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BUREAU OF AIR REGULATION

February 14, 2005

Mr. Jeffery F. Koerner, P.E.
New Source Review Section
Florida Department of Environmental Protection
111 South Magnolia Drive, Suite 4
Tallahassee, Florida 32301

Via FedEx
Airbill No. 7909 1786 2306

Re: **Tampa Electric Company**
H.L. Culbreath Bayside Power Station
DRAFT PSD Air Permit
Project No. 0570040-019-AC
Air Permit No. PSD-FL-301C

Dear Mr. Koerner:

Tampa Electric Company (TEC) has received and reviewed the above referenced draft PSD Air Construction Permit and has several minor comments. TEC offers the following suggested revisions to the H.L. Culbreath Bayside Power Station PSD Draft Permit. Following the revisions to the draft permit, TEC has several administrative changes to the Appendix (Section IV) of the PSD permit. Additions are in bold font and are underlined and deletions have been struck through.

TEC Comment # 1 – Construction schedule

In a conversation with the Florida Department of Environmental Protection’s (FDEP) Jeffery Koerner on January 13, 2005, TEC requested that Condition C.3 be amended. TEC does not believe that revalidation of the BACT or a new netting analysis should be required if a permit extension is required when the project is near completion. TEC does not believe that to be the intention of the Department but requests the following clarification:

C.3.b. Conversion of Units 3A and 3B to combined cycle operation shall be complete before this permit expires. TEC may request an extension of the expiration date of the permit. If an extension is granted based upon an adequate justification, the original BACT determinations and netting analyses shall remain unchanged. Upon review, the Department may require revalidation of the BACT determinations and a new netting analysis. Otherwise, the Department will require revalidation of the BACT determinations and a new netting analysis for any requests to extend the permit.

C.3.c. Construction of combined cycle Unit 4 shall be complete before this permit expires. TEC may request an extension of the expiration date of the permit. If an extension is granted based upon an adequate justification, the original BACT determinations and netting analyses shall remain unchanged. Upon review, the Department may require revalidation of the BACT determinations and a new netting analysis. Otherwise, the Department will require revalidation of the BACT determinations and a new netting analysis for any requests to extend the permit.

TEC Comment # 2 – Combined Cycle Distillate Oil Limit (Units 3A and 3B)

Upon conversion of Units 3A and 3B to combined cycle operation, the EPA/TECO Consent Decree allows TEC up to 875 equivalent full load hours on No. 2 oil if the unit cannot be fired with natural gas. As part of the January 13, 2005 conversation with FDEP's Jeffery Koerner, TEC requested that the language restricting the combined cycle units (Units 3A and 3B) to 700 equivalent full load hours be amended to reflect the wording of the Consent Decree, which allows up to 875 equivalent full load hours on No. 2 oil. In addition, TEC requests that the applicable conditions of the EPA/TECO Consent Decree be referenced and not restated in the PSD permit for clarity as follows:

C.11.c. Distillate Oil – Units 3A and 3B, Combined Cycle Operation Only: Once converted to combined cycle operation, Units 3A and 3B may be fired with new No. 2 distillate oil according to the EPA/TECO Consent Decree. These provisions shall not be revised without prior approval from EPA. [epa/teco Consent Decree]. if and only if:

~~(1)The unit cannot be fired with natural gas;~~

~~(2)The Unit has not yet been fired with No. 2 fuel oil as a back up fuel for more than 875 full load equivalent hours in the calendar year in which Tampa Electric wishes to fire the Unit with such oil;~~

~~(3)The oil to be used in the unit has a sulfur content of less than 0.05 percent (by weight);~~

~~(4)Tampa Electric uses all emission control equipment for that unit when it is fired with such oil to the maximum extent possible; and~~

~~(5)Tampa Electric complies with all applicable permit conditions, including emission rates for firing with No. 2 fuel oil, as set forth in applicable preconstruction and operating permits.~~

~~These provisions shall not be revised without prior approval from EPA. Units 3A and 3B remain subject to the restriction on firing distillate oil specified in Condition 11b. [EPA/TECO Consent Decree]~~

TEC Comment # 3 – Hours of Operation

TEC requests the words "hours of" be added to Condition C.12 for clarification.

C.12. ~~Restricted~~ Hours of Operation: The hours of operation for each gas turbine are not limited (8760 hours per year). [Application; Rules 62-212.400(BACT) and 62-210.200(PTE), F.A.C.]

TEC Comment # 4 – Detail of permit conditions

TEC requests that the following permit conditions be copied under each individual permit condition listed below for Bayside Units 3 and 4 for clarity as follows:

C.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 NOx emissions data may be excluded from the 24-hour block compliance averages in accordance with the corresponding requirements.

- (1) *Definitions:* Rule 62-210.200(231), F.A.C. defines "shutdown" as the cessation of the operation of an emissions unit for any purpose. 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. 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.
- (2) *Standard Startups, Shutdowns, and Malfunctions:* For each gas turbine, no more than four 1-hour CEMS emission averages shall be excluded from any 24-hour block compliance average due to standard startups, shutdowns, and malfunctions (total).
- (3) *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 startup. In the event of a cold steam turbine startup and standard startups, shutdowns and/or malfunctions within the same 24 hour period, a total of sixteen 1-hour CEMS emissions averages may be excluded with no more than four of those sixteen 1-hour CEMS emissions averages being excluded due to standard startups, shutdowns, and malfunctions (total). This condition applies only to the gas turbine being used for the cold steam turbine startup. The permittee shall notify the Compliance Authority no later than 24 hours after beginning a cold steam turbine startup. Notification may be by phone, facsimile, email, or letter.
- (4) *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 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. In the event of a startup following an unplanned forced outage and standard startups, shutdowns and/or malfunctions within the same 24 hour period, a total of eight 1-hour CEMS emissions averages may be excluded with no more than four of those eight 1-hour CEMS

emissions averages being excluded due to standard startups, shutdowns, and malfunctions (total). This condition applies only to the gas turbine being used for steam turbine startup following an unplanned forced outage. The permittee shall notify the Compliance Authority no later than 24 hours after beginning a steam turbine startup following an unplanned forced outage. Notification may be by phone, facsimile, email, or letter and shall include the reason for the unplanned forced outage.

- (5) 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'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.}
- (6) 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.}
- (7) 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: 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. Such startups are expected to occur infrequently.} [Design; Rules 62-4.130, 62-210.700(5), and 62-212.400 (BACT), F.A.C.; Permit No. PSD-FL-301B]

~~Bayside Units 3 and 4 shall be subject to the same alternate standards and data exclusion requirements as Bayside Units 1 and 2 (Condition 17, Subsection IIIA). [Design; Rules 62-4.130, 62-210.700(5), and 62-212.400 (BACT), F.A.C.; Permit No. PSD-FL-301, as revised]~~

C.19. Test Methods: Any required tests shall be performed in accordance with the same following reference methods, and requirements as specified for ~~{Permitting Note: Bayside Units 3 and 4 are subject to the same requirements as specified for Bayside Units 1 and 2 (Condition 0, Subsection IIIA). [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]}~~

<u>Method</u>	<u>Description of Method and Comments</u>
<u>CTM-027</u>	<u>Procedure for Collection and Analysis of Ammonia in Stationary Source:</u> This is an EPA conditional test method. The minimum detection limit shall be 1 ppm.
<u>5</u>	<u>Determination of Particulate Matter Emissions from Stationary Sources:</u> The minimum sampling time shall be two hours per run and the minimum sampling volume shall be 60 dscf per run.
<u>7E</u>	<u>Determination of Nitrogen Oxide Emissions from Stationary Sources</u>
<u>9</u>	<u>Visual Determination of the Opacity of Emissions from Stationary Sources</u>
<u>10</u>	<u>Determination of Carbon Monoxide Emissions from Stationary Sources:</u> The method shall use a continuous sampling train.
<u>18</u>	<u>Measurement of Gaseous Organic Compound Emissions by Gas Chromatography:</u> EPA Method 18 may be used concurrently with EPA Method 25A to deduct emissions of methane and ethane from the measured VOC emissions.
<u>20</u>	<u>Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines</u>
<u>25A</u>	<u>Determination of Volatile Organic Concentrations</u>

Except for Method CTM-027, the above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. Method CTM-027 is published on EPA's Technology Transfer Network Web Site at "http://www.epa.gov/ttn/emc/ctm.html". Although no specific tests are required for emissions of particulate matter and volatile organic compounds, the test methods are included for completeness. No other methods may be used for compliance testing unless prior written approval is received from the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

C.22. Additional Ammonia Slip Testing: If the tested ammonia slip rate for a gas turbine exceeds 5 ppmvd corrected to 15% oxygen when firing natural gas during the annual test, the permittee shall:

- a. Begin testing and reporting the ammonia slip for each subsequent calendar quarter;
- b. Before the ammonia slip exceeds 7 ppmvd corrected to 15% oxygen, take corrective actions that result in lowering the ammonia slip to less than 5 ppmvd corrected to 15% oxygen; and
- c. Test and demonstrate that the ammonia slip is less than 5 ppmvd corrected to 15% oxygen within 15 days after completing the corrective actions.

Corrective actions may include, but are not limited to, adding catalyst, replacing catalyst, or other SCR system maintenance or repair. After demonstrating that the ammonia slip level is less than 5

~~ppmvd corrected to 15% oxygen, testing and reporting shall resume on an annual basis. [Rules 62-4.070(3) and 62-297.310(7)(b), F.A.C.] Ammonia slip testing shall be performed in accordance with the same requirements as specified for Bayside Units 1 and 2 (Condition 22, Subsection IIIA). [Rules 62-4.070(3) and 62-297.310(7)(b), F.A.C.]~~

C.23. Continuous Emissions Monitoring Systems: The permittee shall install, calibrate, maintain, and operate a continuous emission monitoring system (CEMS) in the exhaust stack of each emissions unit to measure and record emissions of CO and NO_x in a manner sufficient to demonstrate compliance with the CEMS emission standards of this permit. The carbon dioxide (CO₂) content of the flue gas shall also be monitored at the location where CO and NO_x are monitored to correct the measured emissions rates to 15% oxygen. The oxygen content of the flue gas shall be calculated by the CEMS using the CO₂ content of the flue gas and an F-factor that is appropriate for natural gas. ~~Each CEMS shall comply with the same requirements as specified for Bayside Units 1 and 2 (Condition 23, Subsection IIIA). {Permitting Note: A multi-span monitor may be necessary for Units 3A and 3B due to the higher NO_x standards.}~~ [Rules 62-4.070(3), 62-210.700(5), and 62-212.400(BACT), F.A.C.]

- a. **Emission Averages.** Compliance with the 24-hour standards for CO and NO_x emissions shall be based on data collected by the required CEMS. The 24-hour block shall start at midnight of each operating day and consist of 24 consecutive 1-hour blocks. If a unit operates continuously throughout the day, the 24-hour block average shall be the average of 24 consecutive 1-hour emission averages. If a unit operates less than 24 hours during the day, the 24-hour block average shall be the average of available valid 1-hour emission averages collected during operation. If monitoring data is authorized for exclusion (due to startup, shutdown, malfunction, or tuning), the 24-hour block average shall be the average of the remaining available valid 1-hour emission averages collected during operation. Upon a request from the Compliance Authority, the NO_x emission rate shall be corrected to ISO conditions to demonstrate compliance with the applicable standards of 40 CFR 60.332.
- b. **Data Collection.** The CEMS shall be designed and operated to sample, analyze, and record CO, CO₂, and NO_x data evenly spaced over the hour. Each 1-hour emission average shall be computed using at least one data point in each fifteen minute quadrant of the 1-hour block during which the unit combusted fuel. Notwithstanding this requirement, each 1-hour emission average shall be computed from at least two data points separated by a minimum of 15 minutes. If the unit does not operate in more than one quadrant of a 1-hour block, the data is insufficient to determine a 1-hour emission average and shall be ignored. (Example: Unit begins startup with only ten minutes remaining in the 1-hour block. Data is insufficient to determine a 1-hour average and is ignored.) All valid measurements or data points collected during a 1-hour block shall be used to calculate the 1-hour emission averages. If the CEMS measures concentration on a wet basis, the CEMS shall include provisions to determine the moisture content of the exhaust gas and an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Alternatively, a curve of the flue gas moisture content versus load may be developed through manual stack test measurements and used in an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). The CO and NO_x CEMS shall express the 1-hour emission averages and the 24-hour block averages in terms of "ppmvd corrected to 15% oxygen".
- c. **Data Exclusion.** CO, CO₂, and NO_x emissions data shall be recorded by the CEMS at all times including episodes of startup, shutdown, malfunction, and tuning. CO and NO_x emissions data recorded during such episodes may be excluded from the 24-hour block compliance averages in accordance with the requirements of Condition of this subsection. All periods of data excluded due to startup, shutdown or malfunction shall be consecutive for each episode. The permittee

shall minimize the duration of data excluded for startup, shutdown and malfunctions, to the extent practicable. Data recorded during startup, shutdown or malfunction shall not be excluded if the episode was caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented. Best operational practices shall be used to minimize hourly emissions that occur during startup, shutdown and malfunction. Emissions of any quantity or duration that occur entirely or in part from poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented, shall be prohibited. Excluded emissions shall be summarized in the required semiannual report.

- d. NOx Certification.** The NOx monitor shall be certified pursuant to 40 CFR Part 75 and shall be operated and maintained in accordance with the applicable requirements of 40 CFR Part 75, Subparts B and C. For purposes of determining compliance with the CEMS emission standards of this permit, missing data shall not be substituted. Instead the 24-hour block average shall be determined using the remaining hourly data in the 24-hour block. Record keeping and reporting shall be conducted pursuant to 40 CFR Part 75, Subparts F and G. The RATA tests required for the NOx monitor shall be performed using EPA Method 7E or 20 as defined in Appendix A of 40 CFR 60. The span for the NOx monitor shall not be greater than 10 ppmvd corrected to 15% O₂. A dual span monitor may be used.
- e. CO and CO₂ Certification.** The CO₂ monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 3. The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4. Quality assurance procedures for each monitor shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semi-annually to the Compliance Authority. The RATA tests required for the CO₂ monitor shall be performed using EPA Method 3A, of Appendix A in 40 CFR 60. The RATA tests required for the CO monitor shall be performed using EPA Method 10, of Appendix A in 40 CFR 60. The Method 10 analysis shall use a continuous sampling train. The span for the CO monitor shall not be greater than 25 ppm corrected to 15% oxygen. A dual span CO monitor may be used.
- f. Monitor Availability.** Monitor availability shall not be less than 95% in any calendar quarter. The report required in Condition e above shall be used to demonstrate monitor availability. In the event 95% availability is not achieved, the permittee shall provide the Compliance Authority with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit.

