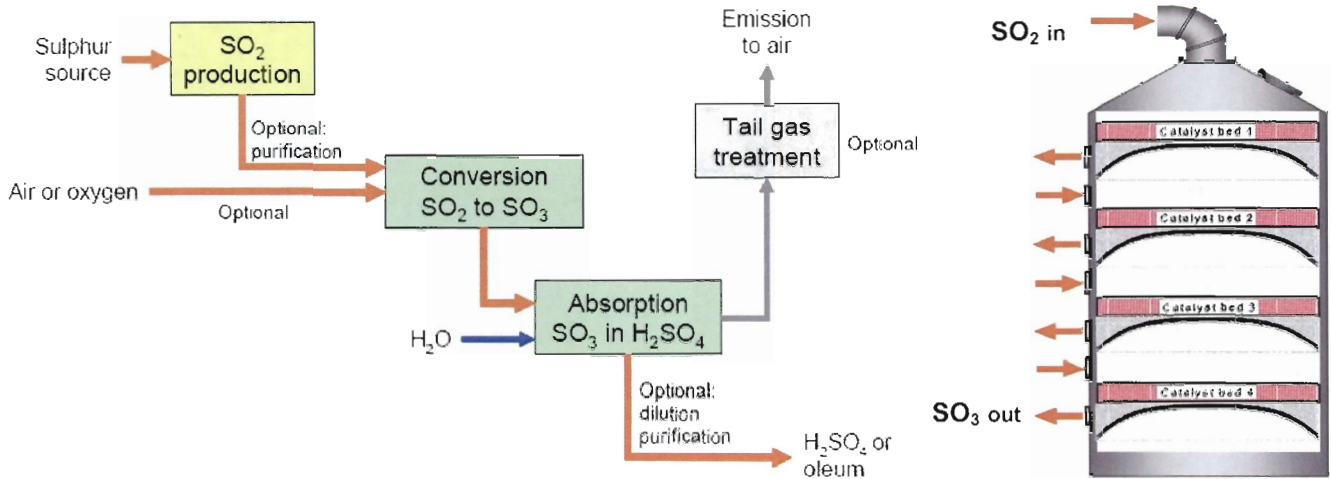


Figure 2. Diagram of the Contact Sulfuric Acid Manufacturing Process and Conversion of SO_2 to SO_3

The following figure from the same European Commission document shows the two main variations of the contact processes including single stage absorption and double staged absorption. The double staged version shown on the left also shows the sulfur burner. CFI employs double staged absorption on SAP C and D. It features two absorbers and typical conversion efficiencies greater than 99.7% are achieved.

The single stage version has only one absorber and achieves only 97-98% absorption, thus leaving a significant amount of SO_2 that is not converted to product and which requires further tail gas scrubbing to control emissions. CFI employs single staged absorption on SAP A and B.

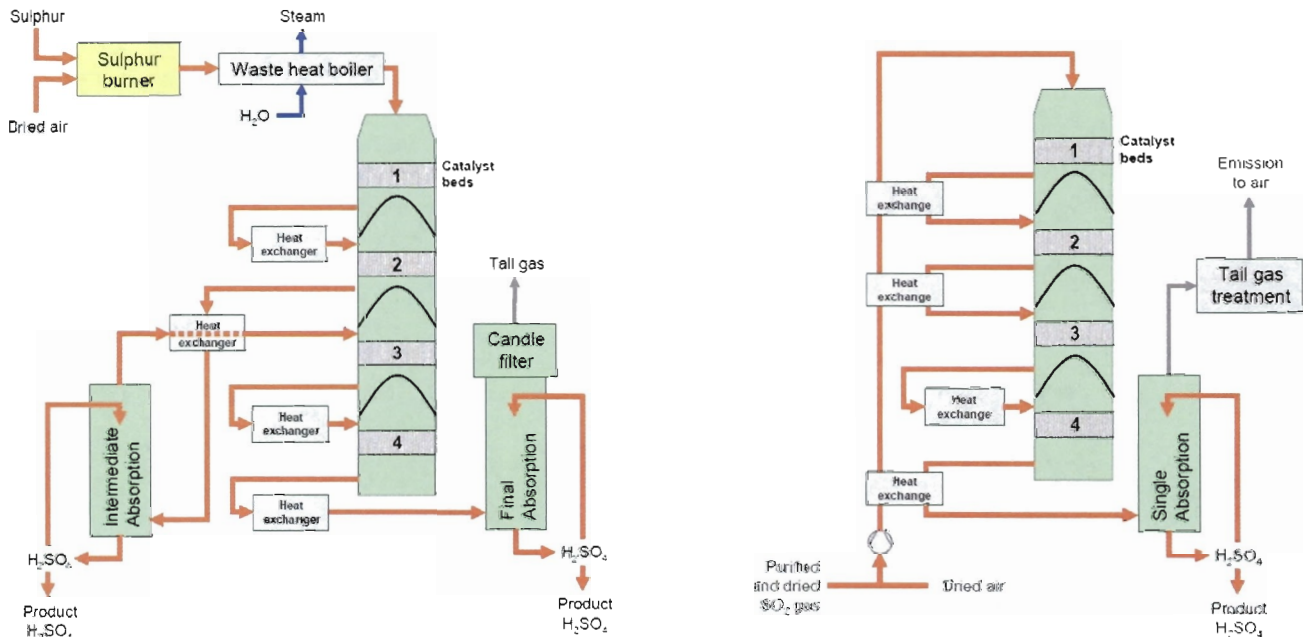


Figure 3. Sulfur Burning and Double Staged Absorption. Single Stage Absorption and Tail Gas Treatment

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The key emissions from the double staged version are SO₂, sulfur trioxide (SO₃) and sulfuric acid mist (SAM or H₂SO₄). All are key intermediate raw materials or products as well as pollutants. NO_x and minor amounts of PM from the sulfur source (typically combustion of molten sulfur) will also exit through the SAP stack.

In the single stage process, the tail gas is scrubbed. At CFI scrubbing is accomplished using ammonia (NH₃) to control and recover SO₂, SO₃ and SAM. Such scrubbing results in the production of a usable by-product that is useful elsewhere in fertilizer production. However the ammoniated sulfate species constitute direct filterable PM emissions from SAP A and B. These species are similar to fine PM (PM_{2.5}) formed in the environment from precursors such as NH₃ and SO₄. They differ from SAM in that they will be captured on an EPA Method 5 filter, whereas SAM may or may not be captured or react on the filter media and filtered dust.

