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Florida Department of Environmental Protection

Memorandum

TO: Trina Vielhauer, Chief *copy for TLV*
Bureau of Air Regulation

THROUGH: Al Linero, Manager *copy*
Air Permitting South Program

FROM: Jeff Koerner, Air Permitting South Program *JK*

DATE: August 26, 2004

SUBJECT: Draft Air Permit No. PSD-FL-301B
Project No. 0570040-021-AC
Tampa Electric Company, Bayside Power Station
Revised Condition 17, Excluded Data

Attached for your review are the following items:

- Intent to Issue Permit and Public Notice Package;
- Technical Evaluation and Preliminary Determination;
- Draft Permit; and
- PE Certification.

The draft permit revises Condition 17 in Section IIIA of the current permit for the existing Bayside Power Station in Tampa, Florida. This condition concerns the plant's ability to exclude CO and NOx emissions data collected during periods startups, shutdowns, malfunctions, DLN tuning, compressor blade drying, and over speed trip testing. The Technical Evaluation and Preliminary Determination provides a detailed description of the project, rule applicability, and the proposed revision. The P.E. certification briefly summarizes the proposed project. Day #74 is September 2, 2004. I recommend your approval of the attached Draft Permit Revision for this project.

Attachments

U.S. Postal Service CERTIFIED MAIL RECEIPT <small>(Domestic Mail Only; No Insurance Coverage Provided)</small>													
OFFICIAL USE													
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%; padding: 2px;">Postage</td> <td style="width: 20%; padding: 2px;">\$</td> </tr> <tr> <td style="padding: 2px;">Certified Fee</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Return Receipt Fee <small>(Endorsement Required)</small></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Restricted Delivery Fee <small>(Endorsement Required)</small></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Total Postage & Fees</td> <td style="padding: 2px;">\$</td> </tr> </table>	Postage	\$	Certified Fee		Return Receipt Fee <small>(Endorsement Required)</small>		Restricted Delivery Fee <small>(Endorsement Required)</small>		Total Postage & Fees	\$	Postmark Here		
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<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;"><small>Send To</small> Wayne A. Maye, General Manager</td> <td style="width: 50%; padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Bayside Power Station</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;"><small>Street, Apt. No., or PO Box No.</small></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Tampa Electric Company</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;"><small>City, State, ZIP+4</small></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Tampa Florida 33601-0111</td> <td style="padding: 2px;"></td> </tr> </table>		<small>Send To</small> Wayne A. Maye, General Manager		Bayside Power Station		<small>Street, Apt. No., or PO Box No.</small>		Tampa Electric Company		<small>City, State, ZIP+4</small>		Tampa Florida 33601-0111	
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<div style="display: flex; justify-content: space-between;"> PS Form 3800, May 2000 See Reverse for Instructions </div>													

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Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

August 26, 2004

Mr. Wade A. Maye, General Manager
Bayside Power Station
Tampa Electric Company
P. O. Box 111
Tampa, FL 33601-0111

Re: Permit No. PSD-FL-301B
Project No. 0570040-021-AC
H. L. Culbreath Bayside Power Station
Revised Condition 17, Excluded Data

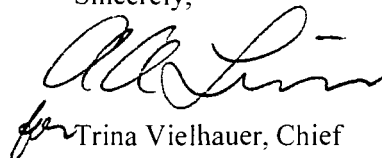
Dear Mr. Maye:

On February 26, 2004, you submitted an application to revise Condition 17 in air construction Permit No. PSD-FL-301A for the Bayside Power Station, which located at on Tampa's Port Sutton Road in Hillsborough County, Florida. The Department has made a preliminary determination to revise the condition as provided in the Draft Permit. Enclosed are the following documents: "Technical Evaluation and Preliminary Determination", "Draft Permit Revision", "Written Notice of Intent to Issue Air Permit", and "Public Notice of Intent to Issue Air Permit".

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 the permit. The "Draft Permit Revision" includes the specific changes to permit conditions that the Department intends to make. The "Written Notice of Intent to Issue Air Permit" provides important information regarding: the Permitting Authority's intent to revise the air permit for the proposed project; the requirements for publishing a Public Notice of the Permitting Authority's intent to revise the air permit; the procedures for submitting comments on the Draft Permit Revision; 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, Jeff Koerner, at 850/921-9536.

Sincerely,



for Trina Vielhauer, Chief
Bureau of Air Regulation

Enclosures

"More Protection, Less Process"

Printed on recycled paper.

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

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

Mr. Wade A. Maye, General Manager
Bayside Power Station
Tampa Electric Company
P. O. Box 111
Tampa, FL 33601-0111

Permit No. PSD-FL-301B
Project No. 0570040-021-AC
H. L. Culbreath Bayside Power Station
Revised Condition 17, Excluded Data

Facility Location: The applicant proposes to revise a condition in Air Permit No. PSD-FL-301A for the existing H. L. Culbreath Bayside Power Station, which is located in Tampa on Port Sutton Road in Hillsborough County, Florida.

Project: In accordance with Air Permit No. PSD-FL-301A, the applicant constructed the new H.L. Culbreath Bayside Power Station. That project re-powered the existing coal-fired Gannon Station with combined cycle gas turbines firing natural gas. After the shutdown of all coal-fired units, the re-powering project is expected to result in the following annual *reductions* of air emissions: 28,000 tons per year of nitrogen oxides; 1600 tons per year particulate matter; 60,000 tons per year; 900 tons per year of sulfuric acid mist; and 18 tons per year of lead.

The current permit allows limited amounts of continuous monitoring data to be excluded from the compliance average for specific operating periods including startup, shutdown, malfunction, cold steam turbine startups, and tuning. The applicant proposes the following changes: allow operation of the gas turbines below 50% base load without restriction, but in compliance with the standards; clarify that only equipment malfunctions resulting in emissions beyond the permitted rates must be reported within one day; retain the current restriction on data exclusion for cold steam turbine startups; add a provision for maximum data exclusion due to startup, shutdown, and malfunction for days with a startup following an unplanned forced outage; and allow the exclusion of all data collected during periods of tuning of the dry low-NO_x combustion system, drying of the compressor blades following a water wash, and conducting an over speed trip test. These scenarios identify specific periods during which the gas turbines are not yet able to operate in full dry low-NO_x combustion mode with the resulting low emission levels. As conditioned and restricted by the draft permit, the Department believes that these cases are limited in scope and impact. Details of the project are provided in the 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 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The proposed project is not exempt from air permitting requirements and an air permit is required. The Department's Bureau of Air Regulation is the Permitting Authority responsible for making the permit determination for this project. The Permitting Authority's mailing address is: Bureau of Air Regulation, Florida Department of Environmental Protection, 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. (Telephone: 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. A copy of the complete project file is available at the Department's Air Resource Section in the Southwest District Office located at 3804 Coconut Palm Drive in Tampa, Florida 33619-1352 (Telephone: 813/744-6100). A copy is also available at the Air Management Division of the Hillsborough County Environmental Protection Commission located at 1410 North 21 Street in Tampa, Florida 33605 (Telephone: 813/272-5530).

WRITTEN NOTICE OF INTENT TO ISSUE AIR PERMIT

Notice of Intent to Issue Air Permit: The Permitting Authority gives notice of its intent to issue an air permit 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 fourteen (14) days from the date of publication of the Public Notice. Written comments must be provided to the Permitting Authority at the above address. Any written comments filed will be made available for public inspection. 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.

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 fourteen (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 fourteen (14) days of publication of the attached Public Notice or within fourteen (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 fourteen (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 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 how and when each petitioner received notice of the agency action or proposed action; (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; 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.

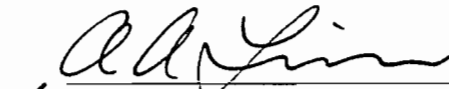
Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Permitting Authority's final action may be different from the position taken by it in this Written Notice of Intent to Issue Air Permit. Persons whose substantial interests 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.

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 the address and phone number listed above. Pursuant to Rule 62-110.106(5), F.A.C., the applicant shall provide proof of publication to the Permitting Authority at the above address within seven (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.

Executed in Tallahassee, Florida.