{Permitting Note: Each CEMS shall comply with the same requirements as specified for Bayside Units 1 and 2 (Condition 25, Subsection IIIA). A multi-span monitor may be necessary for Units 3A and 3B due to the higher NOx standards.} Compliance with these requirements will ensure compliance with the other applicable CEMS requirements such as: NSPS Subpart GG; Rule 62-297.520, F.A.C.; 40 CFR 60.7(a)(5) and 40 CFR 60.13; 40 CFR Part 51, Appendix P – Minimum Emission Monitoring Requirements; 40 CFR 60, Appendix B - Performance Specifications; and 40 CFR 60, Appendix F - Quality Assurance Procedures.}

[Rules 62-4.070(3), 62-210.700(5), and 62-212.400(BACT), F.A.C.]

C.25. Semiannual CEMS Report: In addition to the reports required pursuant to 40 CFR 60.7, the permittee shall submit semiannual reports for each gas turbine summarizing the CEMS data and equipment. For each calendar quarter, the report shall include: the 24-hour block compliance

averages for each day of operation; the number of 1-hour emission averages excluded from each 24-hour compliance average; the emissions rate of the excluded monitoring data; the reason for excluding monitoring data; the hours of missing data due to monitor downtime; the reason for any monitor downtime; unusual maintenance or repair of the CEMS; and a summary of any RATA tests performed. Based on operational data, the permittee shall also update the general range of ammonia flow rates required to meet NOx emissions limitations over the range of gas turbine load conditions. A report covering operations from January through June shall be submitted by July 30th of each year. A report covering operations from July through December shall be submitted by January 30th of each year. The report due dates may be modified by the Title V permit. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.] *{Permitting Note: CEMS Report submitted shall be For Units 3 and 4, the permittee shall submit semiannual reports for each gas turbine summarizing the CEMS data and equipment in accordance with the requirements specified for Bayside Units 1 and 2 (Condition 0, Subsection IIIA). [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]*

TEC Comment # 5 – Detail of permit conditions

TEC requests the following Administrative changes to the Appendix (Section IV) of the PSD permit as follows:

Bayside Units 1 and 2, Permit No. PSD-FL-301 (Project No. 0570040-013-AC)

The project proposed the following: construction of Bayside Unit 1 consisting of a 3-on-1 combined cycle gas turbine system to re-power Gannon Unit 5; and construction of Bayside Unit 2 consisting of a 4-on-1 combined cycle gas turbine system to re-power Gannon Unit 6. Based on the PSD netting analysis, this project required determinations of the Best Available Control Technology (BACT) for emissions of carbon monoxide (CO), particulate matter (PM/PM10), and volatile organic compounds (VOC). The project netted out of PSD review for nitrogen oxides (NOx) and sulfur dioxide (SO2) emissions. However, in accordance with the Settlement Agreements, each gas turbine is required to fire natural gas as the primary fuel and achieve a NOx standard of no more than 3.5 ppmvd. Therefore, Bayside Units 1 and 2 were permitted to fire natural gas as the primary fuel and required to install a selective catalytic reduction (SCR) systems to reduce NOx emissions. Distillate oil was allowed only as a restricted emergency backup fuel in accordance with the EPA/TECO Consent Decree. The permit required the installation of continuous emissions monitoring systems (CEMS) to determine compliance with the CO and NOx emissions standards. See the Technical Evaluation and Preliminary Determination for a full discussion of the PSD netting analysis and BACT determinations.

Bayside Units 3 and 4, Permit No. PSD-FL-301A (Project No. 0570040-015-AC)

In addition to the previously permitted Bayside Units 1 and 2, the project proposed the following: construction of Bayside Unit 3 consisting of a 2-on-1 combined cycle gas turbine system to re-power Gannon Unit 3; and construction of Bayside Unit 4 consisting of a 2-on-1 combined cycle gas turbine system to re-power Gannon Unit 4 6. Natural gas was requested and specified as the exclusive fuel. Based on the netting analysis, this project netted out of PSD review for NOx and SO2 emissions. BACT determinations for CO, PM/PM10, and VOC emissions were made for Bayside Units 3 and 4 and revalidated for Bayside Units 1 and 2.

TABLE E-1. SUMMARY OF MASS EMISSION RATES FOR FIRING NATURAL GAS

Pollutant	Compressor Inlet Temperature	Mass Emission Rate lb/hour
CO	18° F	31.1
	35° F	30.0
	59° F	28.7
	72° F	27.8
	93° F	26.9
NOx	18° F	24.7
	35° F	23.8
	59° F	23.1
	72° F	22.6
	93° F	21.9
PM/PM10	18° F	11.5
	35° F	11.4
	59° F	11.3
	72° F	11.3
	93° F	11.2
VOC	18° F	3.0
	35° F	3.0
	59° F	2.8
	72° F	2.7
	93° F	2.7

Notes:

- This table represents the mass emission rates for the General Electric Model PG7241(FA) gas turbine (combined cycle) firing natural gas with a selective catalytic reduction system to reduce NOx emissions to the permitted emission rate.
- NOx emission rates are reported as NO2 and are based on control with DLN combustion and an SCR system.
- PM emission rates are based on EPA Method 5 (front-half catch only).
- VOC emission rates are measured as methane.

Mr. Jeffery F. Koerner, P.E.

February 14, 2005

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TEC appreciates the opportunity to provide this input. If you have any further questions or need additional clarification, please do not hesitate to call Ms. Greer Briggs or me at (813) 228-4302.

Sincerely,

A handwritten signature in cursive script that reads "Laura R. Crouch".

Laura R. Crouch
Manager - Air Programs
Environmental, Health, and Safety

EA/bmr/GMB219

c/enc: Mr. Jerry Kissel, SWD Office
Mr. Gregg Worley, EPA Region 4
Mr. John Bunyak – NPS
Mr. Jerry Campbell, HEPC

DRAFT PERMIT

PERMITTEE:

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

Authorized Representative:
Wade A. Maye, General Manager

H. L. Culbreath Bayside Power Station
Air Permit No. PSD-FL-301C
Project No. 0570040-019-AC
Expires: December 31, 2007

PROJECT

The Tampa Electric Company operates the H. L. Culbreath Bayside Power Station in Tampa at 3602 Port Sutton Road in Hillsborough County, Florida. The electrical power plant (SIC No. 4911) was formerly known as the F. J. Gannon Station, but was re-powered with combined cycle gas turbines firing natural gas. This permit revision authorizes: a phase of simple cycle operation for Bayside Units 3A and 3B; distillate oil as a restricted alternate fuel for Bayside Units 3A and 3B during simple cycle operation; distillate oil as an emergency backup fuel for Bayside Units 3A and 3B once converted to combined cycle operation; and an extension of the expiration date to allow construction of Bayside Units 3 and 4.

The UTM coordinates are: Zone 17, 360.00 km E, 3087.50 km N.

STATEMENT OF BASIS

The permittee is authorized to install the proposed equipment and perform the work in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department. This air pollution construction permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.) and 40 CFR 52.21. Specifically, this permit is issued pursuant to the Chapter 62-212, F.A.C. requirements for Preconstruction Review of Stationary Sources and the Prevention of Significant Deterioration (PSD) of Air Quality. The conditions of this permit do not relieve the permittee from any applicable requirement of the DEP/TECO Consent Final Judgment or the EPA/TECO Consent Decree.



Michael G. Cooke, Director
Division of Air Resource Management

Effective Date



SECTION I. FACILITY INFORMATION

FACILITY DESCRIPTION

Upon completing construction of all Bayside Units and retiring all coal-fired Gannon units, the H. L. Culbreath Bayside Power Station will have an electrical production capacity of 2845 MW based on the following nominal capacities: Bayside Unit 1 (746 MW), Bayside Unit 2 (1090 MW), Bayside Unit 3 (501 MW), and Bayside Unit 4 (508 MW). Note that the final design may not fully utilize the nameplate capacities of the existing steam-electrical turbines. The following table summarizes the emission units regulated by this air construction permit.

EU No.	Status	Emission Unit Description
001 ^a	Retired	Gannon Unit 1 – coal fired boiler (125 MW steam electrical generator)
002 ^a	Retired	Gannon Unit 2 – coal fired boiler (125 MW steam electrical generator)
003 ^a	Retired	Gannon Unit 3 – coal fired boiler (163 MW steam electrical generator)
004 ^a	Retired	Gannon Unit 4 – coal fired boiler (170 MW steam electrical generator)
005 ^a	Retired	Gannon Unit 5 – coal fired boiler (239 MW steam electrical generator)
006 ^a	Retired	Gannon Unit 6 – coal fired boiler (414 MW steam electrical generator)
008 ^a	Functional	Gannon Coal Yard
020 ^b	Operating	Bayside Unit 1A – 169 MW combined cycle gas turbine
021 ^b	Operating	Bayside Unit 1B – 169 MW combined cycle gas turbine
022 ^b	Operating	Bayside Unit 1C – 169 MW combined cycle gas turbine
023 ^c	Operating	Bayside Unit 2A – 169 MW combined cycle gas turbine
024 ^c	Operating	Bayside Unit 2B – 169 MW combined cycle gas turbine
025 ^c	Operating	Bayside Unit 2C – 169 MW combined cycle gas turbine
026 ^c	Operating	Bayside Unit 2D – 169 MW combined cycle gas turbine
027 ^d	Proposed	Bayside Unit 3A – 169 MW combined cycle gas turbine
028 ^d	Proposed	Bayside Unit 3B – 169 MW combined cycle gas turbine
029 ^e	Proposed	Bayside Unit 4A – 169 MW combined cycle gas turbine
030 ^e	Proposed	Bayside Unit 4B – 169 MW combined cycle gas turbine

Notes

- a. The coal-fired Gannon boilers were permanently retired on the following dates: Unit 1 (04/16/03); Unit 2 (04/15/03); Unit 3 (11/01/03); Unit 4 (10/12/03); Unit 5 (01/30/03); and Unit 6 (09/30/03). The Gannon coal yard (EU 008) remains functional.
- b. Bayside Unit 1 is constructed and began commercial operation on March 16, 2003. The three gas turbines comprising Bayside Unit 1 re-power the 239 MW steam electrical generator from Gannon Unit 5.
- c. Bayside Unit 2 is constructed and began commercial operation on November 19, 2003. The four gas turbines comprising Bayside Unit 2 re-power the 414 MW steam electrical generator from Gannon Unit 6.
- d. The two gas turbines comprising Bayside Unit 3 will re-power the 163 MW steam electrical generator from Gannon Unit 3. This revised permit authorizes a phase of simple cycle operation for these units.
- e. The two gas turbines comprising Bayside Unit 4 will re-power the 170 MW steam electrical generator from Gannon Unit 4.

SECTION I. FACILITY INFORMATION

REGULATORY CLASSIFICATION

Title III: The re-powered facility is not a major source of hazardous air pollutants (HAPs).

Title IV: All Bayside gas turbines are subject to the Phase II Acid Rain requirements. All Gannon boilers have been permanently shutdown and are considered "retired units" in accordance with the Acid Rain provisions.

Title V: The facility is a Title V major source of air pollution in accordance with chapter 62-213, F.A.C.

Site Certification: The facility is not subject to any specific power plant site certification requirements.

PSD: The facility is a PSD-major facility in accordance with Rule 62-212.400, F.A.C.

NSPS: All gas turbines are subject to the New Source Performance Standards in Subpart GG of 40 CFR 60.

NESHAP: The re-powered facility is not a major source of hazardous air pollutants; therefore the National Emissions Standards for Hazardous Air Pollutants in Subpart YYYY of 40 CFR 63 do not apply to the gas turbines.

RELEVANT DOCUMENTS

The following documents are not a part of this permit; however, they are specifically related to this permitting action and are on file with permitting authority.

- DEP/TECO Consent Final Judgment signed on December 7, 1999.
- EPA/TECO Consent Decree entered on October 5, 2000.
- Original Permit No. PSD-FL-301 issued on March 30, 2001 including the application and related correspondence. This permit (Project No. 0570040-013-AC) authorized construction of Bayside Units 1 and 2.
- Revised Permit No. PSD-FL-301A issued on January 8, 2002 including the application and related correspondence. This permit (Project No. 0570040-015-AC) included the construction of Bayside Units 3 and 4.
- Revised Permit No. PSD-FL-301B issued on November 9, 2004 including the application and related correspondence. This permit (Project No. 0570040-021-AC) revised Condition 17 related to monitoring data exclusions.
- Application No. 0570040-019-AC (PSD-FL-301C) received on July 22, 2003 and related correspondence to make it complete.

APPENDICES

The following appendices are attached as part of this permit.

- Appendix A. Technology
- Appendix B. Summary of the BACT Determinations and Emissions Standards
- Appendix C. Summary of Mass Emissions Rates
- Appendix D. Operational Conditions
- Appendix GG. NSPS Subpart GG Requirements for Gas Turbines
- Appendix XS. Semi-Annual Continuous Monitor Systems Report

SECTION II. STANDARD CONDITIONS

ADMINISTRATIVE REQUIREMENTS

1. Effective Date: The effective date of this permit is specified on the placard page (page 1).
2. Permitting Authority: All documents related to applications for permits to construct, operate or modify an emissions unit shall be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection (DEP), at 2600 Blair Stone Road - MS #5505, Tallahassee, Florida 32399-2400. Copies shall also be provided to each Compliance Authority.
3. Compliance Authority: All documents related compliance activities such as reports, tests, and notifications shall be submitted to the Air Management Division of the Environmental Protection Commission of Hillsborough County at 1410 North 21 Street, Tampa, FL 33605. Copies of all such documents shall be submitted to the Air Resources Section of the Southwest District Office, Florida Department of Environmental Protection, 3804 Coconut Palm Drive, Tampa, Florida 33619-8218.
4. Terminology: The terms used in this permit have specific meanings as defined in the applicable chapters of the Florida Administrative Code. *Appendix A* lists frequently used abbreviations and explains the format used to cite rules and regulations in this permit.
5. General Conditions: The owner and operator are subject to, and shall operate under, the attached General Conditions listed in *Appendix GC* of this permit. [Rule 62-4.160, F.A.C.]
6. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403 of the Florida Statutes (F.S.); Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.); and the Title 40, Parts 52, 60, 72, 73, and 75 of the Code of Federal Regulations (CFR), adopted by reference in Rule 62-204.800, F.A.C. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]
7. PSD Expiration: Approval to construct shall become invalid if construction is not commenced within 18 months of the effective date of this permit, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. Such an extension does not relieve the permittee from any applicable requirement of the DEP/TECO Consent Final Judgment or the EPA/TECO Consent Decree. [40 CFR 52.21(r)(2)]
8. Permit Expiration: For good cause, the permittee may request that this PSD air construction permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation at least sixty days prior to the expiration of this permit. Such an extension does not relieve the permittee from any applicable requirement of the DEP/TECO Consent Final Judgment or the EPA/TECO Consent Decree. [Rules 62-4.080, 62-4.080, and 62-210.300(1), F.A.C.]
9. Extension: In conjunction with an extension of the 18-month period to commence or continue construction of the project, or an extension of the permit expiration date, the permittee will be required to demonstrate the adequacy of any previous determination of Best Available Control Technology (BACT) for the source. [Rule 62-212.400(6)(b), F.A.C. and 40 CFR 51.166(j)(4)]
10. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]
11. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without

SECTION II. STANDARD CONDITIONS

obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.200 (Definitions) and 62-210.300(1), F.A.C.]