BART Analysis for SO₂

Applicant's SO₂ Control Technology Review

According to the applicant, except for SAP A these emissions units have established SO₂ (and SAM) emissions limits set according to the best available control technology (BACT) conducted in 2004 and 2007. These BACT permits were issued within the last 3 years. The relevant permits are:

- a. Permit PSD-FL-355 was issued on July 23, 2007, to CFI for SAP B which is a single stage absorption plant. SO₂ emissions are limited to 3.5 lb SO₂/ton of 100% H₂SO₄ produced (lb/ton of acid), 3-hour rolling average, as demonstrated by a continuous emissions monitoring system (CEMS). Cesium promoted catalyst in the final (fourth) bed in conjunction with NH₃ scrubbing of the tail gas constitutes the control technology to achieve the limit. For reference the BACT SAM limit was determined to be 0.075 lb SAM/ton of acid. The same permit reduced the SO₂ limit for SAP A to 250 pounds per hour (lb/hr) on a 24-hour basis.
- b. Permit PSD-FL-339 issued on June 1, 2004, to CFI for SAP C and D which are double staged absorption plants. SO₂ emissions are limited to 3.5 lb/ton of acid, 3-hour rolling average, as demonstrated by CEMS. Cesium promoted vanadium catalyst in the final (fourth) bed in conjunction with the double staged absorption process constitutes the control technology to achieve the limit. For reference the BACT SAM limit was determined to be 0.10 lb/ton of acid.
- c. Draft permit PSD-FL-339B was distributed on December 3, 2007 for a production increase from SAP C and D. The permit further reduced the SO₂ emission limit to 3.25 lb/ton of acid, 3-hour rolling average, as demonstrated by CEMS. The SAM limit was reduced to 0.093 lb/ton of acid.

The present SO₂ limit on the single stage SAP A is 5.6 lb/ton of acid. For reference, the present SAM limit is 0.30 lb/ton of acid. The additional limit in permit PSD-FL-355 of 250 pounds per hour (lb/hr) on a 24-hour basis equates to approximately 4.6 lb/ton of acid. No further changes in SO₂ (or SAM) limits are proposed by CFI as BART for the single stage SAP A and B or the double staged SAP C and D.

Department's SO₂ Control Technology Review and BART Determination

The Department has issued several BACT determinations since 1998 for other facilities specifying a limit of 3.5 lb/ton of acid (or lower) on a progressively more stringent time averaging basis. Similar values have been set in recent years for plants at Piney Point Phosphates, Mosaic New Wales, Mosaic Riverview, Mosaic Bartow and PCS White Springs. As mentioned above, the limit in draft permit PSD-FL-339B for CFI double staged SAP C and D is 3.25 lb/ton of acid.

The Department has determined that 3.25 lb SO₂/ton of acid on a 3-hour basis is BART for SAP C and D. This is the value already proposed under draft permit PSD-FL-339B. It is achievable by the double absorption process coupled with use of cesium promoted vanadium catalyst in the final (fourth) converter bed.

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

The Department has determined that 3.50 lb SO₂/ton of acid on a 3-hour basis is BART for single stage SAP B. This is the value previously determined in 2007 as BACT under permit PSD-FL-355. The value is achievable by the single stage absorption process coupled with use of cesium promoted vanadium catalyst in the final (fourth) converter bed and followed by NH₃ scrubbing of the tail gas.

SAP A is very similar to SAP B, but has not been subjected to a PSD review and BACT determination. The present emission limit of 5.6 lb/ton of acid is less than the applicable limit for existing SAP of 10 lb/ton of acid given in Department Rule 62-296.402, F.A.C. The corresponding value for a new or modified SAP is 4.0 lb/ton of acid in accordance with 40 CFR 60, Subpart H – Standards of Performance for Sulfuric Acid Plants.

According to last ten compliance tests reviewed by the Department, SO₂ emissions from SAP A have ranged from 3.0 to 3.8 lb/ton of acid. Addition of cesium promoted catalyst with greater vanadium content will comfortably allow achievement of a lower limit and lower actual emissions than reflected by the recent tests.

The Department made its first determination that cesium catalyst is cost-effective in terms of cost/ton of SO₂ removed from SAP in 1998 even without contemplating production increases. At that time, the Department concluded that the cost-effectiveness was less than \$1,000/ton of SO₂ removed. Given that no production increases are contemplated, the addition of a small layer of cesium promoted catalyst with increased vanadium concentration and hollow cylindrical shape in the final converter bed can allow the plant to operate longer between turnarounds. This helps offset some of the added cost of the catalyst.

The Department has determined that 3.50 lb SO₂/ton of acid on a 3-hour basis is BART for SAP A. The value is achievable by the single absorption process coupled with use of cesium promoted vanadium catalyst in the final converter followed by NH₃ scrubbing of the tail end gases. SAM is discussed further below.

Compliance will be demonstrated using the installed CEMS presently required under existing permits. These CEMS shall be properly calibrated, maintained, and operated to comply with: 40 CFR 60 Subpart A, General Provisions; 40 CFR 60 Appendix B, Performance Specification 2; and, 40 CFR 60, Appendix F, Quality Assurance Procedures for Gas CEMS Used for Compliance Determination.

In summary, the proposed BART emission limitations for these plants are as follows:

Table 4. CF Industries, Plant City – SO₂ BART Determinations for the Sulfuric Acid Plants

Source	BART Determination
SAP A	3.50 lbs/ton of 100% H ₂ SO ₄ and 190 lb/hr based on 3-hour CEMS basis
SAP B	3.50 lbs/ton of 100% H ₂ SO ₄ and 233.3 lb/hr based on 3-hour CEMS basis
SAP C	3.25 lbs/ton of 100% H ₂ SO ₄ and 401 lb/hr based on 3-hour CEMS basis
SAP D	3.25 lbs/ton of 100% H ₂ SO ₄ and 401 lb/hr based on 3-hour CEMS basis

Although SAP A and B are similar, the allowable mass emissions for SAP B are greater because the plant was modified under permit PSD-FL-355 to achieve greater production. The production increase was part of the justification for use of cesium promoted catalyst in SAP B. Because the production is less on SAP A, significantly less cesium promoted catalyst would be required in the fourth (final) converter bed to achieve the same 3.5 lb/ton of acid limitation when compared with SAP B.