Trina Vielhauer, Chief
Bureau of Air Regulation

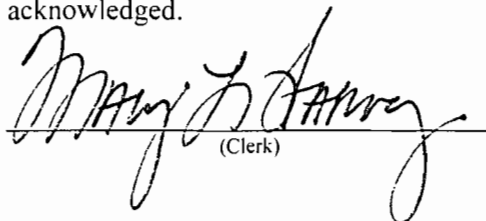
CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this "Written Notice of Intent to Issue Air Permit" package (including the Public Notice, the Technical Evaluation and Preliminary Determination, and the Draft Permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 8/27/04 to the persons listed below.

- Mr. Wade A. Maye, TECO*
- Ms. Greer Briggs, TECO
- Mr. Tom Davis, P.E., ECT
- Mr. Jerry Kissel, SWD Office
- Mr. Jerry Campbell, EPC of Hillsborough County
- Mr. Gregg Worley, EPA Region 4
- Mr. John Bunyak, National Park Service

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) 8/27/04
(Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR PERMIT

Florida Department of Environmental Protection
Draft Air Permit No. PSD-FL-301B
Project No. 0570040-021-AC
Tampa Electric Company – H. L. Culbreath Bayside Power Station
Hillsborough County

Applicant: The applicant for this project is the Tampa Electric Company. The applicant's authorized representative is Mr. Wade A. Maye, General Manager of the existing Bayside Power Station. The mailing address is P. O. Box 111, Tampa, FL 33601-0111.

Facility Location: The applicant proposes to revise a condition in Air Permit No. PSD-FL-301A for the existing H. L. Culbreath Bayside Power Station, which is located in Tampa on Port Sutton Road in Hillsborough County, Florida.

Project: In accordance with Air Permit No. PSD-FL-301A, the applicant constructed the new H.L. Culbreath Bayside Power Station. That project re-powered the existing coal-fired Gannon Station with combined cycle gas turbines firing natural gas. After the shutdown of all coal-fired units, the re-powering project is expected to result in the following annual *reductions* of air emissions: 28,000 tons per year of nitrogen oxides; 1600 tons per year particulate matter; 60,000 tons per year; 900 tons per year of sulfuric acid mist; and 18 tons per year of lead.

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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 62-4, 62-210, and 62-212 of the Florida Administrative Code (F.A.C.). The proposed project is not exempt from air permitting requirements and an air permit is required. The Department's Bureau of Air Regulation is the Permitting Authority responsible for making permit determinations for this project. The Permitting Authority's mailing address is: Bureau of Air Regulation, Florida Department of Environmental Protection, 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400. (Telephone: 850/488-0114).

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(Public Notice to be Published in the Newspaper)

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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. 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)

P.E. CERTIFICATION STATEMENT

PERMITTEE

H. L. Culbreath Bayside Power Station
(Formerly the F. J. Gannon Station)
P.O. Box 111
Tampa, FL 336601-0111

Draft Permit No. PSD-FL-301B
Project No. 0570040-021-AC
Revised Condition 17, Excluded Data
Hillsborough County, Florida

PROJECT DESCRIPTION

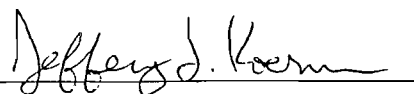
The H. L. Culbreath Bayside Power Station is the re-powered F. J. Gannon Station located in Tampa, Florida. When fully constructed, the plant will have four combined cycle units consisting of gas turbines with heat recovery steam generators supplying four re-powered Gannon steam turbine electrical generators. Each gas turbine is the 170 MW General Electric Model PG7241(FA) gas turbine-electrical generator set and utilizes SCR to reduce NOx emissions. Bayside Units 1 and 2 have been constructed, tested, and are currently in operation. Construction has not yet begun on Bayside Units 3 and 4.

The applicant requests the following revisions to Condition 17 in current Permit No. PSD-FL-301A:

- *Low Load Operation:* The applicant requests removal of the current 3 hour per day restriction on operating below 50% of base load. Information from General Electric suggests that this unit reaches full, dry low-NOx combustion between 40% and 50% of base load. The CO and NOx CEMS will verify the low emission profiles and ensure continued compliance with the emission standards.
- *Startups, Shutdowns, and Malfunctions:* The original PSD permit allowed up to 16 hours of CEMS data due to a cold steam turbine startup; however it allows modification of this condition to "... represent good operational practices ...". The applicant provided a startup and shutdown plan describing the a cold steam turbine startup as well as operational data supporting an extended startup. The applicant requests that this condition be retained. In addition, the applicant requests a provision allowing the exclusion of up to 8 hours of CEMS data due to a startup following an unplanned forced outage. The long steam piping runs (> 1700 feet) and the existing steam turbines require extended periods of low load operation for one gas turbine to provide gradual warming during these startups.
- *DLN Tuning:* The applicant requests the ability to exclude data collected during a DLN tuning session. DLN tuning means operating the gas turbine at intermittent loads throughout the full load range in order to adjust and tune the dry low-NOx (DLN) combustion system. Such tuning is a necessary maintenance practice required by the manufacturer after a major overhaul or repair (i.e., a combustor change-out). The unit may have elevated emissions at some loads until properly tuned.
- *Drying after a Compressor Blade Wash:* Compressor blades are periodically washed with water to remove accumulated particulate. After such a wash, the gas turbine must be operated at low loads (< 10 MW) to gradually heat and dry the blades. The unit has elevated emissions at low loads because it has not yet achieved full, dry low NOx combustion.
- *Over Speed Trip Testing:* The manufacturer periodically requires over speed trip tests to ensure that the unit will properly trip under an over speed scenario to prevent extensive damage. During this test, the gas turbine is operated at full speed, no load (FSNL) for approximately 5 to 6 hours. The unit is gradually accelerated to 110% speed (3960 rpm) to initiate a trip and then coasts down normally. Over speed trip tests are typically performed after a long outage or a major component overhaul. Such tests may occur a few times each year and are a necessary maintenance practice.

The requested revisions cover special, infrequent operating scenarios. Conditions regarding startups are generally preceded by a corresponding shutdown. The goals of the maintenance activities are improve efficiency, which should result in less fuel consumption and lower emissions. The changes are not expected to result in increased annual emissions. The requested revisions do not trigger any new federal NSPS or NESHAP requirements.

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. However, 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).



Jeffery F. Koerner, P.E.
Registration Number: 49441

8-26-04
(Date)

**TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION**

PROJECT

Draft Air Construction Permit No. PSD-FL-301B
Project No. 0570040-021-AC
Revised Condition 17, Excluded Data

COUNTY

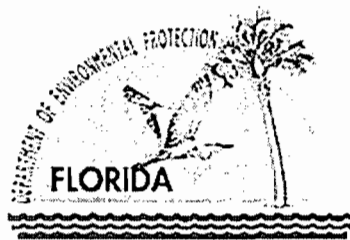
Hillsborough County, Florida

APPLICANT

Tampa Electric Company
H. L. Culbreath Bayside Power Station
ARMS Facility ID No. 0570040

**PERMITTING
AUTHORITY**

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



August 26, 2004

{Filename: PSD-FL-301B - TEPD}

1. GENERAL PROJECT INFORMATION

Applicant Name and Address

H. L. Culbreath Bayside Power Station (Formerly the F. J. Gannon Station)
P.O. Box 111
Tampa, FL 336601-0111

Processing Schedule

02/26/04: Received the application for a minor source air pollution construction permit.
03/19/04: Department requested additional information.
04/09/04: Department mailed reminder for requested additional information.
06/21/04: Department received additional information; complete.

Facility Description and Location

The H. L. Culbreath Bayside Power Station is the re-powered F. J. Gannon Station located in Tampa, Florida. When fully constructed, the plant will have four combined cycle units consisting of gas turbines with heat recovery steam generators supplying four re-powered Gannon steam turbine electrical generators. Each combined cycle unit employs SCR to reduce NOx emissions. The Standard Industrial Classification Code is SIC No. 4911 for electric services. The UTM coordinates are: Zone 17, 360.00 km E, 3087.50 km N. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to a National Ambient Air Quality Standard (NAAQS).

Regulatory Categories

Title III: The existing Gannon Station was a major source of hazardous air pollutants (HAP). However, the re-powered Bayside Station is no longer a major source of HAPs.

Title IV: The existing facility operates units subject to the acid rain provisions of the Clean Air Act.

Title V: The existing facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.

PSD: The existing facility is a PSD-major source of air pollution in accordance with Rule 62-212.400, F.A.C.

NSPS: The existing facility operates units subject to the New Source Performance Standards of 40 CFR 60.