12. Application for Title IV Permit: At least 24 months before the date on which the new unit begins serving an electrical generator greater than 25 MW, the permittee shall submit an application for a Title IV Acid Rain Permit to the Region 4 office of the U.S. Environmental Protection Agency in Atlanta, Georgia and a copy to the Department's Bureau of Air Regulation in Tallahassee. [40 CFR 72]
13. Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V operation permit at least ninety days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Bureau of Air Regulation with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

EMISSIONS AND CONTROLS

13. Unconfined Particulate Emissions: During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]
14. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]
15. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction, shall be prohibited. [Rule 62-210.700(4), F.A.C.]
16. Plant Operation - Problems: 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. [Rule 62-4.130, F.A.C.]

TESTING REQUIREMENTS

17. [REDACTED] Tests: The permittee shall provide stack testing facilities and sampling locations in accordance with Rule 62-297.310(6), F.A.C.
18. [REDACTED] Tests shall be conducted in accordance with all applicable requirements of Chapter 62-210. [REDACTED]
 - a. Sampling Time. Unless otherwise specified in the applicable rule, the required sampling time per 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. The minimum observation period for a visible emissions compliance test shall be thirty (30) minutes. The observation period shall include the period during which the highest opacity can reasonably be expected to occur.
 - b. Minimum Sample Volume. Unless otherwise specified in the applicable rule or test method, the minimum sample volume per run shall be 25 dry standard cubic feet.
 - c. Calibration of Sampling Equipment. Calibration of the sampling train equipment shall be conducted in

SECTION II. STANDARD CONDITIONS

accordance with the schedule shown in Table 297.310-1, F.A.C.

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

19. **Test Notification:** The permittee shall notify the Compliance Authority in writing at least 30 days prior to any initial NSPS performance tests and at least 15 days prior to any other required tests. [Rule 62-297.310(7)(a)9, F.A.C.; 40 CFR 60.7; 40 CFR 60.8]
20. **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.]
21. **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. [Rule 62-297.310(5)(a), F.A.C.]
 - 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)(b), F.A.C.]
22. **Special Compliance Tests:** When the Compliance Authority, 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 Compliance Authority. [Rule 62-297.310(7)(b), F.A.C.]

RECORDS AND REPORTS

23. **Records Retention:** All measurements, records, and other data required by this permit shall be documented in a permanent, legible format and retained for at least five (5) years following the date on which such measurements, records, or data are recorded. Records shall be made available to the Compliance Authority upon request. [Rules 62-4.160(14) and 62-213.440(1)(b)2, F.A.C.]
24. **Performance Test Reports:** A report indicating the results of any required emissions tests shall be submitted to the Compliance Authority no later than 45 days after completion of the test. The test report shall provide sufficient detail on the tested emission unit and the test results to allow the Compliance Authority to determine if the test was properly conducted and if the results were properly computed. At a minimum, the test report shall provide the applicable information in Rule 62-297.310(8)(c), F.A.C. [Rule 62-297.310(8), F.A.C.]
25. **Annual Operating Report:** The permittee shall submit an annual report that summarizes the actual operating rates and emissions from this facility. Annual operating reports shall be submitted to the Compliance Authority by March 1st of each year. [Rule 62-210.370(2), F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. BAYSIDE UNITS 1 AND 2

This section of the permit addresses the following emissions units.

Emissions Units 020 – 026: Bayside Units 1 and 2

Description: Each emissions unit consists of a General Electric Model PG7241(FA) gas turbine-electrical generator set, an automated gas turbine control system, an inlet air filtration system, an evaporative inlet air cooling system, an unfired heat recovery steam generator (HRSG), a single exhaust stack that is 150 feet tall and 19.0 feet in diameter, and associated support equipment. The project also includes electric fuel heaters and cooling towers. Natural gas is the exclusive fuel.

Heat Input: At a compressor inlet air temperature of 59° F and firing 1 842 MMBtu (HHV) per hour of natural gas, each unit produces a nominal 169 MW of shaft-driven electricity. Exhaust gases exit the stack with a volumetric flow rate of approximately 1,030,000 acfm at 220° F.

Generating Capacity: The following table summarizes the electrical generating capacity for each combination of combined cycle gas turbines and steam-electrical turbines.

EU No.	Bayside GT Unit	GT MW, Shaft	Existing Gannon ST	MW, ST	Total
020	1A	169 MW	No. 5	239	746
021	1B	169 MW			
022	1C	169 MW			
023	2A	169 MW	No. 6	414	1090
024	2B	169 MW			
025	2C	169 MW			
026	2D	169 MW			
Totals	7 GTs	1183 MW	2 STs	653	1836

Note: GT means gas turbine. The nameplate generating capacity is shown for the steam-electrical turbines (ST). The final design may not fully utilize the nameplate generating capacity.

Controls: The efficient combustion of natural gas at high temperatures minimizes the emissions of CO, PM/PM₁₀, and VOC. Firing natural gas as the only authorized fuel minimizes emissions of SAM and SO₂ because natural gas contains only small amounts of sulfur. A selective catalytic reduction (SCR) system combined with dry low-NO_x (DLN) combustion technology reduces NO_x emissions.

Continuous Monitors: Each gas turbine is equipped with continuous emissions monitoring systems (CEMS) to monitor SO₂, CO and NO_x emissions as well as flue gas carbon dioxide content.

APPLICABLE STANDARDS AND REGULATIONS

1. **Requirements:** The emissions units addressed in this section are subject to Best Available Control Technology (BACT) determinations for carbon monoxide (CO), particulate matter (PM/PM₁₀), and volatile organic compounds (VOC). [Rule 62-212.400(BACT), F.A.C.]
2. **NSPS Requirements:** Each gas turbine shall comply with all applicable requirements of 40 CFR 60, adopted by reference in Rule 62-204.800(7)(b), F.A.C.
 - a. Subpart A, General Provisions, including: 40 CFR 60.7 (Notification and Record Keeping), 40 CFR 60.8 (Performance Tests), 40 CFR 60.11 (Compliance with Standards and Maintenance Requirements), 40 CFR 60.12 (Circumvention), 40 CFR 60.13 (Monitoring Requirements), and 40 CFR 60.19 (General

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. BAYSIDE UNITS 1 AND 2

Notification and Reporting Requirements).

- b. Subpart GG, Standards of Performance for Stationary Gas Turbines as specified in *Appendix GG* of this permit.

EQUIPMENT

3. Construction: Bayside Unit 1 is constructed and began commercial operation on March 16, 2003. Bayside Unit 2 is constructed and began commercial operation on November 19, 2003. The revised permit (PSD-FL-301C) does not authorize any additional construction for these units. [Application; Rule 62-212.400(BACT), F.A.C.]
4. Combined Cycle Gas Turbines: The permittee is authorized to install, tune, operate and maintain seven new General Electric Model PG7241(FA) gas turbines with electrical generator sets, each designed to produce a nominal 169 MW of shaft-driven electrical power. Each unit shall be designed as a combined cycle system to include an automated gas turbine control system, an inlet air filtration system, an unfired heat recovery steam generator (HRSG), a single exhaust stack that is 150 feet tall and 19.0 feet in diameter, and associated support equipment. [Applicant Request; Design]
5. Heat Recovery Steam Generators (HRSG): Each gas turbine system includes an unfired HRSG with three levels of steam conditions (high pressure, intermediate pressure, and low pressure). [Design]
6. Automated Control System: The permittee shall install, calibrate, tune, operate, and maintain a Speedtronic™ Mark VI automated control system (or better) for each gas turbine. Each system shall be designed and operated to monitor and control the gas turbine combustion process and operating parameters including, but not limited to: air/fuel distribution and staging, turbine speed, load conditions, temperatures, heat input, and fully automated startup and shutdown. [Design; 62-212.400(BACT), F.A.C.]
7. DLN Combustion Technology: The permittee shall install, tune, operate and maintain the General Electric dry low-NOx combustion system (DLN 2.6 or better) to provide efficient lean premix combustion. Prior to the initial emissions performance tests for each gas turbine, the DLN combustors and automated gas turbine control system shall be tuned to reduce CO and NOx emissions. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations. [Design; Rule 62-212.400(BACT), F.A.C.]
8. SCR System: The permittee shall install, tune, operate and maintain a selective catalytic reduction (SCR) system to reduce NOx emissions from each combined cycle gas turbine. The SCR system shall consist of an ammonia injection grid, catalyst, ammonia storage, a monitoring and control system, electrical system, piping, and other ancillary equipment. The SCR system shall be designed to reduce NOx emissions while ammonia slip within the permitted levels. [DEP/TECO Consent Final Judgment; EPA/TECO Rule 62-4.070(3), F.A.C.]
9. Air-Cooling System: Each gas turbine system includes an evaporative cooling system to reduce the temperature of the inlet air to the gas turbine compressor. The reduced temperature increases the air mass flow rate and increases power production with additional fuel combustion. *The installed equipment includes a water distribution system with packed media blocks of corrugated layers of fibrous material. Air passing over the system wicks moisture away from the media to create the cooling effect.* [Applicant Request; Design]

PERFORMANCE RESTRICTIONS

10. Permitted Capacity: The maximum heat input rate to each gas turbine shall not exceed 1842 MMBtu per hour while producing approximately 169 MW (shaft). The maximum heat input rate is based on a

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. BAYSIDE UNITS 1 AND 2

compressor inlet air temperature of 59° F, the higher heating value (HHV) of natural gas and expected performance levels. Heat input rates will vary depending upon gas turbine characteristics, ambient conditions, and evaporative cooling. The permittee shall provide the manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Operating data may be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department. [Design; Rule 62-210.200(PTE), F.A.C.]

- 11. Allowable Fuels: Each gas turbine shall fire only pipeline-quality natural gas. The fuel sulfur content shall not exceed 2 grains per 100 SCF of natural gas based on a 12-month rolling average. Compliance shall be demonstrated each month by compiling the daily fuel sulfur analyses provided by the pipeline vendor. Methods for determining the sulfur content of the natural gas shall be ASTM methods D4084-82, D3246-81 or equivalent methods. No other fuels are allowed. [Design; Rules 62-210.200(PTE); DEP/TEC Consent Final Judgment; EPA/TEC Consent Decree]
- 12. Restricted Operation: The hours of operation for each gas turbine are not limited (8760 hours per year). [Application; Rules 62-212.400(BACT) and 62-210.200(PTE), F.A.C.]
- 13. Operating Procedures: The Best Available Control Technology (BACT) determinations established by this permit rely on "good operating practices" to minimize emissions. Therefore, all operators and supervisors shall be properly trained to operate and maintain the gas turbines and pollution control systems in accordance with the guidelines and procedures established by the manufacturer. The training shall include good operating practices as well as methods to minimize emissions during startup and shutdown. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

EMISSIONS STANDARDS

{Permitting Note: A summary table of the emissions standards is provided in Appendix B of this permit.}

- 14. Emissions Standards Based on Performance Tests: The following standards apply to each combined cycle gas turbine as determined by emissions performance tests conducted at permitted capacity. The mass emission limits are based on a compressor inlet temperature of 59° F. The permittee shall provide the manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Operating data shall be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department.
 - a. Ammonia Slip: Subject to the requirements of Condition 22 in this subsection, each SCR system shall be designed and operated for an ammonia slip target of less than 5 ppmvd corrected to 15% oxygen average of three test runs. [Rule 62-4.070(3), F.A.C.]
 - Carbon Monoxide (CO): CO emissions shall not exceed 28.7 pounds per hour and 7.8 ppmvd corrected to 15% oxygen based on the average of three test runs as determined by EPA Method 10. [Rules 62-212.400(BACT), F.A.C.]
 - Nitrogen Oxides (NOx): NOx emissions shall not exceed 23.1 pounds per hour and 3.5 ppmvd corrected to 15% oxygen based on the average of three test runs as determined by EPA Method 7E. NOx emissions are defined as oxides of nitrogen reported as NO2. [DEP/TECO Consent Final Judgment; EPA/TECO Consent Decree; 40 CFR 60.332]
 - d. Particulate Matter (PM/PM10): The exclusive firing of pipeline-quality natural gas combined with the efficient combustion design and operation of each gas turbine represent the Best Available Control Technology (BACT) requirements for particulate matter emissions. Compliance with carbon monoxide

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. BAYSIDE UNITS 1 AND 2

and visible emissions standards shall serve as continuous indicators of efficient combustion to minimize particulate matter emissions. No performance tests are required. [Rule 62-212.400(BACT), F.A.C.]

- e. **Sulfuric Acid Mist (SAM) and Sulfur Dioxide (SO₂):** The exclusive firing of pipeline-quality natural gas effectively limits potential emissions of SO₂ and SAM. No performance tests are required. [Design; DEP/TEC Consent Final Judgment; EPA/TEC Consent Decree; 40 CFR 60.333]
- f. **Visible Emissions:** Visible emissions shall not exceed 10% opacity, based on a 6-minute average as determined by EPA Method 9. Except as allowed by Condition 17 of this subsection, this standard applies to all loads. [Rule 62-212.400(BACT), F.A.C.]
- g. **Volatile Organic Compounds (VOC):** The exclusive firing of pipeline-quality natural gas combined with the efficient combustion design and operation of each gas turbine represent the Best Available Control Technology (BACT) requirements for VOC emissions. Compliance with carbon monoxide standards shall serve as a continuous indicator of efficient combustion to minimize VOC emissions. No performance tests are required. [Design; Rule 62-212.400(BACT), F.A.C.]

15. **Emissions Standards Based on CEMS Data:** The following standards apply to each gas turbine based on data collected from each required Continuous Emissions Monitoring System (CEMS).

- a. **Carbon Monoxide (CO):** CO emissions shall not exceed 9.0 ppmvd corrected to 15% oxygen based on a 24-hour block average of CEMS data.
- b. **Nitrogen Oxides (NO_x):** NO_x emissions shall not exceed 3.5 ppmvd corrected to 15% oxygen based on a 24-hour block average of CEMS data.

Each 24-hour block average shall start at midnight each operating day and shall be calculated from 24 consecutive 1-hour averages. If a unit operates less than 24 hours during the block, the 24-hour block average shall be the average of the available valid 1-hour averages. [Rules 62-212.400(BACT) and 62-4.070(3), F.A.C.]