BART Analysis for PM/PM₁₀

Applicant's PM/PM₁₀ Control Technology Review

For each of the SAP, the applicant stated that “more than 99% of the visibility impact is due to sulfate particles”. The analysis concentrated on control of SO₂ to reduce emissions of SO₂ as a precursor of such sulfate particles but did evaluate direct PM emissions of sulfate particles from the SAP.

Department's PM/PM₁₀ Control Technology Review and BART Determination

BART also controls PM emissions that are defined as “ all finely divided solid or liquid material, other than uncombined water, emitted to the atmosphere as measured by applicable reference methods, or an equivalent or alternative method ...”

Unabsorbed SO₃ from the process is very hygroscopic and quickly combines with water to form SAM which is a finely divided liquid and arguably constitutes direct PM emissions from the SAP stacks. Stack exhaust gases that contain gaseous SO₃ and fine liquid SAM particles are heated in the EPA Method 5, sampling train. The SAM particles can reenter the gaseous state as SO₃ and water and may or may not be captured on the filter media. SAP C and D have recent and low SAM BACT determinations that are adequate for BART if SAM emissions are treated as direct PM emissions.

The case of SAP A and B is different because in addition to SAM, they can directly emit ammoniated sulfates that are filterable even on a heated filter. Because SAP A and B are single stage absorption plants, there is a significant amount of SO₂ remaining in the gas leaving absorber. CFI practices SO₂ and SAM control/recovery by use of two-staged NH₃ scrubbing. Scrubbing and neutralization of the exhaust gas using NH₃ results in the formation of ammonium bisulfite and ammonium sulfite that are further processed by treatment with sulfuric acid to make ammonium sulfate. The resultant ammonium sulfate by-product is consumed on-site in the DAP/MAP plants.

NH₃ scrubbing has a potentially beneficial effect on SAM because of the neutralization. Therefore the BACT SAM limits are less for SAP B than SAP C and D. However direct emissions of the resultant ammoniated sulfates as PM can cause formation of “blue haze”. Whereas SAM might be considered a PM_{2.5} precursor (if not direct PM_{2.5} emissions), the ammoniated sulfates are clearly direct PM_{2.5} emissions.

The measures that control SAM are useful for controlling ammoniated sulfate emissions. In the sulfuric acid industry the most common measure is use of high efficiency mist eliminators. There are a number of designs that rely on several different modes of reduction including interception of the particles by the filter media (typically bundles of fibers), impaction of the particle onto filter media and diffusion of the finest particles towards the filter media.

The Department has determined that a limit of 0.075 lb SAM/ton of acid will, as a surrogate for the ammoniated sulfates, satisfy BART for SAP A. The new BART limit is substantially less than the present limit of 0.30 lb/ton of acid and is also less than the limit of 0.15 lb/ton of acid applicable to new or modified SAP accordance with Subpart H. The existing mist eliminators can be upgraded as needed to meet the lower limits. Typically the additional product recovery partially offsets the additional control costs such that the technology is cost-effective in terms of \$/ton of PM/PM₁₀ removed and \$/ton of SAM removed.

The BACT-based SAM limitations discussed in the previous section for SAP B, C and D will not be changed. All four SAP are subject to a visible emissions limit of 10% opacity. The opacity limitations in conjunction with the SAM limits constitute BART for the four SAP.

BART Analysis for NO_x

Applicant's NO_x Control Technology Review

The applicant indicated that no known NO_x control technologies have been employed by SAP.

Department's NO_x Control Technology Review and BART Determination

The potential causes of NO_x from the SAP are thermal fixation of nitrogen at very high temperatures in the furnace and oxidation of fuel nitrogen. However, combustion in sulfur furnaces generally occurs at lower temperatures than their counterparts in the power industry, namely fuel-oil fired boilers. Therefore thermal NO_x is not an important factor from a properly operated sulfur furnace. Also elemental sulfur used in the furnaces

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should have fairly low levels of nitrogen compared with fuel oil. Therefore NO_x emissions are also generally low from SAP furnaces and some projects do not trigger a BACT determination.

However, the Department has actually issued BACT determinations for several projects at a limit of 0.12 lb/ton of acid. These include determinations for SAP B, C and D. The values were further lowered for SAP C and D under permit PSD-FL-339B to 0.11 lb NO_x/ton of acid.

The Department has determined that the present NO_x limits constitute BART for SAP B, C and D. A limit of 0.12 lb/ton of acid will be included as BART for SAP A. The control technology is the relatively low combustion temperature to avoid thermal NO_x production and the typically low nitrogen sulfur.

An initial NO_x stack test shall be performed in accordance with EPA Method 7 or 7E. Because the potential NO_x emissions from each SAP are less than 100 TPY a test frequency of every 5 years is required from Rule 62-297, F.A.C. and is deemed adequate for BART.

4. BART ANALYSIS AND PRELIMINARY BART DETERMINATION FOR DAP/MAP PLANTS

This section provides the control technology review and BART determination for the following emissions units:

Table 5. CF Industries, Plant City – List of Diammonium Phosphate/Monoammonium Phosphate Plants

EU No.	Emission Unit Description
010	Diammonium Phosphate/Monoammonium Phosphate (DAP/MAP) Plant A
011	Diammonium Phosphate/Monoammonium Phosphate (DAP/MAP) Plant X
012	Diammonium Phosphate/Monoammonium Phosphate (DAP/MAP) Plant Y
013	Diammonium Phosphate/Monoammonium Phosphate (DAP/MAP) Plant "Z"

Process Description and Pollutants from DAP/MAP Plants A, X, Y and Z

The following figure from the European Fertilizer Manufacturers Association (EFMA) shows two similar fertilizer process schemes (including DAP/MAP) that differ in the type of reactor used in the first stages.