Project Description

The H. L. Culbreath Bayside Power Station is being constructed under Permit No. PSD-FL-301A issued on January 8, 2002. Bayside Units 1 and 2 have been constructed, demonstrated initial compliance, and are currently in operation. Construction of Bayside Units 3 and 4 has not yet commenced. Bayside Unit 1 consists of three gas turbines (169 MW each), three heat recovery steam generators, and the re-powered Gannon Unit 5 steam turbine (239 MW). Bayside Unit 2 consists of four gas turbines (169 MW each), three heat recovery steam generators, and the re-powered Gannon Unit 6 steam turbine (414 MW). Each gas turbine is a General Electric Model PG7241(FA) with an automated control system, an inlet air filtration system, an evaporative inlet air cooling system, and a single exhaust stack. All units fire natural gas as the exclusive fuel. See Figure 1, which is a schematic of Bayside Unit 1.

Based on the actual operation of Bayside Units 1 and 2, the applicant requests several revisions to Specific Condition 17 regarding low load operation, startups, shutdowns, malfunctions, DLN tuning, compressor blade drying, and over speed trip testing. Each request is discussed in detail in Section 3 of this technical evaluation. Under separate applications, the Department is also reviewing the following additional requests for this plant: an initial simple cycle phase for the Bayside Unit 3 gas turbines with restricted oil firing; a revised Title V air operation permit to incorporate Bayside Units 1 and 2; and a renewal of the Title V air operation permit for the existing plant.

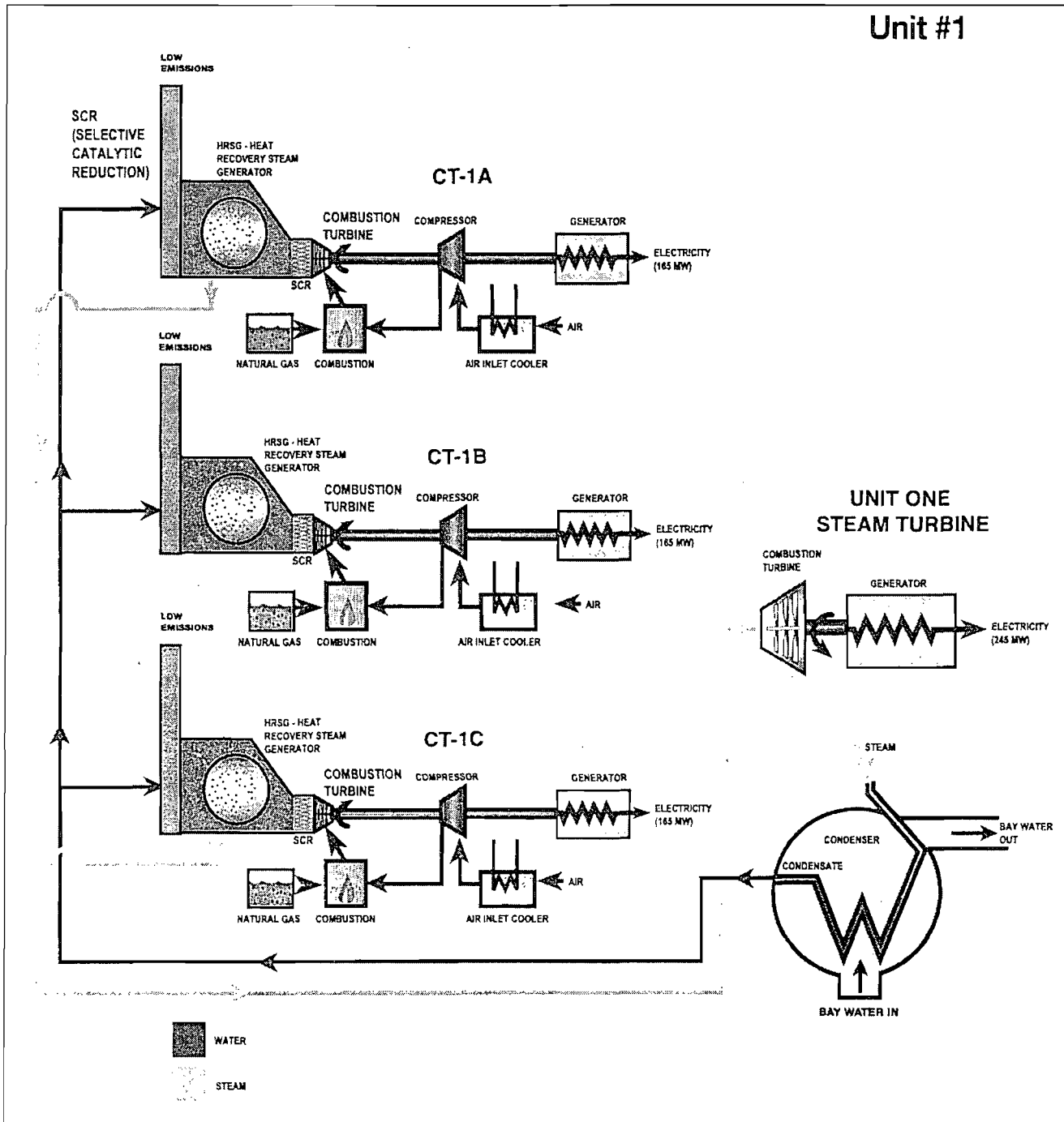


Figure 1. Schematic of Bayside Unit 1

2. APPLICABLE REGULATIONS

State Regulations

This project is subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The Florida Statutes authorize the Department of Environmental Protection to establish rules and regulations regarding air quality as part of the Florida Administrative Code (F.A.C.). The units remain subject to the applicable provisions in Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the

Florida Administrative Code.

Federal Regulations

NSPS: The new gas turbines remain subject to the applicable provisions of Subpart GG in 40 CFR 60, which is the New Source Performance Standard for gas turbines.

NESHAP: The existing Gannon Station was a major source of hazardous air pollutants (HAPs). However, the Bayside gas turbine project did not trigger a 112(g) case-by-case determination of the Maximum Available Control Technology (MACT). The re-powered Bayside Station is not a major source of HAPs. The project to revise Condition 17 does not trigger any new NESHAP requirements.

Prevention of Significant Deterioration (PSD) Preconstruction Review

The existing power plant is a PSD-major facility as defined in Rule 62-212.400, F.A.C. The original air construction permit project included shutdown of the existing coal-fired Gannon Units as well as the construction of the new Bayside Units. Based on the PSD netting analysis, the project was subject to PSD preconstruction review for emissions of carbon monoxide (CO), particulate matter (PM/PM₁₀), and volatile organic compounds (VOC). The Department made determination of the Best Available Control Technology (BACT) for each of these pollutants. Emissions of nitrogen oxides (NO_x) and sulfur dioxides netted out of PSD review with the shutdown of the existing coal-fired Gannon Units.

The re-powering project was part of settlement agreements with the Department and EPA, which alleged that major modifications had been performed on the Gannon Units without PSD preconstruction review. As a result, the netting analysis for this project considered “past actual emissions” to be those emissions that would have been generated if BACT-level controls had been installed. This is the reason that the combined cycle project triggered PSD review for emissions of particulate matter even though the gas turbines will emit much less particulate matter than the previous coal-fired boilers. All of the existing coal-fired Gannon Units have been permanently shut down. Bayside Units 1 and 2 have been constructed, tested, and are currently in operation. Construction has not yet begun on Bayside Units 3 and 4.

As conditioned in the draft permit, the changes are not expected to result in increased annual emissions for the following reasons.

- *Removing the 3-hour restriction on operation below 50% based load:* No increase in annual emissions is expected because the condition requires operation in full, dry low NO_x combustion mode with compliance ensured by CEMS.
- *Retaining the 16-hour data exclusion for cold startups:* No increase in annual emissions is expected because the applicant has requested retaining the original limit.
- *Adding a provision for 8-hours of data exclusion due to a steam turbine startup following an unplanned forced outage:* It is possible that this additional provision could result in some increased annual emissions. However, the ability to use this provision is narrowly defined to periods when the steam turbine has inadvertently tripped off line or must be shut down for unscheduled maintenance or repair. In the past, such cases have been infrequent and beyond the control of the facility. Based on the Department’s estimates, twelve such episodes would be well below the PSD significant emission rates. In addition, it is expected that these startups would actually replace several cold steam turbine startups.
- *Removal of 3-hour restriction for DLN tuning:* No increase in annual emissions is expected because a tuning session generally follows an extended period of shutdown to perform maintenance or repair. A gas turbine that is properly tuned will exhibit lower emissions. In addition, this is a necessary maintenance procedure that is required by the existing permit.
- *Compressor blade drying:* No increase in annual emissions is expected because compressor blade drying generally follows extended periods of shutdown to perform the maintenance activity. Such activities are typically less than two hours per occurrence. This necessary maintenance procedure will likely result in improved efficiency and lower actual emissions.

