



May 02, 2008

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MAY 06 2008

Mr. Al Linero, P.E.
Florida Department of Environmental Protection
South Permitting Section
Division of Air Resource Management
2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400

BUREAU OF AIR REGULATION

RE: **Request for PSD Air Construction Permit Revisions**
DEP File No. 1030011-010-AC and PSD-FL-381
P.L. Bartow Power Plant Repowering Project

Dear Mr. Linero,

Based on discussions between Progress Energy Florida (PEF) and the Department on April 9, 2008, this letter serves to transmit our air application package for revisions to the above-referenced permit. PEF understands that the revisions requested are administrative in nature and could likely be accomplished by issuance of a letter amendment to the current permit. There are other issues that PEF would like to address, such as the designation of the Bartow Plant site as a major source of hazardous air pollutants; however, the timing would be more appropriate when initial compliance testing is completed and the air construction permit conditions are incorporated into a revised Title V operating permit.

Accordingly, attached are the requested language revisions, as well as a professional engineer certification form and a certification form completed by the facility's responsible official. If you should have any questions regarding this request, please contact either Scott Osbourn, P.E. at (813) 287-1717 or me at (727) 820-5962. Thank you in advance for your timely consideration of this permit revision request.

Sincerely,

A handwritten signature in cursive script that reads "Chris Bradley".

Chris Bradley
Senior Environmental Specialist

Enclosure

Cc: Scott Osbourn, P.E., Golder Associates



Department of Environmental Protection

Division of Air Resource Management APPLICATION FOR AIR PERMIT - LONG FORM

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I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

BUREAU OF AIR REGULATION

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: Florida Power Corporation dba Progress Energy Florida, Inc.	
2. Site Name: Bartow Plant	
3. Facility Identification Number: 1030011	
4. Facility Location... Street Address or Other Locator: 1601 Weedon Island Drive City: St. Petersburg County: Pinellas Zip Code: 33702	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Application Contact

1. Application Contact Name: Chris Bradley, Senior Environmental Specialist	
2. Application Contact Mailing Address... Organization/Firm: Progress Energy Florida, Inc. Street Address: PO Box 14042, MAC PEF-903 City: St. Petersburg State: FL Zip Code: 33701	
3. Application Contact Telephone Numbers... Telephone: (727) 820-5962 ext. Fax: (727) 820-5229	
4. Application Contact E-mail Address: chris.bradley@pgnmail.com	

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 5/6/08	3. PSD Number (if applicable):
2. Project Number(s): 1030011-012-AL	4. Siting Number (if applicable):

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

- Air construction permit.
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

- Initial Title V air operation permit.
- Title V air operation permit revision.
- Title V air operation permit renewal.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

**Air Construction Permit and Revised/Renewal Title V Air Operation Permit
(Concurrent Processing)**

- Air construction permit and Title V permit revision, incorporating the proposed project.
- Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

- I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

This application is submitted to request administrative revisions to the current Bartow Repowering air construction permit (Permit No. 1030011-010-AC). The revisions include the removal of an "interim operating mode" that was previously requested, as well as other minor permit hygiene issues. See attached requested permit language (i.e., strikethrough/underline format).

Scope of Application

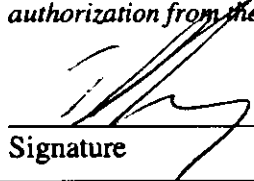
Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
	Simple- and Combined Cycle F-Class Combustion Turbine with HRSG Duct Firing	AC1A	
	Simple- and Combined Cycle F-Class Combustion Turbine with HRSG Duct Firing	AC1A	
	Simple- and Combined Cycle F-Class Combustion Turbine with HRSG Duct Firing	AC1A	
	Simple- and Combined Cycle F-Class Combustion Turbine with HRSG Duct Firing	AC1A	
	Auxiliary Boiler	AC1A	
	Fuel Gas Heaters	AC1A	

Application Processing Fee

Check one: Attached - Amount: _____ Not Applicable

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : Thomas Lawery, Plant Manager
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Progress Energy Florida, Inc. Street Address: 1601 Weedon Island Drive City: St. Petersburg State: FL Zip Code: 33702
3. Owner/Authorized Representative Telephone Numbers... Telephone: (727) 827-6111 ext. Fax: (727) 827-6102
4. Owner/Authorized Representative E-mail Address: <u>Thomas.Lawery@pgnmail.com</u>
5. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.</i>  _____ Signature <u>5/2/08</u> _____ Date