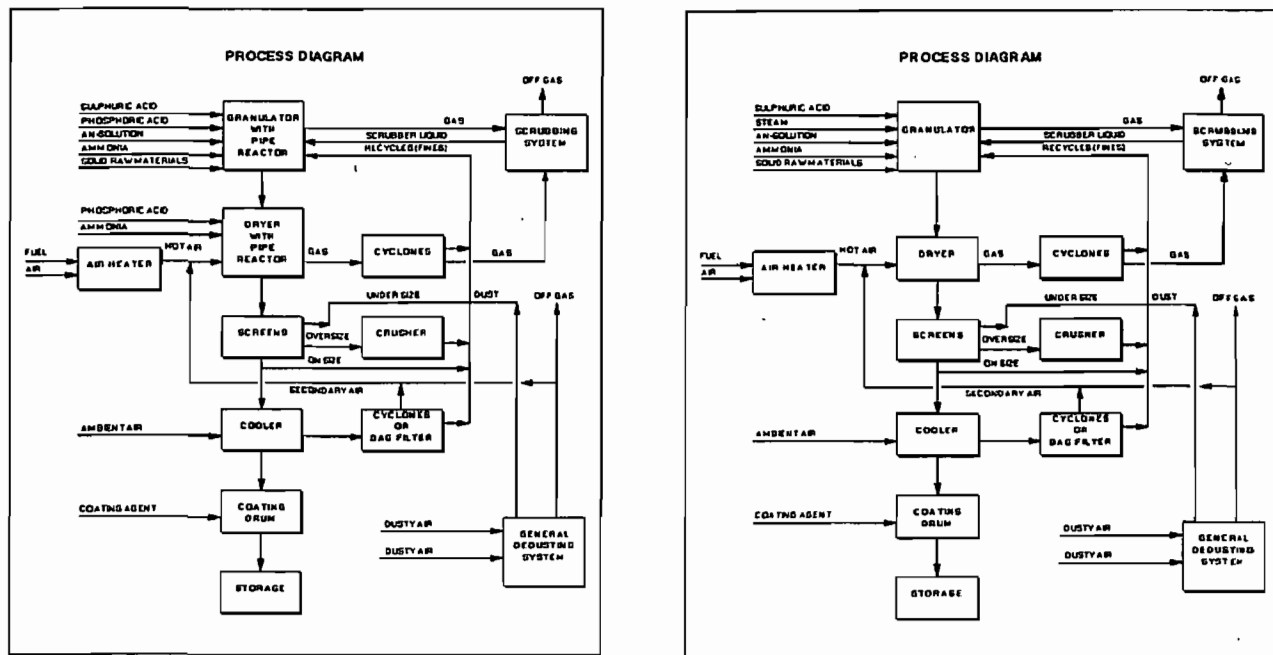


Figure 4. Pipe Reactor and Drum Granulation Systems and Typical Air Pollution Control Equipment.

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At the CFI MAP/DAP plants, phosphoric acid is reacted with ammonia to produce fertilizer. In the basic ammoniated phosphate process, anhydrous ammonia is reacted with phosphoric acid. The slurry produced by the ammoniation is then sprayed onto a bed of solids in the granulator and additional ammonia (if required) is added to complete the acid neutralization and produced the final product grade.

The resulting slurry/solids mixture is dried in a fossil fuel fired direct contact rotary dryer. The dried solids are then screened to remove on size product. The product size material is cooled and then conveyed to storage. The over-sized and under-sized materials are crushed and recirculated through the granulator.

The key pollutants from the DAP/MAP plants are fluoride (particulate and gaseous), other PM in the form of DAP and MAP, and also NH_3 . According to Table 2, the effect of emissions from the MAP/DAP plants on visibility is very much less than the effects of the four SAP. This is logical given that collective emissions of SO_2 from the four SAP are over 5,000 TPY whereas emissions (primarily PM) from the DAP/MAP plants are calculated in terms of a few hundred TPY.

The four DAP/MAP plants are subject to 40 CFR 63, Subpart BB - National Emission Standards for Hazardous Air Pollutants From Phosphate Fertilizers Production Plants (Subpart BB). Subpart BB includes a limitation on fluoride (as F) whether in gaseous or particulate form of 0.060 lb/ton of equivalent P_2O_5 feed (lb/ton feed). The limitation at least insures proper PM control within most of the DAP/MAP process.

The four DAP/MAP plants include medium to high efficiency wet scrubbers that use phosphoric acid and then pond water to reduce F and PM from the reactor and granulators. They are also equipped with abatement scrubbers using fresh water for final cleanup. Emissions from the dryers, coolers, mills and screens are controlled by cyclones, wet scrubbers with phosphoric acid or pond water as the scrubbing medium, and by abatement scrubbers using fresh water.

BART Analysis for SO_2

Applicant's SO_2 Control Technology Review

The applicant did not address SO_2 emissions from the DAP/MAP plants.

Department's SO_2 Control Technology Review and BART Determination

The four dryers associated with the four DAP/MAP plants are rated at 28.5 to 49.7 million British thermal units per hour (mmBtu/hr). Each is fired with natural gas. DAP/MAP plants X, Y and Z use fuel oil No. 2 as backup while DAP/MAP Plant A uses No. 2 through No. 5 fuel oil as backup.

According to Table 2, SO_2 emissions from the DAP/MAP plants contribute much less to visibility impairment than PM/PM_{10} emissions and the DAP/MAP plants contribute very much less to visibility impairment than the four SAP. Even when firing fuel oil, the four SO_2 emissions from the dryers at the four DAP/MAP plants are minimal compared with emissions from the four SAP. No separate BART SO_2 limits will be set for the DAP/MAP plants.

BART Analysis for PM/PM_{10}

Applicant's PM/PM_{10} Control Technology Review

The applicant listed the control equipment and the permitted or recently requested limitations for the four DAP/MAP plants but did not conduct a further assessment.

Department's PM/PM_{10} Control Technology Review and BART Determination

The physical equipment installed at the four DAP/MAP plants to meet the Subpart BB limits are sufficient for the purposes of BART. The Department has actually conducted a number of BACT reviews for PM/PM_{10} from DAP/MAP plants. These include:

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- a. Permit PSD-FL-251 issued on August 8, 2001 to Cargill Fertilizer Riverview facility for the Nos. 3 and 4 MAP plants. The BACT emissions limit was established as 0.12 lb PM/PM₁₀/ ton P₂O₅ feed.
- b. Permit PSD-FL-255 issued on April 21, 1999 to Cargill Fertilizer Bartow facility for the No. 3 DAP/MAP plant. The BACT emissions limit was established as 0.18 lb/ton P₂O₅ feed.
- c. Permit PSD-FL-322 issued on March 2, 2002 to Cargill Fertilizer Bartow facility for the No. 4 DAP plant. The BACT emissions limit was established as 0.15 lb/ton P₂O₅ feed.
- d. PSD-FL-336 issued on March 16, 2004 to Cargill Fertilizer Riverview facility for the No. 6 Granulation plant. The BACT emissions limit was established as 0.15 lb/ton ton P₂O₅ feed.