STARTUP, SHUTDOWN, MALFUNCTION, AND LOW LOAD OPERATION

16. **Excess Emissions Prohibited:** Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction, shall be prohibited. All such preventable emissions shall be included in the compliance averages determined from the CO and NO_x CEMS data. [Rule 62-210.700(4), F.A.C.]

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,

These conditions apply only if operators employ the best operational practices to limit the amount and duration of emissions during such incidents.

Startup and Shutdown: During startup and shutdown, the opacity of the exhaust 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 of the 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).

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. BAYSIDE UNITS 1 AND 2

- 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) *Definitions:* Rule 62-210.200(231), F.A.C. defines “shutdown” as the cessation of the operation of an emissions unit for any purpose. 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. 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.
 - (2) *Standard Startups, Shutdowns, and Malfunctions:* For each gas turbine, no more than four 1-hour CEMS emission averages shall be excluded from any 24-hour block compliance average due to standard startups, shutdowns, and malfunctions (total).
 - (3) *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 startup. In the event of a cold steam turbine startup and standard startups, shutdowns and/or malfunctions within the same 24 hour period, a total of sixteen 1-hour CEMS emissions averages may be excluded with no more than four of those sixteen 1-hour CEMS emissions averages being excluded due to standard startups, shutdowns, and malfunctions (total). This condition applies only to the gas turbine being used for the cold steam turbine startup. The permittee shall notify the Compliance Authority no later than 24 hours after beginning a cold steam turbine startup. Notification may be by phone, facsimile, email, or letter.
 - (4) *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 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 the 24-hour block compliance average due to steam turbine startups following an unplanned forced outage. In the event of a startup following an unplanned forced outage and standard startups, shutdowns and/or malfunctions within the same 24 hour period, a total of eight 1-hour CEMS emissions averages may be excluded with no more than four of those eight 1-hour CEMS emissions averages being excluded due to standard startups, shutdowns, and malfunctions (total). This condition applies only to the gas turbine being used for steam turbine startup following an unplanned forced outage. The permittee shall notify the Compliance Authority no later than 24 hours after beginning a steam turbine startup following an unplanned forced outage. Notification may be by phone, facsimile, email, or letter and shall include the reason for the unplanned forced outage.
 - (5) *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

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. BAYSIDE UNITS 1 AND 2

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.}*

- (6) *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.}*
- (7) *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: 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. Such startups are expected to occur infrequently.} [Design; Rules 62-4.130, 62-210.700(5), and 62-212.400 (BACT), F.A.C.; Permit No. PSD-

EMISSIONS COMPLIANCE TESTING

- 18 **Operating Testing:** Emissions performance testing shall be conducted with the emissions unit at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum capacity allowed by the permit. If it is impractical 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. [Rule 62-297.310(2), F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

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19. Test Methods: Any required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
CTM-027	<i>Procedure for Collection and Analysis of Ammonia in Stationary Source</i> : This is an EPA conditional test method. The minimum detection limit shall be 1 ppm.
5	<i>Determination of Particulate Matter Emissions from Stationary Sources</i> : The minimum sampling time shall be two hours per run and the minimum sampling volume shall be 60 dscf per run.
7E	<i>Determination of Nitrogen Oxide Emissions from Stationary Sources</i>
9	<i>Visual Determination of the Opacity of Emissions from Stationary Sources</i>
10	<i>Determination of Carbon Monoxide Emissions from Stationary Sources</i> : The method shall use a continuous sampling train.
18	<i>Measurement of Gaseous Organic Compound Emissions by Gas Chromatography</i> : EPA Method 18 may be used concurrently with EPA Method 25A to deduct emissions of methane and ethane from the measured VOC emissions.
20	<i>Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines</i>
25A	<i>Determination of Volatile Organic Concentrations</i>

Except for Method CTM-027, the above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. Method CTM-027 is published on EPA's Technology Transfer Network Web Site at "<http://www.epa.gov/ttn/emc/ctm.html>". Although no specific tests are required for emissions of particulate matter and volatile organic compounds, the test methods are included for completeness. No other methods may be used for compliance testing unless prior written approval is received from the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

20. Initial Compliance Tests: Each gas turbine shall be tested to demonstrate compliance with the emission standards for CO, NOx, visible emissions and ammonia slip. The tests shall be conducted within 60 days after achieving at least 90% of the maximum permitted capacity, but not later than 180 days after initial operation of each gas turbine. (Tests for CO and NOx shall be conducted concurrently. Certified CEMS data may be used to demonstrate compliance with the initial CO and NOx standards. The test results for ammonia slip shall also report the CO and NOx emissions recorded by the CEMS during each test run. [Rule 62-297.310(7)(a)1, F.A.C.; 40 CFR 60.335]

21. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), each gas turbine shall be tested to demonstrate compliance with the emission standards for ammonia slip and visible emissions. The test results for ammonia slip shall also report the CO and NOx emissions recorded by the CEMS during each test run. {Permitting Note: Continuous compliance with the CO and NOx standards [redacted] ated with certified CEMS data.} [Rules 62-212.400(BACT) and 62-297.310(7)(a)4,

22. Ammonia Slip Testing: If the tested ammonia slip rate for a gas turbine exceeds 5 ppmvd corrected to 15% oxygen when firing natural gas during the annual test, the permittee shall:

- a. [redacted] and reporting the ammonia slip for each subsequent calendar quarter;
- b. Before the ammonia slip exceeds 7 ppmvd corrected to 15% oxygen, take corrective actions that result in lowering the ammonia slip to less than 5 ppmvd corrected to 15% oxygen; and
- c. Test and demonstrate that the ammonia slip is less than 5 ppmvd corrected to 15% oxygen within 15 days after completing the corrective actions.

Corrective actions may include, but are not limited to, adding catalyst, replacing catalyst, or other SCR

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. BAYSIDE UNITS 1 AND 2

system maintenance or repair. After demonstrating that the ammonia slip level is less than 5 ppmvd corrected to 15% oxygen, testing and reporting shall resume on an annual basis. [Rules 62-4.070(3) and 62-297.310(7)(b), F.A.C.]

CONTINUOUS MONITORING REQUIREMENTS

23. **Continuous Emissions Monitoring Systems:** The permittee shall install, calibrate, maintain, and operate a continuous emission monitoring system (CEMS) in the exhaust stack of each emissions unit to measure and record emissions of CO and NO_x in a manner sufficient to demonstrate compliance with the CEMS emission standards of this permit. The carbon dioxide (CO₂) content of the flue gas shall also be monitored at the location where CO and NO_x are monitored to correct the measured emissions rates to 15% oxygen. The oxygen content of the flue gas shall be calculated by the CEMS using the CO₂ content of the flue gas and an F-factor that is appropriate for natural gas.
- a. **Emission Averages.** Compliance with the 24-hour standards for CO and NO_x emissions shall be based on data collected by the required CEMS. The 24-hour block shall start at midnight of each operating day and consist of 24 consecutive 1-hour blocks. If a unit operates continuously throughout the day, the 24-hour block average shall be the average of 24 consecutive 1-hour emission averages. If a unit operates less than 24 hours during the day, the 24-hour block average shall be the average of available valid 1-hour emission averages collected during operation. If monitoring data is authorized for exclusion (due to startup, shutdown, malfunction, or tuning), the 24-hour block average shall be the average of the remaining available valid 1-hour emission averages collected during operation. Upon a request from the Compliance Authority, the NO_x emission rate shall be corrected to ISO conditions to demonstrate compliance with the applicable standards of 40 CFR 60.332.
- b. **Data Collection.** The CEMS shall be designed and operated to sample, analyze, and record CO, CO₂, and NO_x data evenly spaced over the hour. Each 1-hour emission average shall be computed using at least one data point in each fifteen minute quadrant of the 1-hour block during which the unit combusted fuel. Notwithstanding this requirement, each 1-hour emission average shall be computed from at least two data points separated by a minimum of 15 minutes. If the unit does not operate in more than one quadrant of a 1-hour block, the data is insufficient to determine a 1-hour emission average and shall be ignored. (Example: Unit begins startup with only ten minutes remaining in the 1-hour block. Data is insufficient to determine a 1-hour average and is ignored.) All valid measurements or data points collected during a 1-hour block shall be used to calculate the 1-hour emission averages. If the CEMS measures concentration on a wet basis, the CEMS shall include provisions to determine the moisture content of the exhaust gas and an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Alternatively, a curve of the flue gas moisture content versus load may be determined through manual stack test measurements and used in an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). The CO and NO_x CEMS shall express the 1-hour emission averages and the 24-hour block averages in terms of "ppmvd corrected to 15% oxygen".
- c. **Data Exclusion.** CO, CO₂, and NO_x emissions data shall be recorded by the CEMS at all times except during episodes of startup, shutdown, malfunction, and tuning. CO and NO_x emissions data recorded during such episodes may be excluded from the 24-hour block compliance averages in accordance with the requirements of Condition 17 of this subsection. All periods of data excluded due to startup, shutdown or malfunction shall be consecutive for each episode. The permittee shall minimize the duration of data excluded for startup, shutdown and malfunctions, to the extent practicable. Data recorded during startup, shutdown or malfunction shall not be excluded if the episode was caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented. Best operational practices shall be used to minimize

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

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hourly emissions that occur during startup, shutdown and malfunction. Emissions of any quantity or duration that occur entirely or in part from poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented, shall be prohibited. Excluded emissions shall be summarized in the required semiannual report.

- d. **NOx Certification.** The NOx monitor shall be certified pursuant to 40 CFR Part 75 and shall be operated and maintained in accordance with the applicable requirements of 40 CFR Part 75, Subparts B and C. For purposes of determining compliance with the CEMS emission standards of this permit, missing data shall not be substituted. Instead the 24-hour block average shall be determined using the remaining hourly data in the 24-hour block. Record keeping and reporting shall be conducted pursuant to 40 CFR Part 75, Subparts F and G. The RATA tests required for the NOx monitor shall be performed using EPA Method 7E or 20 as defined in Appendix A of 40 CFR 60. The span for the NOx monitor shall not be greater than 10 ppmvd corrected to 15% O₂. A dual span monitor may be used.
- e. **CO and CO₂ Certification.** The CO₂ monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 3. The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4. Quality assurance procedures for each monitor shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semi-annually to the Compliance Authority. The RATA tests required for the CO₂ monitor shall be performed using EPA Method 3A, of Appendix A in 40 CFR 60. The RATA tests required for the CO monitor shall be performed using EPA Method 10, of Appendix A in 40 CFR 60. The Method 10 analysis shall use a continuous sampling train. The span for the CO monitor shall not be greater than 25 ppm corrected to 15%-oxygen. A dual span CO monitor may be used.
- f. **Monitor Availability.** Monitor availability shall not be less than 95% in any calendar quarter. The report required in Condition 23e above shall be used to demonstrate monitor availability. In the event 95% availability is not achieved, the permittee shall provide the Compliance Authority with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit.

{Permitting Note: Compliance with these requirements will ensure compliance with the other applicable CEMS requirements such as: NSPS Subpart GG; Rule 62-297.520, F.A.C.; 40 CFR 60.7(a)(5) and 40 CFR 60.13; 40 CFR Part 51, Appendix P – Minimum Emission Monitoring Requirements; 40 CFR 60, Appendix B - Performance Specifications; and 40 CFR 60, Appendix F - Quality Assurance Procedures.}

), 62-210.700(5), and 62-212.400(BACT), F.A.C.]

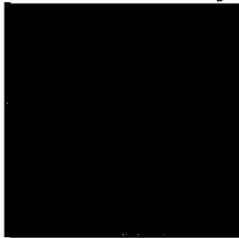
24 **Monitoring Requirements:** The permittee shall install, calibrate, maintain and operate, in accordance with the manufacturer's specifications, an ammonia flow meter to measure and record the ammonia flow rate through each SCR system. The permittee shall document the general range of ammonia flow rates required to meet emissions limitations over the range of gas turbine load conditions permitted by comparing NOx emissions recorded by the NOx monitor with ammonia flow rates recorded using the ammonia flow meter. During NOx monitor downtimes or malfunctions, the permittee shall operate at the ammonia flow rate that is consistent with the documented flow rate for the gas turbine load. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. BAYSIDE UNITS 1 AND 2

RECORDS AND REPORTS

25. Semiannual CEMS Report: In addition to the reports required pursuant to 40 CFR 60.7, the permittee shall submit semiannual reports for each gas turbine summarizing the CEMS data and equipment. For each calendar quarter, the report shall include: the 24-hour block compliance averages for each day of operation; the number of 1-hour emission averages excluded from each 24-hour compliance average; the emissions rate of the excluded monitoring data; the reason for excluding monitoring data; the hours of missing data due to monitor downtime; the reason for any monitor downtime; unusual maintenance or repair of the CEMS; and a summary of any RATA tests performed. Based on operational data, the permittee shall also update the general range of ammonia flow rates required to meet NOx emissions limitations over the range of gas turbine load conditions. A report covering operations from January through June shall be submitted by July 30th of each year. A report covering operations from July through December shall be submitted by January 30th of each year. The report due dates may be modified by the Title V permit. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]
26. Monitoring of Operations: To demonstrate compliance with the gas turbine capacity requirements, the permittee shall monitor and record the operating rate of each gas turbine on a daily average basis, considering the number of hours of operation during each day (including the times of startup, shutdown and malfunction). Such monitoring shall be made using a monitoring component of the CEMS required above, or by monitoring daily rates of consumption and heat content of natural gas in accordance with the provisions of 40 CFR 75 Appendix D. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]



RATA

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

B. GANNON UNITS

The following conditions supplement all other valid air construction and operation permits for these units.

EU ID	Status	Emission Unit Description
001	Retired	Gannon Unit 1 – coal fired boiler (125 MW steam electrical generator)
002	Retired	Gannon Unit 2 – coal fired boiler (125 MW steam electrical generator)
003	Retired	Gannon Unit 3 – coal fired boiler (163 MW steam electrical generator)
004	Retired	Gannon Unit 4 – coal fired boiler (170 MW steam electrical generator)
005	Retired	Gannon Unit 5 – coal fired boiler (239 MW steam electrical generator)
006	Retired	Gannon Unit 6 – coal fired boiler (414 MW steam electrical generator)
008	Functional	Gannon Coal Yard

SHUTDOWN REQUIREMENTS

- Shutdown of Coal-Fired Gannon Units: Pursuant to this federally enforceable PSD air construction permit, the coal-fired boilers for Gannon Units 1 through 6 (EUs 001 – 006) shall be permanently shut down no later than December 31, 2004. Based on the "Retired Unit Exemption" form submitted to the Department, all of these units have been permanently shut down and the dates of permanent retirement are: Unit 1 (04/16/03); Unit 2 (04/15/03); Unit 3 (11/01/03); Unit 4 (10/12/03); Unit 5 (01/30/03); and Unit 6 (09/30/03). [Permit No. PSD-FL-301, as revised; EPA/TECO Consent Decree; DEP Form No. 62-210.900(1)(a)3, F.A.C.]
- Coal Yard: The Gannon coal yard (EU 008) remains operable. Coal throughput for this facility shall not exceed 2.85 million tons in any 12 consecutive months. {Permitting Note: TECO is exploring possible long term plans to use the existing coal handling capabilities as a coal storage and distribution terminal. Additional permits may be required.} [Rules 62-4.160(2), 62-210.200 (PTE), and 62-212.400(2)(a)2, F.A.C.; Permit No. 0570040-006-AC]
- Permanent Bar on Combustion of Coal: Commencing on January 1, 2005, the permittee shall not combust coal in the operation of any unit at this plant. [EPA/TECO Consent Decree]
- Revisions or Extensions: The provisions of this section shall not be extended or revised the without the prior approval of the U.S. EPA. [EPA/TECO Consent Decree]



SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

C. BAYSIDE UNITS 3 AND 4

This section of the permit addresses the following emissions units.