- *Over speed trip testing:* No increase in annual emissions is expected because over speed trip testing generally follows an extended period of shutdown to perform the maintenance activity. Such activities are typically less than five hours per occurrence and are required by the manufacturer to prevent catastrophic failure of the unit.

In addition to the above, Bayside Unit 1 will not reach 24 months of operation until March of 2005 and Bayside Unit 2 will not reach 24 months of operation until September of 2005. Therefore, these changes will not trigger any new PSD preconstruction review requirements.

3. MODIFICATION OF PERMIT CONDITIONS

The applicant requested several changes to Specific Condition 17 in Section III, Subsection A of Permit No. PSD-FL-301A. The following provides a discussion of each request and the Department's conclusion. The full text of the original condition and the revised condition follow this discussion.

b. Low Load Operation

Applicant's Request: The current permit limits operation below 50% base load to 3 hours in a 24-hour block. The applicant requests deletion of the 3-hour restriction because the installed General Electric gas turbines are capable of complying with the permit standards below 50% of base load. The change will offer some operational flexibility for these units while the installed CO and NO_x CEMS will confirm that each gas turbine is operating in full dry low-NO_x combustion mode in compliance with the permitted emission rates.

Department's Review: The applicant provided new additional information from the manufacturer that the Frame 7FA gas turbine can achieve full dry low-NO_x combustion perhaps as low as 40% of base load. The installed CO and NO_x CEMS will ensure that the gas turbine is operating in full, dry low-NO_x combustion mode. Therefore, the 3-hour restriction is unnecessary and may be removed as requested.

c. CEMS Data Exclusion – Startup, Shutdown and Malfunction

Applicant's Request: This condition requires the operator to document a malfunction within one working day of detection by contacting the Compliance Authority. The applicant believes that reporting each malfunction within one day is burdensome and requests removal of the requirement.

Department's Review: The Department notes that Condition 16 in Section II of the permit requires the following in accordance with Rule 62-4.130, F.A.C., "If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the permittee shall notify the Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; steps being taken to correct the problem and prevent future recurrence; and, where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit or the regulations." Therefore, the similar requirement in Condition 17 of Section III is redundant and can be removed. Note that only malfunctions resulting in a failure to comply with permit conditions must be reported. The revised condition will also specify that excluded data must be summarized in the Semiannual CEMS Report as required by Condition 25 of the permit.

c. CEMS Data Exclusion – Steam Turbine Cold Startup

Applicant's Request: The permit allows the Department to review startup information and modify the provision allowing up to 16 hours of data exclusion for a steam turbine cold startup. Based on actual operational information, the applicant requests no revision of the current permit regarding cold steam turbine startups. In addition, the applicant requests removal of the requirement to provide 24-hour advance notice of a steam turbine cold startup because this could delay bringing the unit back on line.

Department's Review: The current PSD permit allows a single gas turbine to operate at low loads (~ 10% of base load) for extended periods when conducting a cold steam turbine startup. Operating procedures provide 11

hours of low load operation to warm the main and hot reheat steam lines, some of which are more than 1700 feet in length. Procedures also allow an additional 5 hours of low load operation to gradually warm up the steam turbine to a uniform temperature. Without an extended gradual warm up, thermal fatigue could cause failures and decrease the life of the existing components. The actual amount of time needed depends on how long the steam turbine has actually been down and actual component temperatures.

Condition 17 currently allows up to 16 hours of monitoring data exclusion due to a cold steam turbine startup because the gas turbine cannot achieve full dry low-NOx combustion at such low loads. This is related to the unique design of the re-powered plant and is not typical for new combined cycle plants. Such new units may require less than four hours for a cold steam turbine startup. However, re-powered plants present unusual circumstances such as long steam lines or older steam turbines that necessitate extended startups. For example, the re-powered FPL Fort Myers and Sanford plants allow up to 12 hours for cold steam turbine startups for reasons similar to the Bayside Units.

Based on the operating information provided, it does not appear that the plant has had an excessive number of cold steam turbine startups. The Bayside plant has averaged about one steam turbine cold startup per month between the two units. The average duration of a steam turbine cold startup has been about 8 hours with the longest being 13 hours. For additional details see the discussion in "Review of Operating Data" which follows this section of the technical evaluation. The Department agrees to retain the current provision regarding cold steam turbine startups. However, the revised condition will also add a limit of 16 hours of excluded data due to *all* startups, shutdowns, and malfunctions.

c. CEMS Data Exclusion – DLN Tuning

Applicant's Request: "Tuning" involves stepping the gas turbine through various loads while gathering operational and emissions data and adjusting the dry low-NOx combustion system accordingly. Such data allows fine-tuning of the control system to ensure low emissions with dry low-NOx combustion throughout the operational load range. Major tuning sessions are required after the replacement of combustors or other critical equipment. Minor tuning sessions may be necessary after other repairs or maintenance. The applicant notes that tuning sessions are typically determined by General Electric.

The permit currently allows for up to 3 hours of CEMS data to be excluded during any 24-hour block due to tuning with a 5-day advance notice. The applicant requests the ability to exclude all tuning data from the compliance demonstration because of the possibility of higher than normal emission levels. After an overhaul or repair, the gas turbine must be "tuned" to reestablish the low emissions profile. During a tuning session, elevated emissions are somewhat beyond the operator's control due to a new or repaired component as well as the requirement to operate at some low load levels to gather data. The applicant also requests removal of the 5-day advance notice because tuning is often the result of a repair needed to return the units to service as soon as possible.

Department's Review: General Electric's dry low-NOx combustion system must be properly tuned to achieve low emissions of CO and NOx. Such tuning sessions generally occur after a period of shutdown and require operation throughout the load range including very low loads. Elevated CO and NOx emissions may occur, but this information is used to adjust the combustion and control systems as necessary. During these periods, the unit is unable to respond to demands from the electrical grid. So, it is in the best interest of the plant to minimize such tuning sessions in order to rapidly return the units to service.

The applicant provided emissions information for three tuning sessions involving two different gas turbines. The first was conducted on 05/11/03 and resulted in approximately 13 hours of data collected during tuning. The second tuning session occurred on 10/31/03 and lasted approximately 8 hours. The third session went from 11/05/03 through 11/06/03 and covered roughly 26 hours of tuning. Note that not all of the data collected during tuning shows elevated emissions. However, it is possible to show low NOx emissions with high CO emissions (and vice versa) before the system is properly tuned. Data collected during tuning sessions also represents only a small fraction of actual operation of the gas turbines.

The Department agrees that tuning is an important part of maintaining low emissions for the gas turbine systems and is required by the permit. During these tuning sessions, low emissions are not completely within the control of the operators and the unit is unable to respond to demands from the grid. Also, it is difficult to estimate the frequency and duration of tuning sessions throughout the year. Therefore, this condition will be revised to allow the exclusion of tuning data with a requirement to summarize this activity in the Semiannual CEMS Report as required by Condition 25 of the permit.

c. CEMS Data Exclusion – New Startup Following an Unplanned Forced Outage

Applicant's Request: The applicant requests a new provision in the permit to address a “warm steam turbine startup”. Such a startup would be defined as startup after the steam turbine is shutdown for less than 24 hours and the first stage metal temperature is more than 250° F. The applicant requests up to 8 hours of data exclusion for a warm steam turbine startup during which a gas turbine will operate at low loads to gradually warm up the steam lines and steam turbine. The applicant believes that the request is justified based on the actual operational data provided and Condition 17d which states, “The Department shall also evaluate the operational information and determine whether a separate “warm startup” requirement shall be specified in the Title V operation permit for startup after the steam turbine has been offline for 24 hours or more, but less than 48 hours.” This would provide operational flexibility to quickly restart the unit after the steam turbine accidentally trips offline or is taken off line for a quick repair. On a few occasions, the plant delayed restarting the steam turbine so that the startup would occur after the steam turbine had been down for at least 24 hours. The startup would then qualify as a cold steam turbine startup and provide the necessary period of data exclusion for restart.