The present PM/PM₁₀ limits at the DAP/MAP plants at CFI range from 13 to 15.3 lb/hr and equate to 0.21 to 0.44 lb/ton of P₂O₅ feed (depending on the plant and the product). The Department evaluated historical test data (for the period 1984 to beginning of 2007) for these plants from Department's records. Results of the tests data for PM indicate that the actual emissions are much lower than the allowable.

On the basis of the recent BACT determinations and on the statistical data, the Department has determined that a PM/PM₁₀ limit of 0.18 lb/ton of P₂O₅ feed constitutes BART for DAP/MAP plants A, X, Y and Z. The BART limit is achievable with the installed wet scrubbers used for chemical recovery and the final abatement scrubbers along with the measures already in place to insure compliance with Subpart BB.

Compliance with the BART particulate matter emission limit shall be demonstrated annually in accordance with EPA Reference Method 5 in accordance with 40 CFR 60, Appendix A.

BART Analysis for NO_x

Applicant's NO_x Control Technology Review

The applicant did not address NO_x emissions from the DAP/MAP plants.

Department's NO_x Control Technology Review and BART Determination

Thermal and fuel NO_x from the natural gas fired dryers should be relatively low. According to Table 2, NO_x emissions from the DAP/MAP plants contribute much less to visibility impairment than PM/PM₁₀ emissions and the DAP/MAP plants contribute very much less to visibility impairment than the four SAP. No separate BART NO_x limits will be set for the DAP/MAP plants.

5. ANALYSIS AND PRELIMINARY BART DETERMINATION FOR SHIPPING BAGHOUSE UNITS

This section provides the control technology review and BART determination for the following emissions units:

Table 6. CF Industries, Plant City – List of Shipping Baghouses Subject to BART

EU No.	Emission Unit Description
015	Shipping Unit A Baghouse
018	Shipping Unit B Baghouse

Process Description and Pollutants from Shipping Baghouses A and B

Fertilizer from the four MAP/DAP plants is stored in Storage Buildings A and B, and is loaded onto trucks and railcars for shipment. Shipping Units A and B consist of sizing, screening, and conveying systems for transferring MAP/DAP from storage buildings to the truck and railcar loading operations. The maximum loading rate of Shipping Units A and B are limited to 250 TPH and 500 TPH, respectively.

Storage Buildings A and B are fugitive sources of PM emissions as fugitive dust is generated from the transfer points in the conveying system. Dust is controlled by the application of dust suppressant coating oil. PM emissions from some of the transfer points and sizing and screening within each shipping unit by a baghouse

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

(10,000 acfm Mikro-Pulsaire high efficiency Model 1F2-48). The truck and railcar loading operations are also fugitive sources of PM emissions and are controlled by a second application of dust suppressants (coating oil).

Applicant's PM/PM₁₀ Control Technology Review

The applicant did not perform a technology review and proposed the existing control technology as BART.

Department's PM/PM₁₀ BART Determination for the "A" and "B" Shipping Units

The permitted PM emission limit for Shipping Unit A Baghouse and Shipping Unit B Baghouse is 1.71 lb/hr each. The Department evaluated historical and recent test data for these units from Department's records. Results of the tests data for PM indicate that the actual emission is close to the allowable. The BART emission limit for these units will remain unchanged.

Compliance with the a visible emissions standard of 5% opacity in accordance with EPA Reference Method 9 as contained in 40 CFR 60, Appendix A will constitute compliance with the proposed BART determination.

6. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations regarding BART as conditioned by the draft permit. This determination is based on a technical review of the complete application, all available information, reasonable assurances provided by the applicant, and the conditions specified in the draft permit.

SECTION 4. APPENDICES

CONTENTS

Appendix A. Citation Formats

Appendix B. General Conditions

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Appendix D. Best Operational Start-Up Practices for Sulfuric Acid Plants

SECTION 4. APPENDIX A
CITATION FORMATS

The following examples illustrate the format used in the permit to identify applicable permitting actions and regulations.

REFERENCES TO PREVIOUS PERMITTING ACTIONS

Old Permit Numbers

Example: Permit No. AC50-123456 or Air Permit No. AO50-123456

Where: “AC” identifies the permit as an Air Construction Permit
“AO” identifies the permit as an Air Operation Permit
“123456” identifies the specific permit project number

New Permit Numbers

Example: Permit Nos. 099-2222-001-AC, 099-2222-001-AO, or 099-2222-001-AV

Where: “099” represents the specific county ID number in which the project is located
“2222” represents the specific facility ID number
“001” identifies the specific permit project
“AC” identifies the permit as an air construction permit
“AO” identifies the permit as a minor source air operation permit
“AV” identifies the permit as a Title V Major Source Air Operation Permit

PSD Permit Numbers

Example: Permit No. PSD-FL-317

Where: “PSD” means issued pursuant to the Prevention of Significant Deterioration of Air Quality
“FL” means that the permit was issued by the State of Florida
“317” identifies the specific permit project

RULE CITATION FORMATS

Florida Administrative Code (F.A.C.)

Example: [Rule 62-213.205, F.A.C.]

Means: Title 62, Chapter 213, Rule 205 of the Florida Administrative Code

Code of Federal Regulations (CFR)

Example: [40 CFR 60.7]

Means: Title 40, Part 60, Section 7

SECTION 4. APPENDIX B
GENERAL CONDITIONS

The permittee shall comply with the following general conditions from Rule 62-4.160, F.A.C.