Emissions Units 027 – 030: Bayside Units 3 and 4

Description: Each emissions unit consists of a General Electric Model PG7241(FA) gas turbine-electrical generator set, an automated gas turbine control system, an inlet air filtration system, an evaporative inlet air cooling system, an unfired heat recovery steam generator (HRSG), a combined cycle exhaust stack (150 feet tall and 19.0 feet in diameter), a simple cycle exhaust stack for Units 3A and 3B (114 feet tall and 18.8 feet in diameter), and associated support equipment. Each unit fires natural gas and Units 3A and 3B may fire distillate oil as a restricted alternate fuel (simple cycle) or as an emergency backup fuel (combined cycle).

Permitted Capacity: At a compressor inlet air temperature of 59° F, the maximum heat input rate to each gas turbine is 1842 MMBtu (HHV) per hour of natural gas. At a compressor inlet air temperature of 59° F, the maximum heat input rate to each Unit 3A or 3B gas turbine is 2015 MMBtu (HHV) per hour of distillate oil.

Stack Conditions: When Units 3 and 4 are operating as combined cycle units at full load, exhaust gases exit the stack with a volumetric flow rate of approximately 1,030,000 acfm at 220° F for gas firing and 1,160,000 acfm at 275° F for oil firing (Unit 3 only). When Units 3A or 3B are operating as simple cycle units at full load, exhaust gases exit the stack with a volumetric flow rate of approximately 2,394,000 acfm at 1120° F for gas firing and 2,469,000 acfm at 1100° F for oil firing.

Generating Capacity: The following table summarizes the electrical generating capacity for each combination of combined cycle gas turbines and steam-electrical turbines.

EU No.	Bayside GT Unit	GT MW, Shaft	Existing Gannon ST	MW, ST	Total
027	3A	169 MW	No. 3	163	501
028	3B	169 MW			
029	4A	169 MW	No. 4	170	508
030	4B	169 MW			
Totals	4 GTs	676 MW	2 STs	333	1009

Note: GT means gas turbine. The nameplate generating capacity is shown for the steam-electrical turbines (ST). The final design may not fully utilize the nameplate generating capacity.

Controls: The efficient combustion of clean fuels minimizes the emissions of CO, PM/PM10, and VOC. The firing of very low sulfur fuels minimizes potential emissions of SAM and SO2. Dry low-NOx (DLN) combustion technology when firing natural gas and water injection when firing distillate oil inhibit NOx emissions. When operating in the combined cycle mode, a selective catalytic reduction (SCR) system further reduces NOx emissions.

Continuous Monitors: Each gas turbine is equipped with continuous emissions monitoring systems (CEMS) to measure and record CO and NOx emissions as well as flue gas carbon dioxide content.

APPENDIX A STANDARDS AND REGULATIONS

- BACT Determinations:** The emissions units addressed in this section are subject to Best Available Control Technology (BACT) determinations for carbon monoxide (CO), particulate matter (PM/PM10), and volatile organic compounds (VOC). [Rule 62-212.400(BACT), F.A.C.]
- NSPS Requirements:** Each gas turbine shall comply with Subpart GG in 40 CFR 60, the New Source Performance Standards (NSPS) for Stationary Gas Turbines, as specified in Appendix GG of this permit. In addition, each gas turbine shall comply with the applicable requirements of Subpart A in 40 CFR 60, the

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

C. BAYSIDE UNITS 3 AND 4

NSPS General Provisions, including: 40 CFR 60.7 (Notification and Record Keeping), 40 CFR 60.8 (Performance Tests), 40 CFR 60.11 (Compliance with Standards and Maintenance Requirements), 40 CFR 60.12 (Circumvention), 40 CFR 60.13 (Monitoring Requirements), and 40 CFR 60.19 (General Notification and Reporting Requirements). [40 CFR 60; Rule 62-204.800(7)(b), F.A.C.]

EQUIPMENT

3. Construction: Bayside Unit 3 is scheduled to commence construction in May of 2005 and complete construction in 2006. Units 3A and 3B may be installed and operated as simple cycle units and later converted to combined cycle units. Unit 4 will be added as a combined cycle unit. The permittee shall inform the Department and Compliance Authority of any substantial changes to the construction schedule including conversion of Units 3A and 3B to combined cycle operation. Pursuant to 40 CFR 52.21(r)(2):
 - a. Construction of Bayside Units 3A and 3B shall commence within 18 months after permit issuance. Otherwise, authorization to construct shall become invalid.
 - b. Conversion of Units 3A and 3B to combined cycle operation shall be complete before this permit expires. TEC may request an extension of the expiration date of the permit. If an extension is granted based upon an adequate justification, the original BACT determinations and netting analyses shall remain unchanged. Upon review, the Department may require revalidation of the BACT determinations and a new netting analysis. Otherwise, the Department will require revalidation of the BACT determinations and a new netting analysis for any requests to extend the permit.
 - c. Construction of combined cycle Unit 4 shall be complete before this permit expires. TEC may request an extension of the expiration date of the permit. If an extension is granted based upon an adequate justification, the original BACT determinations and netting analyses shall remain unchanged. Upon review, the Department may require revalidation of the BACT determinations and a new netting analysis. Otherwise, the Department will require revalidation of the BACT determinations and a new netting analysis for any requests to extend the permit.
 - d. Each combined cycle unit shall include an SCR system to reduce NOx emissions.
[Application; Rule 62-212.400(BACT), F.A.C.]
4. Gas Turbines: The permittee is authorized to install, tune, operate and maintain four new General Electric Model PG7241(FA) gas turbines with electrical generator sets, each designed to produce a nominal 169 MW of shaft-driven electrical power. Each unit shall be designed for eventual operation as a combined cycle system to include an automated gas turbine control system, an inlet air filtration system, an unfired heat recovery steam generator (HRSG), a combined cycle exhaust stack (150 feet tall and 19.0 feet in diameter), and associated support equipment. Bayside Units 3A and 3B may be installed as simple cycle units and later converted to combined cycle units. Units 3A and 3B will each have a simple cycle exhaust (14 feet tall and 18.8 feet in diameter). [Applicant Request; Design]
5. Steam Generators (HRSG): Each gas turbine system shall be designed to include an unfired steam generator capable of operating at three levels of steam conditions (high pressure, intermediate pressure, and low pressure).
6. Control System: The permittee shall install, calibrate, tune, operate, and maintain a Speedtronic™ Mark VI automated control system (or better) for each gas turbine. Each system shall be designed and operated to monitor and control the gas turbine combustion process and operating parameters including, but not limited to: air/fuel distribution and staging, turbine speed, load conditions, temperatures, heat input, and fully automated startup and shutdown. [Design; 62-212.400(BACT), F.A.C.]
7. Combustion Controls

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

C. BAYSIDE UNITS 3 AND 4

- a. *DLN Combustion Technology*: Each gas turbine shall incorporate the General Electric dry low-NOx combustion system (DLN 2.6 or better) to provide efficient lean premix combustion. Prior to the initial emissions performance tests for each gas turbine, the DLN combustors and automated gas turbine control system shall be tuned to reduce CO and NOx emissions. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations to maintain CO and NOx emissions at the optimum levels. [Design; Rule 62-212.400(BACT), F.A.C.]
- b. *Water Injection*: The permittee shall install, operate, and maintain a water injection system on Units 3A and 3B to reduce NOx emissions from each gas turbine when firing distillate oil. The water injection system shall be tuned to achieve the permitted levels for CO and NOx emissions during simple cycle operation. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations. The automated control system shall be programmed to establish a water-to-fuel ratio designed to achieve the NOx emission standard for oil firing during simple cycle operation on a 1-hour basis. [Design; Rule 62-212.400(BACT), F.A.C.]
8. SCR System: The permittee shall install, tune, operate and maintain a selective catalytic reduction (SCR) system to reduce NOx emissions from each combined cycle gas turbine. The SCR system shall consist of an ammonia injection grid, catalyst, ammonia storage, a monitoring and control system, electrical system, piping, and other ancillary equipment. The SCR system shall be designed to reduce NOx emissions while minimizing ammonia slip within the permitted levels for gas firing. [DEP/TECO Consent Final Judgment; EPA/TECO Consent Decree; Rule 62-4.070(3), F.A.C.]
9. Evaporative Inlet Air-Cooling System: Each gas turbine system includes an evaporative cooling system designed to reduce the temperature of the inlet air to the gas turbine compressor. The reduced temperature provides a greater mass flow rate and increases power production with additional fuel combustion. {Permitting Note: The proposed equipment includes a water distribution system with packed media blocks of corrugated layers of fibrous material. Air passing over the system wicks moisture away from the media to create the cooling effect.} [Applicant Request; Design]

PERFORMANCE RESTRICTIONS

10. Permitted Capacity: At a compressor inlet air temperature of 59° F, the maximum heat input rate to each gas turbine is 1842 MMBtu (HHV) per hour of natural gas. At a compressor inlet air temperature of 59° F, the maximum heat input rate to each Unit 3A and 3B gas turbine is 2015 MMBtu (HHV) per hour of distillate oil. The maximum heat input rates are based on a compressor inlet air temperature of 59° F, the higher heating value (HHV) of each fuel and the expected performance levels. Heat input rates will vary depending upon gas turbine characteristics, ambient conditions, and evaporative cooling. The permittee shall provide the manufacturer's performance curves (or equations) that correct for site conditions to the Compliance Authorities within 45 days of completing the initial compliance testing. They may be adjusted for the appropriate site conditions in accordance with the performance specifications on file with the Department. [Design; Rule 62-210.200(PTE), F.A.C.]
11. The gas turbines shall fire only the following fuels.
Each gas turbine shall fire pipeline natural gas with a fuel sulfur content of no more than 2 grams per 100 SCF of natural gas based on a 12-month rolling average. Compliance shall be demonstrated each month by compiling the daily fuel sulfur analyses provided by the pipeline vendor. Methods for determining the sulfur content of the natural gas shall be ASTM methods D4084-82, D3246-81 or equivalent methods. [Design; Rules 62-210.200(PTE) and 62-212.400(BACT), F.A.C.; DEP/TECO Consent Final Judgment; EPA/TECO Consent Decree]
- b. *Distillate Oil – Units 3A and 3B*: As a restricted alternate fuel, Units 3A and 3B may fire new No. 2

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

C. BAYSIDE UNITS 3 AND 4

distillate oil with a maximum fuel sulfur content of no more than 0.05% sulfur by weight. Each gas turbine shall fire no more than 9,722,300 gallons of distillate oil during any consecutive 12-month period (equivalent to 700 full load equivalent hours of operation). Initial compliance with the fuel sulfur limit shall be demonstrated by taking a sample, analyzing the sample for fuel sulfur, and reporting the results to each Compliance Authority before initial startup. Sampling the fuel oil sulfur content shall be conducted in accordance with ASTM D4057-88, Standard Practice for Manual Sampling of Petroleum and Petroleum Products, and one of the following test methods for sulfur in petroleum products: ASTM D129-91, ASTM D1552-90, ASTM D2622-94, or ASTM D4294-90. More recent versions of these methods may be used. For each subsequent fuel delivery, the permittee shall maintain a permanent file of the certified fuel sulfur analysis from the fuel vendor. At the request of a Compliance Authority, the permittee shall perform additional sampling and analysis for the fuel sulfur content. [Design; Application; Rules 62-210.200(PTE) and 62-212.400(BACT), F.A.C.]

c. Distillate Oil – Units 3A and 3B, Combined Cycle Operation Only: Once converted to combined cycle operation, Units 3A and 3B may be fired with new No. 2 distillate oil according to the EPA/TECO Consent Decree. These provisions shall not be revised without prior approval from EPA. [EPA/TECO Consent Decree].

~~(1)The unit cannot be fired with natural gas;~~

~~(2)The Unit has not yet been fired with No. 2 fuel oil as a back up fuel for more than 875 full load equivalent hours in the calendar year in which Tampa Electric wishes to fire the Unit with such oil;~~


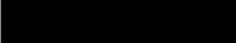
~~(3)The oil to be used in the unit has a sulfur content of less than 0.05 percent (by weight);~~

~~(4)Tampa Electric uses all emission control equipment for that unit when it is fired with such oil to the maximum extent possible; and~~

~~(5)Tampa Electric complies with all applicable permit conditions, including emission rates for firing with No. 2 fuel oil, as set forth in applicable preconstruction and operating permits.~~

~~These provisions shall not be revised without prior approval from EPA. Units 3A and 3B remain subject to the restriction on firing distillate oil specified in Condition 11b. [EPA/TECO Consent Decree]~~

12. Restricted Hours of Operation: The hours of operation for each gas turbine are not limited (8760 hours per year). [Application; Rules 62-212.400(BACT) and 62-210.200(PTE), F.A.C.]

13. Operating Procedures: The Best Available Control Technology (BACT) determinations for CO, PM/PM10, ns established by this permit rely on “good operating practices” to minimize emissions. Operators and supervisors shall be properly trained to operate and maintain the gas turbines control systems in accordance with the guidelines and procedures established by the he training shall include good operating practices as well as methods to minimize startup and shutdown. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

EN  DS

{Permitting Note: A summary table of the emissions standards is provided in Appendix B of this permit.}

14. Emissions Standards - Performance Tests: The gas turbines shall not exceed the following standards as determined by the emissions performance tests conducted at permitted capacity.