Department's Review: The Department agrees that the original permit allows the evaluation of a “warm steam turbine startup”. Further discussions with the applicant suggest that there have been a handful of incidents when the steam turbine tripped off line, a corrective action was taken, and the steam turbine was ready to return to service within 24 hours. However, the plant was concerned that the restart would take longer than allowed by permit. The Department agrees to add a provision for the following two limited cases: (1) the steam turbine inadvertently trips off line, or (2) the plant is forced to take the steam turbine off line for unscheduled repair. This will be referred to as a startup following an unplanned forced outage. Up to eight hours of excluded data due to startups, shutdowns, and malfunctions will be allowed on days with a startup following an unplanned forced outage. These cases are narrow in scope and may replace a few steam turbine cold startups.

c. CEMS Data Exclusion – New Compressor Blade Drying

Applicant's Request: Over time, compressor blades become fouled, which reduces power output and increases fuel consumption as well as costs. Approximately six times each year, each gas turbine is shut down and the compressor blades are washed with water. After a compressor blade wash, General Electric requires operating the gas turbine at very low loads (< 10% base load) to heat and dry the compressor blades. At such loads, the gas turbine is not operating in dry low-NOx combustion mode and the HRSG temperature is not sufficient to initiate operation of the SCR system. Drying is typically complete well within two hours. The applicant requests exclusion of CEMS data from the compliance demonstration due to low-load operation performed to dry compressor blades after a wash.

Department's Review: A compressor blade wash is a necessary maintenance procedure during which the gas turbine is shutdown for a considerable period of time. After completing the wash, the manufacturer requires operators to follow strict procedures at low loads to gradually heat and dry the compressor. This is to prevent damage to the compressor blades due to thermal expansion while drying. Based on the expected maintenance schedule, it is estimated that this activity would result in a negligible amount of data exclusion. Therefore, the Department agrees to add a provision for excluding data collected during compressor blade drying after a wash.

c. CEMS Data Exclusion – New Over Speed Trip Test

Applicant's Request: To ensure that the turbine is protected from over speed (i.e, 3960 rpm), an “over speed trip test” is performed. The turbine reaches a speed of 3600 rpm and then speed is gradually increased to 3960 rpm

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(110%) until a trip is initiated. During this test, the gas turbine is operated at full speed, no load (FSNL) and CO and NOx emissions may be elevated. The over speed trip test is usually conducted for each gas turbine at least once each year, but may also be required after a long outage or a major overhaul. The applicant requests the exclusion of 6 hours of emissions data due to an over speed trip test.

Department’s Review: The applicant provided information from General Electric regarding the over speed trip test requirement. According to General Electric, the gas turbine operates at FSNL for approximately 4 hours to thermally and mechanically stabilize the rotor before initiating the turbine trip. The internal gas vanes are then positioned to 88° and the gas turbine is run for an additional 45 minutes. This procedure is intended to provide adequate blade clearance and prevent “rubs”. The Department agrees that the over speed trip test is a necessary maintenance activity and will allow the exclusion of monitoring data from the 24-hour compliance averages.

d. Startup and Shutdown Plan

Applicant’s Request: The permit requires submittal of a Startup and Shutdown Plan to consider a revision of the condition regarding cold steam turbine startups. As part of this project, the applicant has submitted these plans and requests removal of the requirement to submit this information.

Department’s Review: The Department acknowledges that the requirement to submit startup and shutdown plans has been met. A discussion of the emissions from startups is provided in “Review of Operating Data” which follows this section of the report. The Department agrees to revise this condition to require the plant to maintain the startup and shutdown plan on site.

Review of Operating Data

Since beginning operation, Bayside Units 1 and 2 have had approximately 16 cold steam turbine startups, which is an average of about one such startup per month for one of the units. To evaluate emissions resulting from cold steam turbine startups, the Department reviewed operational and emissions data from nine specific startups involving most of the Bayside gas turbines. The average duration is 8 hours, but at least two cold steam turbine startups lasted 13 hours. Again, the extended periods of low load operation are needed to heat the very long main and hot reheat steam lines as well as gradually warm up the steam turbine to a uniform temperature. This plant’s unique operating procedures are due to the physical configuration of the re-powered units.

Predicted emissions from these startups averaged about 400 pounds of CO per hour and about 100 pounds of NOx per hour. For comparison, potential emissions from the gas turbines operating in full dry low NOx combustion mode without add on controls are approximately 30 pounds of CO per hour and approximately 60 pounds of NOx per hour. The applicant’s request for a separate provision to cover startups following an unplanned forced outage is expected to result in similar hourly emission rates. Using the average emissions rates, the following table summarizes the expected range of emissions from 12 cold steam turbine startups and from 12 steam turbine startups following a “forced, unplanned outage”.

Table 3A. Estimated Startup Emissions

Pollutant	lb/hr, avg.	12 Cold ST Startups		12 Unplanned, Forced Outages	
		Hours	TPY	Hours	TPY
CO	400	8	19.2	4	9.6
CO	400	16	38.4	8	19.2
NOx	100	8	4.8	4	2.4
NOx	100	16	9.6	8	4.8

Although the actual data shows that individual hourly emissions may be high, annual impacts are predicted to be

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relatively low based on the actual frequency. In fact, it is expected that the few steam turbine startups following an unplanned forced outage will replace several cold steam turbine startups.

The Department also reviewed the amount of data being excluded due to startups, shutdowns, and malfunctions. The following table summarizes this information for three quarters of operation.

Table 3B. Summary of Data Exclusion (Hours)

Quarter	Unit	CT1A	CT1B	CT1C	CT2A	CT2B	CT2C	CT2D
2 nd Quarter 2003	Total Operation	1461	1376	1424	---	---	---	---
	Startup/Shutdown	37	35	58	---	---	---	---
	Malfunctions	4	2	1	---	---	---	---
	Tuning	0	0	0	---	---	---	---
	Total Exclusion	41	37	59	---	---	---	---
	% Excluded	3%	3%	4%	---	---	---	---
3 rd Quarter 2003	Total Operation	1666	1601	1714	---	---	---	---
	Startup/Shutdown	116	76	106	---	---	---	---
	Malfunctions	24	0	5	---	---	---	---
	Tuning	0	0	0	---	---	---	---
	Total Exclusion	140	76	111	---	---	---	---
	% Excluded	8%	5%	6%	---	---	---	---
4 th Quarter 2003	Total Operation	1666	1601	1714	71	79	82	78
	Startup/Shutdown	107	134	124	6	5	8	4
	Malfunctions	1	0	0	0	0	0	0
	Tuning	19	0	0	0	0	0	0
	Total Exclusion	127	134	124	6	5	8	4
	% Excluded	8%	8%	7%	8%	6%	10%	5%

Table Notes:

1. Based on the information provided, Bayside Unit 1 had the following operation from 07/01/03 through 12/31/03: CT1A (3331.4 hours); CT1B (3201.75 hours); and CT1C (3428.25 hours). The Department assumed similar operation for each calendar quarter in preparing this table.
2. Bayside Unit 2 began operation in the 4th quarter of 2003.

Reported malfunctions that affect emission levels have been infrequent. In general, only a few malfunctions have been reported that appear to be directly related to the combined cycle gas turbine units. For example, a review of 3 quarters of data for Bayside Unit 1 (3 gas turbines) indicated that there were 37, 1-hour emissions rates reported as “excluded” due to malfunctions. However, 20 of these were reported in the same quarter for the same gas turbine and were not related to “process equipment”. This indicates approximately 2 hours of excluded data per gas turbine per quarter related to malfunctions of the gas turbine systems and/or controls. The few incidents reported as “malfunctions” show that the plant is properly interpreting and applying this provision.

The data also indicates that the number of startups/shutdowns has increased since Bayside Unit 1 first commenced operation. Note that only a few of the reported startup hours resulted from cold steam turbine startups. For the remainder of the “normal” startups, it appears that one or more gas turbines are being taken offline at night during periods of low electrical energy demands and then “restarted” the following day. The remaining gas turbines are used to maintain the operating temperature of the steam turbine. The increased startups are likely the result of higher natural gas prices combined with the fact that Bayside Unit 2 came on line in the 4th quarter of 2003 and displaces some of the power production at the plant.

A closer look at emissions from Bayside Unit CT1A shows the following for 92 days of operation during the 3rd quarter of 2003.

- There were 80 daily NOx compliance averages of 3.0 ppmvd @ 15% oxygen or less.
- There were 12 daily NOx compliance averages between 3.1 to 3.5 ppmvd @ 15% oxygen.