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:
 - a. Have access to and copy and records that must be kept under the conditions of the permit;
 - b. Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
 - c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:
 - a. A description of and cause of non-compliance; and
 - b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

SECTION 4. APPENDIX B
GENERAL CONDITIONS

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.
10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.
11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes:
 - a. Determination of Best Available Control Technology (Not Applicable);
 - b. Determination of Prevention of Significant Deterioration (Not Applicable); and
 - c. Compliance with New Source Performance Standards (Not Applicable).
14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - c. Records of monitoring information shall include:
 - 1) The date, exact place, and time of sampling or measurements;
 - 2) The person responsible for performing the sampling or measurements;
 - 3) The dates analyses were performed;
 - 4) The person responsible for performing the analyses;
 - 5) The analytical techniques or methods used; and
 - 6) The results of such analyses.
15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SECTION 4. APPENDIX C
STANDARD TESTING REQUIREMENTS

Unless otherwise specified by permit, all emissions units that require testing are subject to the following conditions as applicable.

1. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]
2. Operating Rate During Testing: Unless otherwise stated in the applicable emission limiting standard rule, testing of emissions shall be conducted with the emissions unit operating at permitted capacity as defined below. If it is impracticable to test at permitted capacity, an emissions unit may be tested at less than the maximum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test rate until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity.
 - a. *Combustion Turbines*. (Reserved)
 - b. *All Other Sources*. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit.
[Rule 62-297.310(2), F.A.C.]
3. Calculation of Emission Rate: For each emissions performance test, the indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]
4. Applicable Test Procedures:
 - a. *Required Sampling Time*.
 - 1) Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes.
 - 2) *Opacity Compliance Tests*. When either EPA Method 9 or DEP Method 9 is specified as the applicable opacity test method, the required minimum period of observation for a compliance test shall be sixty (60) minutes for emissions units which emit or have the potential to emit 100 tons per year or more of particulate matter, and thirty (30) minutes for emissions units which have potential emissions less than 100 tons per year of particulate matter and are not subject to a multiple-valued opacity standard. The opacity test observation period shall include the period during which the highest opacity emissions can reasonably be expected to occur. Exceptions to these requirements are as follows:
 - a) For batch, cyclical processes, or other operations which are normally completed within less than the minimum observation period and do not recur within that time, the period of observation shall be equal to the duration of the batch cycle or operation completion time.

SECTION 4. APPENDIX C
STANDARD TESTING REQUIREMENTS

- b) The observation period for special opacity tests that are conducted to provide data to establish a surrogate standard pursuant to Rule 62-297.310(5)(k), F.A.C., Waiver of Compliance Test Requirements, shall be established as necessary to properly establish the relationship between a proposed surrogate standard and an existing mass emission limiting standard.
- c) The minimum observation period for opacity tests conducted by employees or agents of the Department to verify the day-to-day continuing compliance of a unit or activity with an applicable opacity standard shall be twelve minutes.
- b. *Minimum Sample Volume.* Unless otherwise specified in the applicable rule, the minimum sample volume per run shall be 25 dry standard cubic feet.
- c. *Required Flow Rate Range.* For EPA Method 5 particulate sampling, acid mist/sulfur dioxide, and fluoride sampling which uses Greenburg Smith type impingers, the sampling nozzle and sampling time shall be selected such that the average sampling rate will be between 0.5 and 1.0 actual cubic feet per minute, and the required minimum sampling volume will be obtained.
- d. *Calibration of Sampling Equipment.* Calibration of the sampling train equipment shall be conducted in accordance with the schedule shown in Table 297.310-1.
- e. *Allowed Modification to EPA Method 5.* When EPA Method 5 is required, the following modification is allowed: the heated filter may be separated from the impingers by a flexible tube.

TABLE 297.310-1 CALIBRATION SCHEDULE			
Item	Minimum Frequency	Reference Instrument	Tolerance
Liquid in glass thermometer	Annually	ASTM Hg in glass ref. thermometer or equivalent or thermometric points	± 2%
Bimetallic thermometer	Quarterly	Calib. liq. in glass	5° F
Thermocouple	Annually	ASTM Hg in glass ref. thermometer, NBS calibrated reference and potentiometer	5° F
Barometer	Monthly	Hg barometer or NOAA station	± 1% scale
Pitot Tube	When required or when damaged	By construction or measurements in wind tunnel D greater than 16" and standard pitot tube	See EPA Method 2, Fig. 2-2 & 2-3
Probe Nozzles	Before each test or when nicked, dented, or corroded	Micrometer	± 0.001" mean of at least three readings; maximum deviation between readings, 0.004"
Dry Gas Meter and Orifice Meter	1. Full Scale: When received, when 5% change observed, annually	Spirometer or calibrated wet test or dry gas test meter	2%
	2. One Point: Semiannually		
	3. Check after each test series	Comparison check	5%

[Rule 62-297.310(4), F.A.C.]

SECTION 4. APPENDIX C
STANDARD TESTING REQUIREMENTS

5. Determination of Process Variables:

- a. *Required Equipment.* The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.
- b. *Accuracy of Equipment.* Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

[Rule 62-297.310(5), F.A.C.]

6. Required Stack Sampling Facilities: Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E.

- a. *Permanent Test Facilities.* The owner or operator of an emissions unit for which a compliance test, other than a visible emissions test, is required on at least an annual basis, shall install and maintain permanent stack sampling facilities.
- b. *Temporary Test Facilities.* The owner or operator of an emissions unit that is not required to conduct a compliance test on at least an annual basis may use permanent or temporary stack sampling facilities. If the owner chooses to use temporary sampling facilities on an emissions unit, and the Department elects to test the unit, such temporary facilities shall be installed on the emissions unit within 5 days of a request by the Department and remain on the emissions unit until the test is completed.
- c. *Sampling Ports.*
 - 1) All sampling ports shall have a minimum inside diameter of 3 inches.
 - 2) The ports shall be capable of being sealed when not in use.
 - 3) The sampling ports shall be located in the stack at least 2 stack diameters or equivalent diameters downstream and at least 0.5 stack diameter or equivalent diameter upstream from any fan, bend, constriction or other flow disturbance.
 - 4) For emissions units for which a complete application to construct has been filed prior to December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 15 feet or less. For stacks with a larger diameter, four sampling ports, each 90 degrees apart, shall be installed. For emissions units for which a complete application to construct is filed on or after December 1, 1980, at least two sampling ports, 90 degrees apart, shall be installed at each sampling location on all circular stacks that have an outside diameter of 10 feet or less. For stacks with larger diameters, four sampling ports, each 90 degrees apart, shall be installed. On horizontal circular ducts, the ports shall be located so that the probe can enter the stack vertically, horizontally or at a 45 degree angle.
 - 5) On rectangular ducts, the cross sectional area shall be divided into the number of equal areas in accordance with EPA Method 1. Sampling ports shall be provided which allow access to each sampling point. The ports shall be located so that the probe can be inserted perpendicular to the gas flow.