Pollutant	Emission Standards – Performance Tests	Test Method
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SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

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Simple Cycle Operation – Units 3A and 3B Only		
Carbon Monoxide (CO)	≤ 28.7 pounds per hour and 7.8 ppmvd corrected to 15% oxygen (gas) ≤ 40.5 pounds per hour and 9.0 ppmvd corrected to 15% oxygen (oil)	EPA Method 10 3 test runs
Nitrogen Oxides (NOx)	≤ 69.1 pounds per hour and 10.5 ppmvd corrected to 15% oxygen (gas) ≤ 320.3 pounds per hour and 42.0 ppmvd corrected to 15% oxygen (oil)	EPA Method 7E 3 test runs
Visible Emissions	≤ 10% opacity, 6-minute block average (gas/oil)	EPA Method 9 30 minutes
Pollutant	Emission Standards – Performance Tests	Test Method
Combined Cycle Operation – Units 3 and 4		
Ammonia Slip	Subject to the requirements of Condition 22 in this subsection, each SCR system shall be designed and operated for an ammonia slip target of less than 5 ppmvd corrected to 15% oxygen for gas firing.	CEM-027 3 test runs
Carbon Monoxide (CO)	≤ 28.7 pounds per hour and 7.8 ppmvd corrected to 15% oxygen (gas)	EPA Method 10 3 test runs
Nitrogen Oxides (NOx)	≤ 23.1 pounds per hour and 3.5 ppmvd corrected to 15% oxygen (gas)	EPA Method 7E 3 test runs
Visible Emissions	≤ 10% opacity, 6minute block average (gas/oil)	EPA Method 9 30 minutes

- a. The mass emission limits are based on full load and a compressor inlet temperature of 59° F.
- b. NOx emissions are defined as oxides of nitrogen reported as NO₂.
- c. Operating data shall be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department.
- d. The CO and NOx standards represent the initial standards for “new and clean” units. Subsequent compliance shall be demonstrated with data collected by the certified CEMS.
- e. The efficient combustion of clean fuels represents the Best Available Control Technology (BACT) requirements for emissions of particulate matter and volatile organic compounds. Compliance with carbon monoxide and visible emissions standards shall serve as continuous indicators of efficient combustion to minimize emissions of these pollutants. Compliance with the fuel sulfur specifications of this permit minimizes potential emissions of sulfuric acid mist and sulfur dioxide. No performance tests are required for these pollutants.

f. Only the CEMS-based CO and NOx emissions standards apply to Units 3A and 3B when firing distillate oil and operating in combined cycle mode because these units can only fire distillate oil as an “emergency” backup fuel” when operating in this mode.

[Rules 62-407.0(3), 62-212.400(BACT), and 62-297.310, F.A.C.; DEP/TECO Consent Final Judgment; EPA/TECO Consent Decree; 40 CFR 60.332]

15. Emissions Standards Based on CEMS Data: The following standards apply to each gas turbine based on data collected from each required Continuous Emissions Monitoring System (CEMS).

Pollutant	CEMS-Based Emission Standards	Method
Simple Cycle Operation – Units 3A and 3B Only		
Carbon Monoxide (CO)	≤ 9.0 ppmvd corrected to 15% oxygen based on a 24-hour block average (gas/oil)	CO CEMS

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

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Nitrogen Oxides (NOx)	≤ 10.5 ppmvd corrected to 15% oxygen based on a 24-hour block average (gas) ≤ 42.0 ppmvd corrected to 15% oxygen based on a 24-hour block average (oil)	NOx CEMS
Combined Cycle Operation – Units 3 and 4		
Carbon Monoxide (CO)	≤ 9.0 ppmvd corrected to 15% oxygen based on a 24-hour block average (gas/oil)	CO CEMS
Nitrogen Oxides (NOx)	≤ 3.5 ppmvd corrected to 15% oxygen based on a 24-hour block average (gas) ≤ 12.0 ppmvd corrected to 15% oxygen based on a 24-hour block average (oil)	NOx CEMS

Each 24-hour block average shall start at midnight each operating day and shall be calculated from 24 consecutive 1-hour averages. If a unit operates less than 24 hours during the block, the 24-hour block average shall be the average of the available valid 1-hour averages. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

STARTUP, SHUTDOWN, MALFUNCTION, AND LOW LOAD OPERATION

16. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction, shall be prohibited. All such preventable emissions shall be included in the compliance averages determined from the CO and NOx CEMS data. [Rule 62-210.700(4), F.A.C.]

17. Alternate Standards and CEMS Data Exclusion: ~~Bayside Units 3 and 4 shall be subject to the same alternate standards and data exclusion requirements as Bayside Units 1 and 2 (Condition 17, Subsection IIIA). [Design; Rules 62-4.130, 62-210.700(5), and 62-212.400 (BACT), F.A.C.; Permit No. PSD-FL-301, as revised]~~ 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 NOx emissions data may be excluded from the 24-hour block compliance averages in accordance with the corresponding requirements.

(1) Definitions: Rule 62-210.200(231), F.A.C. defines “shutdown” as the cessation of the operation of an emissions unit for any purpose. 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. 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.

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- (2) Standard Startups, Shutdowns, and Malfunctions: For each gas turbine, no more than four 1-hour CEMS emission averages shall be excluded from any 24-hour block compliance average due to standard startups, shutdowns, and malfunctions (total).
- (3) 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 startup. In the event of a cold steam turbine startup and standard startups, shutdowns and/or malfunctions within the same 24-hour period, a total of sixteen 1-hour CEMS emissions averages may be excluded with no more than four of those sixteen 1-hour CEMS emissions averages being excluded due to standard startups, shutdowns, and malfunctions (total). This condition applies only to the gas turbine being used for the cold steam turbine startup. The permittee shall notify the Compliance Authority no later than 24 hours after beginning a cold steam turbine startup. Notification may be by phone, facsimile, email, or letter.
- (4) 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 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. In the event of a startup following an unplanned forced outage and standard startups, shutdowns and/or malfunctions within the same 24-hour period, a total of eight 1-hour CEMS emissions averages may be excluded with no more than four of those eight 1-hour CEMS emissions averages being excluded due to standard startups, shutdowns, and malfunctions (total). This condition applies only to the gas turbine being used for steam turbine startup following an unplanned forced outage. The permittee shall notify the Compliance Authority no later than 24 hours after beginning a steam turbine startup following an unplanned forced outage. Notification may be by phone, facsimile, email, or letter and shall include the reason for the unplanned forced outage.
- (5) 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’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.}*
- (6) 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.}*
- (7) 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

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

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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.

17. {Permitting Note: Bayside Units 3 and 4 shall be subject to the same alternate standards and data exclusion requirements as Bayside Units 1 and 2 (Condition 17, Subsection IIIA). 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. Such startups are expected to occur infrequently.} [Design; Rules 62-4.130, 62-210.700(5), and 62-212.400 (BACT), F.A.C.; Permit No. PSD-FL-301B]

EMISSIONS PERFORMANCE TESTING

18. Operating Rate During Testing: Emissions performance testing shall be conducted with the emissions unit operating at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical 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 with the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]

19. Test Methods: Any required tests shall be performed in accordance with the following same-reference methods. {Permitting Note: Bayside Units 3 and 4 are subject to the same requirements as specified for Bayside Units 1 and 2 (Condition 19, Subsection IIIA).} [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

<u>Method</u>	<u>Description of Method and Comments</u>
<u>CTM-027</u>	<u>Procedure for Collection and Analysis of Ammonia in Stationary Source: This is an EPA conditional test method. The minimum detection limit shall be 1 ppm.</u>
<u>5</u>	<u>Determination of Particulate Matter Emissions from Stationary Sources: The minimum sampling time shall be two hours per run and the minimum sampling volume shall be 60 dscf per run.</u>
<u>7E</u>	<u>Determination of Nitrogen Oxide Emissions from Stationary Sources</u>

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9	<i>Visual Determination of the Opacity of Emissions from Stationary Sources</i>
10	<i>Determination of Carbon Monoxide Emissions from Stationary Sources: The method shall use a continuous sampling train.</i>
18	<i>Measurement of Gaseous Organic Compound Emissions by Gas Chromatography: EPA Method 18 may be used concurrently with EPA Method 25A to deduct emissions of methane and ethane from the measured VOC emissions.</i>
20	<i>Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines</i>
25A	<i>Determination of Volatile Organic Concentrations</i>

Except for Method CTM-027, the above methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. Method CTM-027 is published on EPA's Technology Transfer Network Web Site at "<http://www.epa.gov/ttn/emc/ctm.html>". Although no specific tests are required for emissions of particulate matter and volatile organic compounds, the test methods are included for completeness. No other methods may be used for compliance testing unless prior written approval is received from the Department. [Rules 62-204.800 and 62-297.100, F.A.C.; 40 CFR 60, Appendix A]

20. **Initial Compliance Tests:** To demonstrate initial compliance with the emissions standards, tests shall be conducted on each gas turbine within 60 days after achieving at least 90% of the maximum permitted capacity, but not later than 180 days after initial operation of each gas turbine. Tests shall be conducted in accordance with the following requirements.

- a. *Simple Cycle Units 3A and 3B:* Each simple cycle gas turbine shall be tested to demonstrate initial compliance with the emissions standards for CO, NOx, and visible emissions in Condition 14 of this subsection when firing natural gas and distillate oil.
- b. *Combined Cycle Units 3 and 4:* Each combined cycle gas turbine shall be tested to demonstrate compliance with the emissions standards for CO, NOx, visible emissions and ammonia slip in Condition 14 of this subsection when firing natural gas. {Permitting Note: For combined cycle operation of Units 3A and 3B, initial tests when firing distillate oil are not required because this fuel may only be fired as a restricted emergency backup fuel.}

Tests for CO and NOx shall be conducted concurrently. Certified CEMS data may be used to demonstrate initial compliance with the CO and NOx emissions standards. The test results for ammonia slip shall also report the CO and NOx emissions recorded by the CEMS during each test run. [Rule 62-297.310(7)(a)1, F.A.C.; 40 CFR 60.335]

21. **Annual Compliance Tests:** During each federal fiscal year (October 1st to September 30th), each gas turbine is subject to the following testing requirements.

- a. *Simple Cycle Units 3A and 3B:* Each simple cycle gas turbine shall be tested annually to demonstrate compliance with the standard for visible emissions in Condition 14 of this subsection when firing natural gas and when firing distillate oil (if the unit fires distillate oil for more than 400 hours during the federal fiscal year).
- b. *Combined Cycle Units 3 and 4:* Each combined cycle gas turbine shall be tested to demonstrate compliance with the standards for visible emissions and ammonia slip in Condition 14 of this subsection when firing natural gas. The test results for ammonia slip shall also report the CO and NOx emissions recorded by the CEMS during each test run. Units 3A and 3B shall also be tested for visible emissions if the unit fires distillate oil for more than 400 hours during the federal fiscal year.

{Permitting Note: Continuous compliance with the CO and NOx standards will be demonstrated by data

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

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collected from the certified CEMS.] [Rules 62-212.400(BACT) and 62-297.310(7)(a)3 and 4, F.A.C.]

22. Additional Ammonia Slip Testing: Ammonia slip testing shall be performed in accordance with the same requirements as specified for Bayside Units 1 and 2 (Condition 22, Subsection IIIA). [Rules 62-4.070(3) and 62-297.310(7)(b), F.A.C.] If the tested ammonia slip rate for a gas turbine exceeds 5 ppmvd corrected to 15% oxygen when firing natural gas in combine cycle mode during the annual test, the permittee shall:

- d. Begin testing and reporting the ammonia slip for each subsequent calendar quarter;
- e. Before the ammonia slip exceeds 7 ppmvd corrected to 15% oxygen, take corrective actions that result in lowering the ammonia slip to less than 5 ppmvd corrected to 15% oxygen; and
- f. Test and demonstrate that the ammonia slip is less than 5 ppmvd corrected to 15% oxygen within 15 days after completing the corrective actions.

Corrective actions may include, but are not limited to, adding catalyst, replacing catalyst, or other SCR system maintenance or repair. After demonstrating that the ammonia slip level is less than 5 ppmvd corrected to 15% oxygen, testing and reporting shall resume on an annual basis. [Rules 62-4.070(3) and 62-297.310(7)(b), F.A.C.]

{Permitting Note: Ammonia slip testing shall be performed in accordance with the same requirements as specified for Bayside Units 1 and 2 (Condition 22, Subsection IIIA).}

CONTINUOUS MONITORING REQUIREMENTS

23. Continuous Emissions Monitoring Systems: The permittee shall install, calibrate, maintain, and operate a continuous emission monitoring system (CEMS) in the exhaust stack of each emissions unit to measure and record emissions of CO and NOx in a manner sufficient to demonstrate compliance with the CEMS emission standards of this permit. The carbon dioxide (CO₂) content of the flue gas shall also be monitored at the location where CO and NOx are monitored to correct the measured emissions rates to 15% oxygen. The oxygen content of the flue gas shall be calculated by the CEMS using the CO₂ content of the flue gas and an F-factor that is appropriate for natural gas.

a. Emission Averages. Compliance with the 24-hour standards for CO and NOx emissions shall be based on data collected by the required CEMS. The 24-hour block shall start at midnight of each operating day and consist of 24 consecutive 1-hour blocks. If a unit operates continuously throughout the day, the 24-hour block average shall be the average of 24 consecutive 1-hour emission averages. If a unit operates less than 24 hours during the day, the 24-hour block average shall be the average of available valid 1-hour emission averages collected during operation. If monitoring data is authorized for exclusion (due to startup, shutdown, malfunction, or tuning), the 24-hour block average shall be the average of the remaining available valid 1-hour emission averages collected during operation. Upon a request from the Compliance Authority, the NOx emission rate shall be corrected to ISO conditions to demonstrate compliance with the applicable standards of 40 CFR 60.332.

b. Data Collection. The CEMS shall be designed and operated to sample, analyze, and record CO, CO₂, and NOx data evenly spaced over the hour. Each 1-hour emission average shall be computed using at least one data point in each fifteen minute quadrant of the 1-hour block during which the unit combusted fuel. Notwithstanding this requirement, each 1-hour emission average shall be computed from at least two data points separated by a minimum of 15 minutes. If the unit does not operate in more than one quadrant of a 1-hour block, the data is insufficient to determine a 1-hour emission average and shall be ignored. (Example: Unit begins startup with only ten minutes remaining in the 1-hour block. Data is insufficient to determine a 1-hour average and is ignored.) All valid measurements or data points collected during a 1-hour block shall be used to calculate the 1-hour emission averages.

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

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If the CEMS measures concentration on a wet basis, the CEMS shall include provisions to determine the moisture content of the exhaust gas and an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Alternatively, a curve of the flue gas moisture content versus load may be developed through manual stack test measurements and used in an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). The CO and NOx CEMS shall express the 1-hour emission averages and the 24-hour block averages in terms of "ppmvd corrected to 15% oxygen".