- There were 76 daily CO compliance averages of 1.0 ppmvd @ 15% oxygen or less.
- There were 16 daily CO compliance averages between 1.1 and 2.0 ppmvd @ 15% oxygen.

In addition, the CEMS data availability has been reported as 95% or greater for all units for each quarter of operation. For each gas turbine, excluded data represents less than 8% of the total operation in each quarter. In summary, the installed units appear to be reliable and operating well with low emissions profiles during normal combined cycle operation. The proposed changes will not result in significant emissions from startups, shutdowns, malfunctions, DLN tuning, compressor blade drying, or over speed trip testing.

Revised Specific Condition 17

Based on the applicant's requests and the Department's conclusions, Condition 17 will be revised *from*:

17. Alternate Standards and CEMS Data Exclusion: The following permit conditions establish alternate standards or allow the exclusion of monitoring data for specifically defined periods of startup, shutdown, and documented malfunction of a gas turbine. These conditions apply only if operators employ the best operational practices to minimize the amount and duration of emissions during such incidents.
- (a) **Opacity During Startup and Shutdown**: During startup and shutdown, the opacity of the exhaust gases shall not exceed 10%, except for up to ten 6-minute averaging periods in a calendar day during which the opacity shall not exceed 20%. Data for each 6-minute averaging period shall be exclusive from other 6-minute averaging periods.
 - (b) **Low Load Operation**: Excluding startup, shutdown, and documented malfunction, each gas turbine is allowed up to three hours of operation below 50% base load in any 24-hour block, providing: the gas turbine is firing natural gas; the CO and NOx CEMS are functioning properly during such periods and recording valid emissions data within the span range of the monitors; and the gas turbine remains in compliance with the CO and NOx emissions standards based on 24-hour block averages of valid CEMS data.
 - (c) **CEMS Data Exclusion**: For the following identified operational periods, CO and NOx emissions data may be excluded from the 24-hour block compliance averages in accordance with the corresponding requirements.
 - (1) *Startup, Shutdown, and Malfunction*: Periods of data excluded for gas turbine startup (excluding steam turbine cold startup), shutdown, or documented malfunction shall not exceed four 1-hour emission averages in any 24-hour block due to all such episodes. Gas turbine startup is the commencement of operation of a gas turbine that has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, or pollution control device imbalances, which may result in elevated emissions. Shutdown is the process of bringing a gas turbine off line and ending fuel combustion. A malfunction is any unavoidable mechanical and/or electrical failure of air pollution control equipment or process equipment or of a process resulting in operation in an abnormal or unusual manner. A documented malfunction is a malfunction that is documented within one working day of detection by contacting the Compliance Authority by telephone, facsimile transmittal, or electronic mail.
 - (2) *Steam Turbine Cold Startup*: Periods of data excluded for a steam turbine cold startup shall not exceed sixteen 1-hour emission averages in any 24-hour block. A "steam turbine cold startup" is defined as startup after the steam turbine has been offline for 24 hours or more or the first stage turbine metal temperature is 250° F or less. Based on actual operating data and experience, the Department may modify this period of data exclusion in the Title V air operation permit without modifying this PSD permit.
 - (3) *Tuning*: If the permittee provides at least five days advance notice prior to a major tuning session performed by the manufacturer's representative, monitoring data during tuning may be excluded from the 24-hour block compliance averages. Periods of data excluded for such episodes shall not

exceed a total of three 1-hour averages in any 24-hour block. Tuning sessions must be performed in accordance with the manufacturer's recommendations. {Permitting Note: As an example, a major tuning session would occur after a combustor change-out. A tuning session may take a few hours each day over a few days. No more than two major tuning sessions would be expected during any year.}

If a CEMS reports emissions in excess of a CO or NO_x standard, the permittee shall notify the Compliance Authority within one working day with a preliminary report of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Compliance Authority may request a written summary report of the incident.

(d) **Startup and Shutdown Plan:** A "steam turbine cold startup" is defined as startup after the steam turbine has been offline for 24 hours or more or the first stage turbine metal temperature is 250° F or less. To minimize emissions, no more than one gas turbine for each Bayside Unit shall be operated during each steam turbine cold startup. The permittee shall notify the Compliance Authority at least 24 hours in advance of a steam turbine cold startup. For each Bayside Unit, the permittee shall provide a Startup and Shutdown Plan as part of the application for a Title V air operation permit. The plan shall identify startup and shutdown procedures, the duration of each procedure, and the methods used to minimize emissions during these periods. Within 90 days of completing eight steam turbine cold startups following commencement of commercial operation or within 90 days after 12 months of commercial operation (whichever occurs first), the permittee shall submit a revised plan to the Department based on actual operating data and experience. The Department shall review the actual operational data and determine whether data exclusion allowed for a steam turbine cold startup defined in Condition 23 of this section shall be modified to represent good operational practices. The Department shall also evaluate the operational information and determine whether a separate "warm startup" requirement shall be specified in the Title V operation permit for startup after the steam turbine has been offline for 24 hours or more, but less than 48 hours.

As provided by the authority in Rule 62-210.700(5), F.A.C., the above requirements are established in lieu of the provisions of Rule 62-210.700(1), F.A.C. [Design; Rules 62-210.700(5), 62-4.130, and Rule 62-212.400 (BACT), F.A.C.]

To:

17. **Alternate Standards and CEMS Data Exclusion:** The following permit conditions establish alternate standards or allow the exclusion of monitoring data for specifically defined periods of startup, shutdown, and malfunction. These conditions apply only if operators employ the best operational practices to minimize the amount and duration of emissions during such incidents.
 - a. **Opacity During Startup and Shutdown:** During startup and shutdown, the opacity of the exhaust gases shall not exceed 10%, except for up to ten 6-minute averaging periods in a calendar day during which the opacity shall not exceed 20%. Data for each 6-minute averaging period shall be exclusive from other 6-minute averaging periods.
 - b. **Low Load Operation:** Excluding startup, shutdown, malfunction, DLN tuning, compressor blade drying, and over speed trip tests, each gas turbine may operate below 50% base load providing: the gas turbine is firing natural gas and operating in full dry low-NO_x combustion mode; the CO and NO_x CEMS are functioning properly during such periods and recording valid emissions data within the span range of the monitors; and the gas turbine remains in compliance with the CO and NO_x emissions standards (24-hour block averages).
 - c. **CEMS Data Exclusion:** For the following specified operational periods, CO and NO_x emissions data may be excluded from the 24-hour block compliance averages in accordance with the corresponding requirements..

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- (1) *Shutdowns*: Rule 62-210.200(231), F.A.C. defines “shutdown” as the cessation of the operation of an emissions unit for any purpose. No more than two, 1-hour CEMS emission averages shall be excluded from any 24-hour block due to shutdowns.
- (2) *Malfunctions*: Rule 62-210.200(160), F.A.C. defines “malfunction” as any unavoidable mechanical and/or electrical failure of air pollution control equipment or process equipment or of a process resulting in operation in an abnormal or unusual manner.” No more than two, 1-hour CEMS emission averages shall be excluded from any 24-hour block due to malfunctions.
- (3) *Standard Startup*: Rule 62-210.200(246), F.A.C. defines “startup” as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, chemical or pollution control device imbalances, which result in excess emissions. Except as provided in (4) and (5) below, no more than four 1-hour CEMS emission averages shall be excluded from any 24-hour block compliance average due to startups, shutdowns, and malfunctions (total).
- (4) *Cold Steam Turbine Startup*: “Cold steam turbine startup” means a startup after the steam turbine has been offline for 24 hours or more, or the first stage turbine metal temperature is 250° F or less. To minimize emissions, no more than one gas turbine per Bayside Unit shall be operated during a cold steam turbine startup. No more than sixteen 1-hour CEMS emission averages shall be excluded from the 24-hour block compliance averages due to a cold steam turbine startup. In addition, no more than sixteen 1-hour CEMS emission averages shall be excluded from any 24-hour block compliance average due to cold steam turbine startups, shutdowns, and malfunctions (total). The permittee shall notify the Compliance Authority within 24 hours of beginning a cold steam turbine startup.
- (5) *Steam Turbine Startup Following an Unplanned Forced Outage*: “Steam turbine startup following unplanned, forced outage” means startup when the first stage turbine metal temperature is 250° F or more and occurs within 24 hours after either (1) the steam turbine inadvertently trips offline, or (2) the plant is forced to take the steam turbine offline for an unscheduled repair. To minimize emissions, no more than one gas turbine per Bayside Unit shall be operated during a steam turbine startup following an unplanned forced outage. No more than eight 1-hour CEMS emissions averages shall be excluded from the 24-hour block compliance averages due to a steam turbine startup following an unplanned forced outage. In addition, no more than eight 1-hour CEMS emission averages shall be excluded from any 24-hour block compliance average due to steam turbine startups following an unplanned forced outage, shutdowns, and malfunctions (total). The permittee shall notify the Compliance Authority within 24 hours of beginning steam turbine startup following an unplanned forced outage. The notification shall include the reason for the unplanned forced outage.