d. *Work Platforms.*

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STANDARD TESTING REQUIREMENTS

- 1) Minimum size of the working platform shall be 24 square feet in area. Platforms shall be at least 3 feet wide.
- 2) On circular stacks with 2 sampling ports, the platform shall extend at least 110 degrees around the stack.
- 3) On circular stacks with more than two sampling ports, the work platform shall extend 360 degrees around the stack.
- 4) All platforms shall be equipped with an adequate safety rail (ropes are not acceptable), toeboard, and hinged floor-opening cover if ladder access is used to reach the platform. The safety rail directly in line with the sampling ports shall be removable so that no obstruction exists in an area 14 inches below each sample port and 6 inches on either side of the sampling port.

e. *Access to Work Platform.*

- 1) Ladders to the work platform exceeding 15 feet in length shall have safety cages or fall arresters with a minimum of 3 compatible safety belts available for use by sampling personnel.
- 2) Walkways over free-fall areas shall be equipped with safety rails and toeboards.

f. *Electrical Power.*

- 1) A minimum of two 120-volt AC, 20-amp outlets shall be provided at the sampling platform within 20 feet of each sampling port.
- 2) If extension cords are used to provide the electrical power, they shall be kept on the plant's property and be available immediately upon request by sampling personnel.

g. *Sampling Equipment Support.*

- 1) A three-quarter inch eyebolt and an angle bracket shall be attached directly above each port on vertical stacks and above each row of sampling ports on the sides of horizontal ducts.
 - a) The bracket shall be a standard 3 inch × 3 inch × one-quarter inch equal-legs bracket which is 1 and one-half inches wide. A hole that is one-half inch in diameter shall be drilled through the exact center of the horizontal portion of the bracket. The horizontal portion of the bracket shall be located 14 inches above the centerline of the sampling port.
 - b) A three-eighth inch bolt which protrudes 2 inches from the stack may be substituted for the required bracket. The bolt shall be located 15 and one-half inches above the centerline of the sampling port.
 - c) The three-quarter inch eyebolt shall be capable of supporting a 500 pound working load. For stacks that are less than 12 feet in diameter, the eyebolt shall be located 48 inches above the horizontal portion of the angle bracket. For stacks that are greater than or equal to 12 feet in diameter, the eyebolt shall be located 60 inches above the horizontal portion of the angle bracket. If the eyebolt is more than 120 inches above the platform, a length of chain shall be attached to it to bring the free end of the chain to within safe reach from the platform.
- 2) A complete monorail or dualrail arrangement may be substituted for the eyebolt and bracket.
- 3) When the sample ports are located in the top of a horizontal duct, a frame shall be provided above the port to allow the sample probe to be secured during the test.

7. Frequency of Compliance Tests: The following provisions apply only to those emissions units that are subject to an emissions limiting standard for which compliance testing is required.

a. *General Compliance Testing.*

SECTION 4. APPENDIX C
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- 1) The owner or operator of a new or modified emissions unit that is subject to an emission limiting standard shall conduct a compliance test that demonstrates compliance with the applicable emission limiting standard prior to obtaining an operation permit for such emissions unit.
- 2) For excess emission limitations for particulate matter specified in Rule 62-210.700, F.A.C., a compliance test shall be conducted annually while the emissions unit is operating under soot blowing conditions in each federal fiscal year during which soot blowing is part of normal emissions unit operation, except that such test shall not be required in any federal fiscal year in which a fossil fuel steam generator does not burn liquid and/or solid fuel for more than 400 hours other than during startup.
- 3) The owner or operator of an emissions unit that is subject to any emission limiting standard shall conduct a compliance test that demonstrates compliance with the applicable emission limiting standard prior to obtaining a renewed operation permit. Emissions units that are required to conduct an annual compliance test may submit the most recent annual compliance test to satisfy the requirements of this provision. In renewing an air operation permit pursuant to sub-subparagraph 62-210.300(2)(a)3.b., c., or d., F.A.C., the Department shall not require submission of emission compliance test results for any emissions unit that, during the year prior to renewal:
 - a) Did not operate; or
 - b) In the case of a fuel burning emissions unit, burned liquid and/or solid fuel for a total of no more than 400 hours,
- 4) During each federal fiscal year (October 1 – September 30), unless otherwise specified by rule, order, or permit, the owner or operator of each emissions unit shall have a formal compliance test conducted for:
 - a) Visible emissions, if there is an applicable standard;
 - b) Each of the following pollutants, if there is an applicable standard, and if the emissions unit emits or has the potential to emit: 5 tons per year or more of lead or lead compounds measured as elemental lead; 30 tons per year or more of acrylonitrile; or 100 tons per year or more of any other regulated air pollutant; and
 - c) Each NESHAP pollutant, if there is an applicable emission standard.
- 5) An annual compliance test for particulate matter emissions shall not be required for any fuel burning emissions unit that, in a federal fiscal year, does not burn liquid and/or solid fuel, other than during startup, for a total of more than 400 hours.
- 6) For fossil fuel steam generators on a semi-annual particulate matter emission compliance testing schedule, a compliance test shall not be required for any six-month period in which liquid and/or solid fuel is not burned for more than 200 hours other than during startup.
- 7) For emissions units electing to conduct particulate matter emission compliance testing quarterly pursuant to paragraph 62-296.405(2)(a), F.A.C., a compliance test shall not be required for any quarter in which liquid and/or solid fuel is not burned for more than 100 hours other than during startup.
- 8) Any combustion turbine that does not operate for more than 400 hours per year shall conduct a visible emissions compliance test once per each five-year period, coinciding with the term of its air operation permit.
- 9) The owner or operator shall notify the Department, at least 15 days prior to the date on which each formal compliance test is to begin, of the date, time, and place of each such test, and the test contact

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person who will be responsible for coordinating and having such test conducted for the owner or operator.