- c. **Data Exclusion.** CO, CO₂, and NO_x emissions data shall be recorded by the CEMS at all times including episodes of startup, shutdown, malfunction, and tuning. CO and NO_x emissions data recorded during such episodes may be excluded from the 24-hour block compliance averages in accordance with the requirements of Condition 17 of this subsection. All periods of data excluded due to startup, shutdown or malfunction shall be consecutive for each episode. The permittee shall minimize the duration of data excluded for startup, shutdown and malfunctions, to the extent practicable. Data recorded during startup, shutdown or malfunction shall not be excluded if the episode was caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented. Best operational practices shall be used to minimize hourly emissions that occur during startup, shutdown and malfunction. Emissions of any quantity or duration that occur entirely or in part from poor maintenance, poor operation, or any other equipment or process failure, which may reasonably be prevented, shall be prohibited. Excluded emissions shall be summarized in the required semiannual report.
- d. **NO_x Certification.** The NO_x monitor shall be certified pursuant to 40 CFR Part 75 and shall be operated and maintained in accordance with the applicable requirements of 40 CFR Part 75, Subparts B and C. For purposes of determining compliance with the CEMS emission standards of this permit, missing data shall not be substituted. Instead the 24-hour block average shall be determined using the remaining hourly data in the 24-hour block. Record keeping and reporting shall be conducted pursuant to 40 CFR Part 75, Subparts F and G. The RATA tests required for the NO_x monitor shall be performed using EPA Method 7E or 20 as defined in Appendix A of 40 CFR 60. The span for the NO_x monitor shall not be greater than 10 ppmvd corrected to 15% O₂. A dual span monitor may be used.
- e. **CO and CO₂ Certification.** The CO₂ monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 3. The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4. Quality assurance procedures for each monitor shall conform to the requirements of 40 CFR 60, Appendix F, and the Data Assessment Report of Section 7 shall be made each calendar quarter, and reported semi-annually to the Compliance Authority. The RATA tests required for the CO₂ monitor shall be performed using EPA Method 3A, of Appendix A in 40 CFR 60. The RATA tests required for the CO monitor shall be performed using EPA Method 10, of Appendix A in 40 CFR 60. The Method 10 analysis shall use a continuous sampling train. The span for the CO monitor shall not be greater than 25 ppm corrected to 15% oxygen. A dual span CO monitor may be used.
- f. **Monitor Availability.** Monitor availability shall not be less than 95% in any calendar quarter. The report required in Condition 23e above shall be used to demonstrate monitor availability. In the event 95% availability is not achieved, the permittee shall provide the Compliance Authority with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit.

{Permitting Note: Each CEMS shall comply with the same requirements as specified for Bayside Units 1 and 2 (Condition 23, Subsection IIIA). A multi-span monitor may be necessary for Units 3A and 3B due to

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

C. BAYSIDE UNITS 3 AND 4

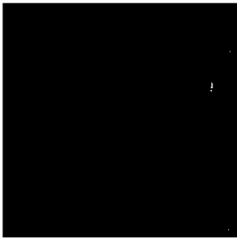
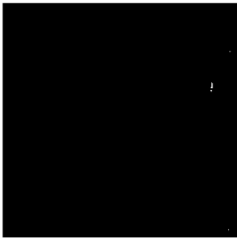
the higher NOx standards. Compliance with these requirements will ensure compliance with the other applicable CEMS requirements such as: NSPS Subpart GG; Rule 62-297.520, F.A.C.; 40 CFR 60.7(a)(5) and 40 CFR 60.13; 40 CFR Part 51, Appendix P – Minimum Emission Monitoring Requirements; 40 CFR 60, Appendix B - Performance Specifications; and 40 CFR 60, Appendix F - Quality Assurance Procedures.

[Rules 62-4.070(3), 62-210.700(5), and 62-212.400(BACT), F.A.C.]

24. Ammonia Monitoring Requirements: The permittee shall install, calibrate, maintain and operate in accordance with the manufacturer’s specifications an ammonia flow meter to measure and record the ammonia injection rate through each SCR system. The permittee shall document the general range of ammonia flow rates required to meet emissions limitations over the range of gas turbine load conditions allowed in this permit by comparing NOx emissions recorded by the NOx monitor with ammonia flow rates recorded using the ammonia flow meter. During NOx monitor downtimes or malfunctions, the permittee shall operate at the ammonia flow rate that is consistent with the documented flow rate for the gas turbine load. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

RECORDS AND REPORTS

25. Semiannual CEMS Report: In addition to the reports required pursuant to 40 CFR 60.7, the permittee shall submit semiannual reports for each gas turbine summarizing the CEMS data and equipment. For each calendar quarter, the report shall include: the 24-hour block compliance averages for each day of operation; the number of 1-hour emission averages excluded from each 24-hour compliance average; the emissions rate of the excluded monitoring data; the reason for excluding monitoring data; the hours of missing data due to monitor downtime; the reason for any monitor downtime; unusual maintenance or repair of the CEMS; and a summary of any RATA tests performed. Based on operational data, the permittee shall also update the general range of ammonia flow rates required to meet NOx emissions limitations over the range of gas turbine load conditions. A report covering operations from January through June shall be submitted by July 30th of each year. A report covering operations from July through December shall be submitted by January 30th of each year. The report due dates may be modified by the Title V permit. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.] *{Permitting Note: Each CEMS Report submitted shall be For Units 3 and 4, the permittee shall submit semiannual reports for each gas turbine summarizing the CEMS data and equipment in accordance with the requirements specified for Bayside Units 1 and 2 (Condition 25, Subsection IIIA).}* [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

26. Monitoring of Operations: To demonstrate compliance with the gas turbine capacity requirements, the permittee shall monitor and record the operating rate of each gas turbine on a daily average basis, considering the number of hours of operation during each day (including the times of startup, shutdown and  monitoring shall be made using a monitoring component of the CEMS required above,  daily rates of consumption and heat content of natural gas in accordance with the CFR 75 Appendix D. [Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

SECTION IV. APPENDIX A

TERMINOLOGY

ABBREVIATIONS AND ACRONYMS

CEMS	-	Continuous Emissions Monitoring System
DARM	-	Division of Air Resource Management
DEP	-	State of Florida, Department of Environmental Protection
DLN	-	Dry Low-NOx Combustion Technology
EPA	-	United States Environmental Protection Agency
° F	-	Degrees Fahrenheit
F.A.C.	-	Florida Administrative Code
F.S.	-	Florida Statute
HRSG	-	Heat Recovery Steam Generator
UTM	-	Universal Transverse Mercator
SCR	-	Selective Catalytic Reduction

FORMATS FOR PERMIT REFERENCES AND RULE CITATIONS

The following examples illustrate the methods used in this permit to abbreviate and cite the references of rules, regulations, permit numbers, and identification numbers.

Florida Administrative Code (F.A.C.) Rules:

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

<i>Where:</i> 62	-	identifies the specific Title of the F.A.C.
62-213	-	identifies the specific Chapter of the F.A.C.
62-213.205	-	identifies the specific Rule of the F.A.C.

Facility Identification (ID) Number:

Example: Facility ID No. 099-0001

<i>Where:</i> 099	-	identifies the specific county location
0221	-	identifies the specific facility

New Permit Numbers:

Example: Permit No. 099-2222-001-AC or 099-2222-001-AV

<i>Where:</i> AC	-	identifies the permit as an Air Construction Permit
AV	-	identifies the permit as a Title V Major Source Air Operation Permit
099	-	identifies the specific county that project is located in
2222	-	identifies the specific facility
001	-	identifies the specific permit project

Old Permit Numbers:

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

<i>Where:</i> AC	-	identifies the permit as an Air Construction Permit
AO	-	identifies the permit as an Air Operation Permit
123456	-	identifies the specific permit project

SECTION IV. APPENDIX B
SUMMARY OF BACT DETERMINATIONS AND EMISSIONS STANDARDS

Background Discussion

The Tampa Electric Company operates the H. L. Culbreath Bayside Power Station in Tampa (Hillsborough County), an area that is currently in attainment with the state and federal Ambient Air Quality Standards (AAQS) or otherwise designated as unclassifiable. The electrical power plant was formerly known as the F. J. Gannon Station, but was re-powered with combined cycle gas turbines firing natural gas. The actual and potential annual emissions of several pollutants from the existing facility are greater than the PSD applicability thresholds defined in Rule 62-212.400, F.A.C. Therefore, the plant is an existing PSD-major facility and new projects are subject to review for PSD applicability.

In accordance with the DEP/TECO Consent Final Judgment and the EPA/TECO Consent Decree (Settlement Agreements), TECO was required to re-power the coal fired boilers at the F.J. Gannon Plant with natural gas fired units meeting a NO_x standard of 3.5 ppmvd. Shut down of the coal fired boilers created emissions decreases that could be used in a PSD netting analysis. However, TECO could not take advantage of the full emissions decreases because the re-powering project was the result of alleged violations of the new source preconstruction review regulations. Therefore, emissions decreases from the shutdown Gannon Units must be adjusted downward to represent BACT-level controls on the coal-fired units.

Bayside Units 1 and 2, Permit No. PSD-FL-301 (Project No. 0570040-013-AC)

The project proposed the following: construction of Bayside Unit 1 consisting of a 3-on-1 combined cycle gas turbine system to re-power Gannon Unit 5; and construction of Bayside Unit 2 consisting of a 4-on-1 combined cycle gas turbine system to re-power Gannon Unit 6. Based on the PSD netting analysis, this project required determinations of the Best Available Control Technology (BACT) for emissions of carbon monoxide (CO), particulate matter (PM/PM₁₀), and volatile organic compounds (VOC). The project netted out of PSD review for nitrogen oxides (NO_x) and sulfur dioxide (SO₂) emissions. However, in accordance with the Settlement Agreements, each gas turbine is required to fire natural gas as the primary fuel and achieve a NO_x standard of no more than 3.5 ppmvd. Therefore, Bayside Units 1 and 2 were permitted to fire natural gas as the primary fuel and required to install a selective catalytic reduction (SCR) systems to reduce NO_x emissions. Distillate oil was allowed only as a restricted emergency backup fuel in accordance with the EPA/TECO Consent Decree. The permit required the installation of continuous emissions monitoring systems (CEMS) to determine compliance with the CO and NO_x emissions standards. See the Technical Evaluation and Preliminary Determination for a full discussion of the PSD netting analysis and BACT determinations.

Bayside Units 3 and 4, Permit No. PSD-FL-301A (Project No. 0570040-015-AC)

In addition to the previously permitted Bayside Units 1 and 2, the project proposed the following: construction of Bayside Unit 3 consisting of a 2-on-1 combined cycle gas turbine system to re-power Gannon Unit 3; and construction of Bayside Unit 4 consisting of a 2-on-1 combined cycle gas turbine system to re-power Gannon Unit 4. Natural gas was requested and specified as the exclusive fuel. Based on the netting analysis, this project netted out of PSD review for NO_x and SO₂ emissions. BACT determinations for CO, PM/PM₁₀, and VOC emissions were made for Bayside Units 3 and 4 and revalidated for Bayside Units 1 and 2.

Bayside Units 1 – 4, Permit No. PSD-FL-301B (Project No. 0570040-021-AC)

The project was a permit revision related to monitoring data exclusions in Condition 17. No BACT determinations were required.

Bayside Units 3 and 4, Permit No. PSD-FL-301C (Project No. 0570040-019-AC)

Bayside Units 1 and 2 have been constructed and are in operation. Bayside Units 3 and 4 have not yet been constructed. The project proposed the following: initial construction of Bayside Unit 3A and 3B as simple cycle gas turbines; distillate oil firing for Units 3A and 3B during simple cycle operation (restricted to 700 full load equivalent hours); after an initial phase of simple cycle operation, future conversion of Bayside Units 3A and 3B to combined cycle operation; future construction of Bayside Unit 4 as a combined cycle unit. Based on the netting analysis, this project also netted out of PSD review for NO_x and SO₂ emissions. Bayside Units 1 and 2 are in operation and the previous BACT determinations for these units remain unchanged by this permitting action. Bayside Units 3 and 4 have not been constructed and new (re-validated) BACT determinations were made for CO, PM/PM₁₀, and VOC emissions.

SECTION IV. APPENDIX B

SUMMARY OF BACT DETERMINATIONS AND EMISSIONS STANDARDS

Emissions Standards Summaries

The following tables summarize the Department's current BACT determinations and emissions standards.

Table B-1. BACT Emissions Standards for Bayside Units 1 – 4 ^a

Pollutant	Controls ^c and Standards ^g
Fuel Specifications ^b	<i>Gas Standard:</i> Pipeline natural gas (≤ 2 grains per 100 SCF, 12 month rolling average) <i>Oil Standard:</i> Distillate oil ($\leq 0.05\%$ sulfur by weight)
<i>All Modes of Operation - - Compliance Tests ^d</i>	
CO	<i>Control:</i> Efficient combustion of clean fuels <i>Gas Standard:</i> 7.8 ppmvd @ 15% O ₂ (28.7 lb/hour) <i>Oil Standard:</i> 9.0 ppmvd @ 15% O ₂ (40.5 lb/hour)
PM/PM ₁₀	<i>Controls:</i> Efficient combustion of clean fuels <i>Standard:</i> 10% opacity, 6-minute block average (gas/oil) <i>Comments:</i> The CO CEMS serves as a continuous indicator of efficient combustion.
VOC	<i>Controls:</i> Efficient combustion of clean fuels <i>Comments:</i> The CO CEMS serves as a continuous indicator of efficient combustion.
<i>All Modes of Operation - CEMS Data ^e</i>	
CO (BACT)	<i>Control:</i> Efficient combustion of clean fuels <i>Standard:</i> 9.0 ppmvd @ 15% O ₂ , 24-hour block average (gas/oil)

Table B-2. Other Emissions Standards for Bayside Units 1 – 4 ^a

Pollutant	Controls ^c and Standards ^g
<i>Combined Cycle Operation - Compliance Tests ^{d, h}</i>	
Ammonia	<i>Standard:</i> 5 ppmvd @ 15% O ₂ , combined cycle operation with SCR ^f
NO _x	<i>Controls:</i> SCR with DLN combustion (gas) <i>Standard:</i> 3.5 ppmvd @ 15% O ₂ (23.1 lb/hour)
<i>Combined Cycle Operation - CEMS Data ^c</i>	
NO _x	<i>Controls:</i> SCR plus DLN combustion technology (gas) and wet injection (oil) <i>Gas Standard:</i> 3.5 ppmvd @ 15% O ₂ , 24-hour block average <i>Oil Standard:</i> 12.0 ppmvd @ 15% O ₂ , 24-hour block average
<i>Simple Cycle Operation - Compliance Tests ^d</i>	
NO _x	<i>Controls:</i> DLN combustion technology (gas) and wet injection (oil) <i>Gas Standard:</i> 10.5 ppmvd @ 15% O ₂ (69.1 lb/hour) <i>Oil Standard:</i> 42.0 ppmvd @ 15% O ₂ (320.3 lb/hour)
<i>Simple Cycle Operation - CEMS Data ^e</i>	
NO _x	<i>Controls:</i> DLN combustion technology (gas) and wet injection (oil) <i>Gas Standard:</i> 10.5 ppmvd @ 15% O ₂ , 24-hour block average <i>Oil Standard:</i> 42.0 ppmvd @ 15% O ₂ , 24-hour block average

Notes:

- a. Each gas turbine is a General Electric Model PG7241(FA).
- b. Potential SAM and SO₂ emissions are limited by the fuel specifications.