{Permitting Note: The durations for a cold steam turbine startup and a steam turbine startup following an unplanned forced outage are not typical for combined cycle units. The Bayside Units utilize the existing Gannon steam turbines. Operating procedures require one gas turbine to operate at low loads for extended periods to gradually warm the main and hot reheat steam lines to the steam turbine as well as the steam turbine. Some steam lines are in excess of 1700 feet.}
- (6) *DLN Tuning*: “DLN Tuning” means operating the gas turbine at intermittent loads throughout the full load range in order to adjust and tune the dry low-NOx (DLN) combustion system. DLN tuning shall be conducted in accordance with manufacturer’ recommendations. Emissions data collected during DLN tuning may be excluded from the 24-hour block compliance averages. *{Permitting Note: For example, a major tuning session would occur after combustor change-out.}*
- (7) *Compressor Blade Drying*: Following a compressor blade wash in accordance with the manufacturer’s recommendations, the permittee may operate a gas turbine at very low loads to heat

TECHNICAL EVALUATION AND PRELIMINARY DETERMINATION

and dry the compressor blades. Emissions data collected while drying the compressor blades may be excluded from the 24-hour block compliance averages. *{Permitting Note: A gas turbine would typically operate at approximately 10% of base load or less to perform compressor blade drying.}*

- (8) **Over Speed Trip Test:** As a periodic maintenance practice, the permittee may perform over speed trip tests in accordance with the manufacturer's recommendations. Emissions data collected while conducting over speed trip tests may be excluded from the 24-hour block compliance averages. *{Permitting Note: During this test, the gas turbine is operated at full speed, no load (FSNL) for approximately 5 to 6 hours. The unit is gradually accelerated to 110% speed (3960 rpm) to initiate a trip and then coasts down normally. Over speed trip tests are typically performed after a long outage or a major component overhaul.}*

To the extent practicable, the permittee shall minimize the amount and duration of emissions during periods of startup, shutdown, malfunction, DLN tuning, compressor blade drying, and over speed trip testing. If a CEMS reports emissions in excess of an emissions standard (24-hour block), the permittee shall notify the Compliance Authority within one working day with a preliminary report of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Compliance Authority may request a written summary report of the incident. All emissions data allowed for exclusion shall be summarized in the Semiannual CEMS Report required in Condition 25 of this subsection.

- d. **Startup and Shutdown Plan:** The permittee shall maintain on site a "Startup and Shutdown Plan" that describes procedures for startup and shutdown of the Bayside Units.

As provided by the authority in Rule 62-210.700(5), F.A.C., the above requirements are established in lieu of the provisions of Rule 62-210.700(1), F.A.C.

{Permitting Note: This condition was revised pursuant to Permit No. PSD-FL-301B.} [Design; Rules 62-4.130, 62-210.700(5), and 62-212.400 (BACT), F.A.C.; Permit No. PSD-FL-301B]

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions. Jeff Koerner is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

NOTICE OF FINAL PERMIT REVISION

In the Matter of an
Application for Permit by:

Tampa Electric Company
P. O. Box 111
Tampa, FL 33601-0111

Authorized Representative:

Mr. Wade A. Maye, General Manager
H. L. Culbreath Bayside Power Station

Permit No. PSD-FL-301B
Project No. 0570040-021-AC
Bayside Power Station
Revised Condition 17, Data Exclusion

Enclosed is the final revised air permit (No. PSD-FL-301B) for the Bayside Power Station, which modifies Condition 17 in Section IIIA regarding startups, shutdowns, malfunctions, low load operation, DLN tuning, compressor blade drying, and over speed trip testing. The existing plant is located on Tampa's Port Sutton Road in Hillsborough County, Florida. As noted in the attached Final Determination, only minor changes and clarifications were made. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty (30) days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

DRAFT

Michael G. Cooke, Director
Division of Air Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final Permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on _____ to the persons listed:

Mr. Wade A. Maye, TECO*
Ms. Greer Briggs, TECO
Mr. Tom Davis, P.E., ECT
Mr. Jerry Kissel, SWD Office

Mr. Jerry Campbell, EPC of Hillsborough County
Mr. Gregg Worley, EPA Region 4
Mr. John Bunyak, National Park Service

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk)

(Date)

PERMIT HISTORY

On March 30, 2001, the Department issued Permit No. PSD-FL-301, which authorized construction of Bayside Units 1 and 2 to re-power existing coal-fired Gannon Units 5 and 6. On January 8, 2002, the Department modified that permit (PSD-FL-301A) to include construction of Bayside Units 3 and 4 to re-power existing Gannon Units 3 and 4. Bayside Units 1 and 2 have been constructed, demonstrated initial compliance, and are currently in operation. Construction of Bayside Units 3 and 4 has not yet commenced.

MODIFIED PERMIT CONDITIONS

Emissions units at the Bayside Power Station are subject to the existing terms and conditions as specified in Permit No. PSD-FL-301A unless otherwise revised below.

In Section IIIA of Permit No. PSD-FL-301A, Condition 17 is revised *from*:

17. Alternate Standards and CEMS Data Exclusion: The following permit conditions establish alternate standards or allow the exclusion of monitoring data for specifically defined periods of startup, shutdown, and documented malfunction of a gas turbine. These conditions apply only if operators employ the best operational practices to minimize the amount and duration of emissions during such incidents.
- a. **Opacity During Startup and Shutdown**: During startup and shutdown, the opacity of the exhaust gases shall not exceed 10%, except for up to ten 6-minute averaging periods in a calendar day during which the opacity shall not exceed 20%. Data for each 6-minute averaging period shall be exclusive from other 6-minute averaging periods.
 - b. **Low Load Operation**: Excluding startup, shutdown, and documented malfunction, each gas turbine is allowed up to three hours of operation below 50% base load in any 24-hour block, providing: the gas turbine is firing natural gas; the CO and NO_x CEMS are functioning properly during such periods and recording valid emissions data within the span range of the monitors; and the gas turbine remains in compliance with the CO and NO_x emissions standards based on 24-hour block averages of valid CEMS data.
 - c. **CEMS Data Exclusion**: For the following identified operational periods, CO and NO_x emissions data may be excluded from the 24-hour block compliance averages in accordance with the corresponding requirements.
 - (1) *Startup, Shutdown, and Malfunction*: Periods of data excluded for gas turbine startup (excluding steam turbine cold startup), shutdown, or documented malfunction shall not exceed four 1-hour emission averages in any 24-hour block due to all such episodes. Gas turbine startup is the commencement of operation of a gas turbine that has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, or pollution control device imbalances, which may result in elevated emissions. Shutdown is the process of bringing a gas turbine off line and ending fuel combustion. A malfunction is any unavoidable mechanical and/or electrical failure of air pollution control equipment or process equipment or of a process resulting in operation in an abnormal or unusual manner. A documented malfunction is a malfunction that is documented within one working day of detection by contacting the Compliance Authority by telephone, facsimile transmittal, or electronic mail.
 - (2) *Steam Turbine Cold Startup*: Periods of data excluded for a steam turbine cold startup shall not exceed sixteen 1-hour emission averages in any 24-hour block. A "steam turbine cold startup" is defined as startup after the steam turbine has been offline for 24 hours or more or the first stage turbine metal temperature is 250° F or less. Based on actual operating data and experience, the Department may modify this period of data exclusion in the Title V air operation permit without modifying this PSD permit.

- (3) **Tuning:** If the permittee provides at least five days advance notice prior to a major tuning session performed by the manufacturer's representative, monitoring data during tuning may be excluded from the 24-hour block compliance averages. Periods of data excluded for such episodes shall not exceed a total of three 1-hour averages in any 24-hour block. Tuning sessions must be performed in accordance with the manufacturer's recommendations. {Permitting Note: As an example, a major tuning session would occur after a combustor change-out. A tuning session may take a few hours each day over a few days. No more than two major tuning sessions would be expected during any year.}

If a CEMS reports emissions in excess of a CO or NOx standard, the permittee shall notify the Compliance Authority within one working day with a preliminary report of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Compliance Authority may request a written summary report of the incident.