10) An annual compliance test conducted for visible emissions shall not be required for units exempted from air permitting pursuant to subsection 62-210.300(3), F.A.C.; units determined to be insignificant pursuant to subparagraph 62-213.300(2)(a)1., F.A.C., or paragraph 62-213.430(6)(b), F.A.C.; or units permitted under the General Permit provisions in paragraph 62-210.300(4)(a) or Rule 62-213.300, F.A.C., unless the general permit specifically requires such testing.

b. Special Compliance Tests. When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department.

8. Test Reports:

a. The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test.

b. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed.

c. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the following information:

1) The type, location, and designation of the emissions unit tested.

2) The facility at which the emissions unit is located.

3) The owner or operator of the emissions unit.

4) The normal type and amount of fuels used and materials processed, and the types and amounts of fuels used and material processed during each test run.

5) The means, raw data and computations used to determine the amount of fuels used and materials processed, if necessary to determine compliance with an applicable emission limiting standard.

6) The type of air pollution control devices installed on the emissions unit, their general condition, their normal operating parameters (pressure drops, total operating current and GPM scrubber water), and their operating parameters during each test run.

7) A sketch of the duct within 8 stack diameters upstream and 2 stack diameters downstream of the sampling ports, including the distance to any upstream and downstream bends or other flow disturbances.

8) The date, starting time and duration of each sampling run.

9) The test procedures used, including any alternative procedures authorized pursuant to Rule 62-297.620, F.A.C. Where optional procedures are authorized in this chapter, indicate which option was used.

10) The number of points sampled and configuration and location of the sampling plane.

SECTION 4. APPENDIX C
STANDARD TESTING REQUIREMENTS

- 11) For each sampling point for each run, the dry gas meter reading, velocity head, pressure drop across the stack, temperatures, average meter temperatures and sample time per point.
- 12) The type, manufacturer and configuration of the sampling equipment used.
- 13) Data related to the required calibration of the test equipment.
- 14) Data on the identification, processing and weights of all filters used.
- 15) Data on the types and amounts of any chemical solutions used.
- 16) Data on the amount of pollutant collected from each sampling probe, the filters, and the impingers, are reported separately for the compliance test.
- 17) The names of individuals who furnished the process variable data, conducted the test, analyzed the samples and prepared the report.
- 18) All measured and calculated data required to be determined by each applicable test procedure for each run.
- 19) The detailed calculations for one run that relate the collected data to the calculated emission rate.
- 20) The applicable emission standard and the resulting maximum allowable emission rate for the emissions unit plus the test result in the same form and unit of measure.
- 21) A certification that, to the knowledge of the owner or his authorized agent, all data submitted are true and correct. When a compliance test is conducted for the Department or its agent, the person who conducts the test shall provide the certification with respect to the test procedures used. The owner or his authorized agent shall certify that all data required and provided to the person conducting the test are true and correct to his knowledge.

[Rule 62-297.310(8), F.A.C.]

9. Stack: The terms stack and duct are used interchangeably in this rule.

[Rule 62-297.310(9), F.A.C.]

SECTION 4. APPENDIX D

BEST OPERATIONAL START-UP PRACTICES FOR SULFURIC ACID PLANTS

1. Only one sulfuric acid plant at a facility should be started up and burning sulfur at a time. There are times when it will be acceptable for more than one sulfuric acid plant to be in the start-up mode at the same time, provided the following condition is met. It is not acceptable to initiate sulfur burning at one sulfuric acid plant when another plant at the same facility is emitting SO₂ at a rate in excess of the emission limits imposed by the permit or rule, as determined by the CEMs emission rates for the immediately preceding 20 minutes.
2. A plant start-up must be at the lowest practicable operating rate, not to exceed 70 percent of the designated operating rate, until the SO₂ monitor indicates compliance. Because production rate is difficult to measure during start-up, if a more appropriate indicator (such as blower pressure, furnace temperature, gas strength, blower speed, number of sulfur guns operating, etc.) can be documented, tested and validated, the Department will accept this in lieu of directly documenting of the suitable list of surrogate parameters to demonstrate and document the reduced operating rate on a plant-by-plant basis. Documentation that the plant is conducting start-up at the reduced rate is the responsibility of the owner or operator.
3. Sulfuric acid plants are authorized to emit excess emissions from start-up for a period of three consecutive hours provided best operational practices, in accordance with this agreement, to minimize emissions are followed. No plant shall be operated (with sulfur as fuel) out of compliance for more than three consecutive hours. Thereafter, the plant shall be shut down (cease burning sulfur) if, as indicated by the continuous emission monitoring system, the plant is not in compliance within three hours of startup. Restart may occur as soon as practicable following any needed repairs or adjustments, provided the corrective action is taken and properly documented.
4. Cold Start-Up Procedures.
 - a. Converter.
 - (1) The inlet and outlet temperature at the first two masses of catalyst shall be sufficiently high to provide immediate ignition when SO₂ enters the masses. In no event shall the inlet temperature to the first mass be less than 800°F or the outlet temperature to the first two masses be less than 700°F. These temperatures are the desired temperatures at the time the use of auxiliary fuel is terminated.
 - (2) The gas stream entering the converter shall contain SO₂ at a level less than normal and sufficiently low to promote catalytic conversion to SO₃.
 - b. Absorbing Towers.

The concentration, temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H₂SO₄.
5. Warm Restart.
 - a. Converter

The inlet and outlet temperatures of the first two catalyst masses should be sufficiently high to ensure conversion. One of the following three conditions must be met:

 - (1) The first two catalyst masses inlet and outlet temperatures must be at a minimum of 700°F; or
 - (2) Two of the four inlet and outlet temperatures must be greater than or equal to 800°F; or
 - (3) The inlet temperature of the first catalyst must be greater than or equal to 600°F and the outlet temperature greater than or equal to 800°F. Also, the inlet and outlet temperatures of the second catalyst must be greater than or equal to 700°F.

SECTION 4. APPENDIX D

BEST OPERATIONAL START-UP PRACTICES FOR SULFURIC ACID PLANTS

Failure to meet one of the above conditions requires use of cold start-up procedures.

To allow for technologies improvements or individual plant conditions, alternative conditions will be considered by the Department in appropriate cases.

b. Absorbing Towers.

The concentration, temperature and flow of circulating acid shall be as near to normal conditions as reasonably can be achieved. In no event shall the concentration be less than 96 percent H₂SO₄.