SECTION IV. APPENDIX B

SUMMARY OF BACT DETERMINATIONS AND EMISSIONS STANDARDS

- c. "SCR" means selective catalytic reduction system. "DLN" means dry low-NOx combustion technology.
- d. Mass emissions rates are based on operation at permitted capacity and a compressor inlet temperature of 59° F.
- e. "CEMS" means continuous emissions monitoring system.
- f. If the tested ammonia slip rate exceeds 5 ppmvd corrected to 15% oxygen during the required annual test, the permittee shall begin testing and reporting the ammonia slip for each subsequent calendar quarter. Before the ammonia slip exceeds 7 ppmvd corrected to 15% oxygen, the permittee shall take corrective actions that result in lowering the ammonia slip to less than 5 ppmvd corrected to 15% oxygen. The permittee shall test and demonstrate that the ammonia slip is less than 5 ppmvd corrected to 15% oxygen within 15 days after completing the corrective actions.
- g. Only Units 3A and 3B are authorized to fire distillate oil. During simple cycle operation of Units 3A and 3B, distillate oil may be fired as a restricted alternate fuel limited to 9,722,300 gallons during any consecutive 12-month period (equivalent to 700 full load equivalent hours of operation). During combined cycle operation of Units 3A and 3B, distillate oil may only be fired as an emergency backup fuel subject to the requirements of the EPA-TECO Consent Decree.
- h. Only Units 3A and 3B may fire distillate oil. These units will be installed initially as simple cycle units and later converted to combined cycle operation. Once converted, Units 3A and 3B may only fire distillate oil as an emergency backup fuel. Therefore, no initial NOx compliance test is required for oil firing.

SECTION IV. APPENDIX E
SUMMARY OF MASS EMISSIONS RATES FOR FIRING GAS

Table E-1. Summary of Mass Emission Rates for Firing Natural Gas

Pollutant	Compressor Inlet Temperature	Mass Emission Rate lb/hour
CO	18° F	31.1
	35° F	30.0
	59° F	28.7
	72° F	27.8
	93° F	26.9
NOx	18° F	24.7
	35° F	23.8
	59° F	23.1
	72° F	22.6
	93° F	21.9
PM/PM10	18° F	11.5
	35° F	11.4
	59° F	11.3
	72° F	11.3
	93° F	11.2
VOC	18° F	3.0
	35° F	3.0
	59° F	2.8
	72° F	2.7
	93° F	2.7

Notes:

- This table represents the mass emission rates for the General Electric Model PG7241(FA) gas turbine (combined cycle) firing natural gas with a selective catalytic reduction system to reduce NOx emissions to the permitted emission rate.
- NOx emission rates are reported as NO2 and are based on control with DLN combustion and an SCR system.
- PM emission rates are based on EPA Method 5 (front-half catch only).
- VOC emission rates are measured as methane.

SECTION IV. APPENDIX GC

GENERAL CONDITIONS

- G.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.
- G.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.
- G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and 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.
- G.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.
- G.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.
- G.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.
- G.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.

- G.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.

- G.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

SECTION IV. APPENDIX GC

GENERAL CONDITIONS

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.

- G.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.
- G.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.
- G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.
- G.13 This permit also constitutes:
- (a) Determination of Best Available Control Technology (X);
 - (b) Determination of Prevention of Significant Deterioration (X); and
 - (c) Compliance with New Source Performance Standards (X).
- G.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.
- G.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 IV. APPENDIX GG
NSPS SUBPART GG REQUIREMENTS FOR GAS TURBINES

NSPS SUBPART GG REQUIREMENTS

[Note: Inapplicable provisions have been deleted in the following conditions, but the numbering of the original rules has been preserved for ease of reference to the original rules. The term “Administrator” when used in 40 CFR 60 shall mean the Department’s Secretary or the Secretary’s designee. Department notes and requirements related to the Subpart GG requirements are shown in **bold** immediately following the section to which they refer. The rule basis for the Department requirements specified below is Rule 62-4.070(3), F.A.C.]

Pursuant to 40 CFR 60.332, Standard for Nitrogen Oxides:

- (a) On and after the date of the performance test required by § 60.8 is completed, every owner or operator subject to the provisions of this subpart as specified in paragraph (b) section shall comply with:
- (1) No owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any stationary gas turbine, any gases which contain nitrogen oxides in excess of:

$$\text{STD} = 0.0075 \frac{(14.4)}{Y} + F$$

Where:

- STD = allowable NOx emissions (percent by volume at 15 percent oxygen and on a dry basis).
 Y = manufacturer’s rated heat rate at manufacturer’s rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt-hour.
 F = NOx emission allowance for fuel-bound nitrogen as de-fined in paragraph (a)(3) of this section.

- (3) F shall be defined according to the nitrogen content of the fuel as follows:

Fuel-bound nitrogen (percent by weight)	F (NOx percent by volume)
N≤0.015	0
0.015<N≤0.1	0.04(N)
0.1<N≤0.25	0.004+0.0067(N-0.1)
N>0.25	0.005

Where, N = the nitrogen content of the fuel (percent by weight).

Department requirement: For natural gas, the “F” value shall be assumed to be 0.

{Note: This is required by EPA’s March 12, 1993 determination regarding the use of NOx CEMS. The “Y” value provided by the applicant is approximately 10.0 for natural gas. The equivalent emission standard is 108 ppmvd @ 15% oxygen. The permit standards are more stringent than this requirement.}

- (b) Electric utility stationary gas turbines with a heat input at peak load greater than 107.2 gigajoules per hour (100 million Btu/hour) based on the lower heating value of the fuel fired shall comply with the provisions of paragraph (a)(1) of this section.

Pursuant to 40 CFR 60.333, Standard for Sulfur Dioxide:

On and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, every owner or operator subject to the provision of this subpart shall comply with:

- (b) No owner or operator subject to the provisions of this subpart shall burn in any stationary gas turbine any fuel that contains sulfur in excess of 0.8 percent by weight.

{Note: The permit specifies a much lower fuel sulfur content for natural gas.}

Pursuant to 40 CFR 60.334, Monitoring of Operations:

- (b) The owner or operator of any stationary gas turbine subject to the provisions of this subpart shall monitor sulfur content and nitrogen content of the fuel being fired in the turbine. The frequency of determination of these values shall be as follows:

SECTION IV. APPENDIX GG

NSPS SUBPART GG REQUIREMENTS FOR GAS TURBINES

- (2) If the turbine is supplied its fuel without intermediate bulk storage the values shall be determined and recorded daily. Owners, operators or fuel vendors may develop custom schedules for determination of the values based on the design and operation of the affected facility and the characteristics of the fuel supply. These custom schedules shall be substantiated with data and must be approved by the Administrator before they can be used to comply with paragraph (b) of this section.

Department requirement: The requirement to monitor the nitrogen content of pipeline quality natural gas fired is waived. For purposes of complying with the sulfur content monitoring requirements of this rule, the owner or operator shall obtain a monthly report from the vendor indicating the sulfur content of the natural gas being supplied from the pipeline for each month of operation.

{Note: This is consistent with EPA's custom fuel monitoring policy and guidance from EPA Region 4.}

- (c) For the purpose of reports required under 40 CFR 60.7(c), periods of excess emissions that shall be reported are defined as follows:

- (1) *Nitrogen oxides.* Any one-hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the water-to-fuel ratio determined to demonstrate compliance with 40 CFR 60.332 by the performance test required in § 60.8 or any period during which the fuel-bound nitrogen of the fuel is greater than the maximum nitrogen content allowed by the fuel-bound nitrogen allowance used during the performance test required in § 60.8. Each report shall include the average water-to-fuel ratio, average fuel consumption, ambient conditions, gas turbine load, and nitrogen content of the fuel during the period of excess emissions, and the graphs or figures developed under 40 CFR 60.335(a).

Department requirement: NOx CEMS data shall substitute for the above requirement because NOx monitoring is required to demonstrate compliance with the permit standards. NOx CEMS data shall be used to determine "excess emissions" for purposes of 40 CFR 60.7 subject to the conditions of the permit.

{Note: As required by EPA's March 12, 1993 determination, the NOx monitor shall meet the applicable requirements of 40 CFR 60.13, Appendix B and Appendix F for certifying, maintaining, operating and assuring the quality of the system; shall be capable of calculating NOx emissions concentrations corrected to 15% oxygen; shall have no less than 95% monitor availability in any given calendar quarter; and shall provide a minimum of four data points for each hour and calculate an hourly average. The requirements for the CEMS specified by the specific conditions of this permit satisfy these requirements.}

- (2) *Sulfur dioxide.* Any daily period during which the sulfur content of the fuel being fired in the gas turbine exceeds 0.8 percent.

Pursuant to 40 CFR 60.335, Test Methods and Procedures:

- (a) To compute the nitrogen oxides emissions, the owner or operator shall use analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator to determine the nitrogen content of the fuel being fired.
- (b) In conducting the performance tests required in 40 CFR 60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided for in 40 CFR 60.8(b). Acceptable alternative methods and procedures are given in paragraph (f) of this section.
- (c) The owner or operator shall determine compliance with the nitrogen oxides and sulfur dioxide standards in 40 CFR 60.332 and 60.333(a) as follows:

- (1) The nitrogen oxides emission rate (NOx) shall be computed for each run using the following equation:

$$\text{NOx} = (\text{NOx}_o) (\text{Pr}/\text{Po})^{0.5} e^{19(\text{Ho}-0.00633)} (288^\circ\text{K}/\text{Ta})^{1.53}$$

Where:

NOx = emission rate of NOx at 15 percent O2 and ISO standard ambient conditions, volume percent

NOxo = observed NOx concentration, ppm by volume

Pr = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg

SECTION IV. APPENDIX GG

NSPS SUBPART GG REQUIREMENTS FOR GAS TURBINES

- Po = observed combustor inlet absolute pressure at test, mm Hg
Ho = observed humidity of ambient air, g H₂O/g air
e = transcendental constant, 2.718
Ta = ambient temperature, °K

Department requirement: The owner or operator is not required to have the NO_x monitor continuously correct NO_x emissions concentrations to ISO conditions. However, the owner or operator shall keep records of the data needed to make the correction, and shall make the correction when required by the Department or Administrator.

{Note: This is consistent with guidance from EPA Region 4.}

- (2) The monitoring device of 40 CFR 60.334(a) shall be used to determine the fuel consumption and the water-to-fuel ratio necessary to comply with 40 CFR 60.332 at 30, 50, 75, and 100 percent of peak load or at four points in the normal operating range of the gas turbine, including the minimum point in the range and peak load. All loads shall be corrected to ISO conditions using the appropriate equations supplied by the manufacturer.

Department requirement: The permittee is allowed to conduct initial performance tests at a single load because a NO_x monitor shall be used to demonstrate compliance with the specified NO_x limits.

{Note: This is consistent with guidance from EPA Region 4.}

- (3) Method 20 shall be used to determine the nitrogen oxides, sulfur dioxide, and oxygen concentrations. The span values shall be 300 ppm of nitrogen oxide and 21 percent oxygen. The NO_x emissions shall be determined at each of the load conditions specified in paragraph (c)(2) of this section.

Department requirement: The permittee is allowed to make the initial compliance demonstration for NO_x emissions using certified CEMS data, provided that compliance is based on a minimum of three test runs representing a total of at least three hours of data, and that the CEMS be calibrated in accordance with the procedure in section 6.2.3 of Method 20 following each run. Alternatively, initial compliance may be demonstrated using data collected during the initial relative accuracy test audit (RATA) performed on the NO_x monitor. The span value specified in the permit shall be used instead of that specified in paragraph (c)(3) above.

{Note: These initial compliance demonstration requirements are consistent with guidance from EPA Region 4. The span value is changed in the permit pursuant to Department authority and is consistent with guidance from EPA Region 4.}

- (d) The owner or operator shall determine compliance with the sulfur content standard in 40 CFR 60.333(b) as follows: ASTM D 1072-80, D 3031-81, D 4084-82, or D 3246-81 shall be used for the sulfur content of gaseous fuels (incorporated by reference – see 40 CFR 60.17). The applicable ranges of some ASTM methods mentioned above are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator.

Department requirement: The permit specifies sulfur monitoring methods.

- (e) To meet the requirements of 40 CFR 60.334(b), the owner or operator shall use the methods specified in paragraphs (a) and (d) of this section to determine the nitrogen and sulfur contents of the fuel being burned. The analysis may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency.

{Note: The fuel analysis requirements of the permit meet or exceed the requirements of this rule and will ensure compliance with this rule.}

**SECTION IV. APPENDIX XS
SEMIANNUAL CONTINUOUS MONITOR SYSTEMS REPORT**

{Note: This form is based on 40 CFR 60.7, Subpart A, General Provisions.}

Pollutant (*Circle One*): Nitrogen Oxides (NOx) Carbon Monoxide (CO)
 Reporting period dates: From _____ to _____
 Company: _____
 Emission Limitation: _____
 Address: _____
 Monitor Manufacturer and Model No.: _____
 Date of Latest CMS Certification or Audit: _____
 Process Units Description: _____
 Total source operating time in reporting period ^a: _____

Emission data summary ^a		CMS performance summary ^a	
1. Duration of Excess Emissions In Reporting Period Due To:		1. CMS downtime in reporting period due to:	
a. Startup/Shutdown		a. Monitor Equipment Malfunctions	
b. Control Equipment Problems		b. Non-Monitor Equipment Malfunctions	
c. Process Problems		c. Quality Assurance Calibration	
d. Other Known Causes		d. Other Known Causes	
e. Unknown Causes		e. Unknown Causes	
2. Total Duration of Excess Emissions		2. Total CMS Downtime	
3. $\frac{[\text{Total Duration of Excess Emissions}]}{[\text{Total Source Operating Time}]} \times (100\%)$ ^b		3. $\frac{[\text{Total CMS Downtime}]}{[\text{Total source operating time}]} \times (100\%)$	

^a For opacity, record all times in minutes. For gases, record all times in hours.

^b For the reporting period: If the total duration of excess emissions is 1 percent or greater of the total operating time or the total CMS downtime is 5 percent or greater of the total operating time, both the summary report form and the excess emission report described in 40 CFR 60.7(c) shall be submitted.

Note: On a separate page, describe any changes to CMS, process or controls during last 6 months. For each quarter, summarize the ammonia injection rates over various loads and the data excluded due to startups, shutdowns, and malfunctions.

I certify that the information contained in this report is true, accurate, and complete.

Name

Title

Signature

Date