- d. **Startup and Shutdown Plan:** A "steam turbine cold startup" is defined as startup after the steam turbine has been offline for 24 hours or more or the first stage turbine metal temperature is 250° F or less. To minimize emissions, no more than one gas turbine for each Bayside Unit shall be operated during each steam turbine cold startup. The permittee shall notify the Compliance Authority at least 24 hours in advance of a steam turbine cold startup. For each Bayside Unit, the permittee shall provide a Startup and Shutdown Plan as part of the application for a Title V air operation permit. The plan shall identify startup and shutdown procedures, the duration of each procedure, and the methods used to minimize emissions during these periods. Within 90 days of completing eight steam turbine cold startups following commencement of commercial operation or within 90 days after 12 months of commercial operation (whichever occurs first), the permittee shall submit a revised plan to the Department based on actual operating data and experience. The Department shall review the actual operational data and determine whether data exclusion allowed for a steam turbine cold startup defined in Condition 23 of this section shall be modified to represent good operational practices. The Department shall also evaluate the operational information and determine whether a separate "warm startup" requirement shall be specified in the Title V operation permit for startup after the steam turbine has been offline for 24 hours or more, but less than 48 hours.

As provided by the authority in Rule 62-210.700(5), F.A.C., the above requirements are established in lieu of the provisions of Rule 62-210.700(1), F.A.C. [Design; Rules 62-210.700(5), 62-4.130, and Rule 62-212.400 (BACT), F.A.C.]

In Section IIIA of Permit No. PSD-FL-301A, Condition 17 is revised *to*:

17. **Alternate Standards and CEMS Data Exclusion:** The following permit conditions establish alternate standards or allow the exclusion of monitoring data for specifically defined periods of startup, shutdown, and malfunction. These conditions apply only if operators employ the best operational practices to minimize the amount and duration of emissions during such incidents.
- a. **Opacity During Startup and Shutdown:** During startup and shutdown, the opacity of the exhaust gases shall not exceed 10%, except for up to ten 6-minute averaging periods in a calendar day during which the opacity shall not exceed 20%. Data for each 6-minute averaging period shall be exclusive from other 6-minute averaging periods.
- b. **Low Load Operation:** Excluding startup, shutdown, malfunction, DLN tuning, compressor blade drying, and over speed trip tests, each gas turbine may operate below 50% base load providing: the gas turbine is firing natural gas and operating in full dry low-NOx combustion mode; the CO and NOx CEMS are functioning properly during such periods and recording valid emissions data within the span range of the monitors; and the gas turbine remains in compliance with the CO and NOx emissions

standards (24-hour block averages).

- c. **CEMS Data Exclusion:** For the following specified operational periods, CO and NO_x emissions data may be excluded from the 24-hour block compliance averages in accordance with the corresponding requirements.
- (1) *Shutdowns:* Rule 62-210.200(231), F.A.C. defines “shutdown” as the cessation of the operation of an emissions unit for any purpose. No more than two, 1-hour CEMS emission averages shall be excluded from any 24-hour block due to shutdowns.
 - (2) *Malfunctions:* Rule 62-210.200(160), F.A.C. defines “malfunction” as any unavoidable mechanical and/or electrical failure of air pollution control equipment or process equipment or of a process resulting in operation in an abnormal or unusual manner.” No more than two, 1-hour CEMS emission averages shall be excluded from any 24-hour block due to malfunctions.
 - (3) *Standard Startup:* Rule 62-210.200(246), F.A.C. defines “startup” as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, chemical or pollution control device imbalances, which result in excess emissions. Except as provided in (4) and (5) below, no more than four 1-hour CEMS emission averages shall be excluded from any 24-hour block compliance average due to startups, shutdowns, and malfunctions (total).
 - (4) *Cold Steam Turbine Startup:* “Cold steam turbine startup” means a startup after the steam turbine has been offline for 24 hours or more, or the first stage turbine metal temperature is 250° F or less. To minimize emissions, no more than one gas turbine per Bayside Unit shall be operated during a cold steam turbine startup. No more than sixteen 1-hour CEMS emission averages shall be excluded from the 24-hour block compliance averages due to a cold steam turbine startup. In addition, no more than sixteen 1-hour CEMS emission averages shall be excluded from any 24-hour block compliance average due to cold steam turbine startups, shutdowns, and malfunctions (total). The permittee shall notify the Compliance Authority within 24 hours of beginning a cold steam turbine startup.
 - (5) *Steam Turbine Startup Following an Unplanned Forced Outage:* “Steam turbine startup following unplanned, forced outage” means startup when the first stage turbine metal temperature is 250° F or more and occurs within 24 hours after either (1) the steam turbine inadvertently trips offline, or (2) the plant is forced to take the steam turbine offline for an unscheduled repair. To minimize emissions, no more than one gas turbine per Bayside Unit shall be operated during a steam turbine startup following an unplanned forced outage. No more than eight 1-hour CEMS emissions averages shall be excluded from the 24-hour block compliance averages due to a steam turbine startup following an unplanned forced outage. In addition, no more than eight 1-hour CEMS emission averages shall be excluded from any 24-hour block compliance average due to steam turbine startups following an unplanned forced outage, shutdowns, and malfunctions (total). The permittee shall notify the Compliance Authority within 24 hours of beginning steam turbine startup following an unplanned forced outage. The notification shall include the reason for the unplanned forced outage.
- {Permitting Note: The durations for a cold steam turbine startup and a steam turbine startup following an unplanned forced outage are not typical for combined cycle units. The Bayside Units utilize the existing Gannon steam turbines. Operating procedures require one gas turbine to operate at low loads for extended periods to gradually warm the main and hot reheat steam lines to the steam turbine as well as the steam turbine. Some steam lines are in excess of 1700 feet.}*
- (6) *DLN Tuning:* “DLN Tuning” means operating the gas turbine at intermittent loads throughout the full load range in order to adjust and tune the dry low-NO_x (DLN) combustion system. DLN

tuning shall be conducted in accordance with manufacturer's recommendations. Emissions data collected during DLN tuning may be excluded from the 24-hour block compliance averages. *{Permitting Note: For example, a major tuning session would occur after combustor change-out.}*

- (7) *Compressor Blade Drying:* Following a compressor blade wash in accordance with the manufacturer's recommendations, the permittee may operate a gas turbine at very low loads to heat and dry the compressor blades. Emissions data collected while drying the compressor blades may be excluded from the 24-hour block compliance averages. *{Permitting Note: A gas turbine would typically operate at approximately 10% of base load or less to perform compressor blade drying.}*
- (8) *Over Speed Trip Test:* As a periodic maintenance practice, the permittee may perform over speed trip tests in accordance with the manufacturer's recommendations. Emissions data collected while conducting over speed trip tests may be excluded from the 24-hour block compliance averages. *{Permitting Note: During this test, the gas turbine is operated at full speed, no load (FSNL) for approximately 5 to 6 hours. The unit is gradually accelerated to 110% speed (3960 rpm) to initiate a trip and then coasts down normally. Over speed trip tests are typically performed after a long outage or a major component overhaul.}*

To the extent practicable, the permittee shall minimize the amount and duration of emissions during periods of startup, shutdown, malfunction, DLN tuning, compressor blade drying, and over speed trip testing. If a CEMS reports emissions in excess of an emissions standard (24-hour block), the permittee shall notify the Compliance Authority within one working day with a preliminary report of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Compliance Authority may request a written summary report of the incident. All emissions data allowed for exclusion shall be summarized in the Semiannual CEMS Report required in Condition 25 of this subsection.

- d. **Startup and Shutdown Plan:** The permittee shall maintain on site a "Startup and Shutdown Plan" that describes procedures for startup and shutdown of the Bayside Units.

As provided by the authority in Rule 62-210.700(5), F.A.C., the above requirements are established in lieu of the provisions of Rule 62-210.700(1), F.A.C.

{Permitting Note: This condition was revised pursuant to Permit No. PSD-FL-301B.} [Design; Rules 62-4.130, 62-210.700(5), and 62-212.400 (BACT), F.A.C.; Permit No. PSD-FL-301B]