Application Responsible Official Certification

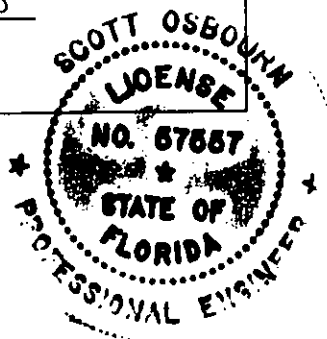
Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:			
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):			
<input type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.			
<input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively.			
<input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.			
<input type="checkbox"/> The designated representative at an Acid Rain source, CAIR source, or Hg Budget source.			
3. Application Responsible Official Mailing Address...			
Organization/Firm:			
Street Address:			
City:		State:	Zip Code:
4. Application Responsible Official Telephone Numbers...			
Telephone: ()		ext.	Fax: ()
5. Application Responsible Official E-mail Address:			
6. Application Responsible Official Certification:			
<p>I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.</p>			
_____		_____	
Signature		Date	

Professional Engineer Certification

1. Professional Engineer Name: Scott H. Osbourn Registration Number: 57557
2. Professional Engineer Mailing Address... Organization/Firm: Golder Associates Inc.** Street Address: 5100 West Lemon Street, Suite 114 City: Tampa State: FL Zip Code: 33609
3. Professional Engineer Telephone Numbers... Telephone: (813) 287-1717 ext. 53304 Fax: (813) 287-1716
4. Professional Engineer E-mail Address: sosbourn@golder.com
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> (1) <i>To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> (2) <i>To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> (3) <i>If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/> , if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> (4) <i>If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/> , if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/> , if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> (5) <i>If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/> , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i> Signature: <u><i>Scott H. Osbourn</i></u> Date: <u>4/30/08</u> (seal)

* Attach any exception to certification statement.
**Board of Professional Engineers Certificate of Authorization #00001670.



SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Combined Cycle Unit 4 and Simple Cycle Unit 5 (EU-038, 039, 040, 041 and 042)

This section of the permit addresses the following emissions unit.

E.U. ID	Emissions Units Comprising Combined Cycle Unit 4 and Simple Cycle Unit 5
038	Unit 4A – One 215 MW (ISO) Combustion Turbine with Duct-fired Heat Recovery Steam Generator
039	Unit 4B – One 215 MW (ISO) Combustion Turbine with Duct-fired Heat Recovery Steam Generator
040	Unit 4C – One 215 MW (ISO) Combustion Turbine with Duct-fired Heat Recovery Steam Generator
041	Unit 4D – One 215 MW (ISO) Combustion Turbine with Duct-fired Heat Recovery Steam Generator
042	Unit 5 – One 195 MW (ISO) Combustion Turbine

APPLICABLE STANDARDS AND REGULATIONS

1. **PSD Applicability and BACT Determinations:** The Rules for the Prevention of Significant Deterioration (PSD) of Air Quality apply to this project and Best Available Control Technology (BACT) determinations were made for carbon monoxide (CO) and volatile organic compounds (VOC).

See Appendix BD of this permit for a summary of the final BACT determinations.
[Rules 62-210.200 (Definitions) and 62-212.400, F.A.C.]

{Permitting Note: The repowering project does not trigger PSD or require a BACT determination for NO_x, SO₂, sulfuric acid mist or PM/PM₁₀ because emissions reductions from the permanent shutdown of existing fossil fueled steam generating Units 1, 2 and 3 will exceed emissions increases from the project by values greater than the respective significant emissions rates.}

2. **NSPS Requirements:** Each CT shall comply with all applicable requirements of 40 CFR 60, listed below, 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
 - 40 CFR 60.19, General Notification and Reporting Requirements
 - b. **Subpart KKKK - Standards of Performance for Stationary Combustion Turbines:** These provisions were finalized on July 6, 2006 and include requirements applicable to duct burners located in HRSGs.
3. **NESHAP Requirements:** The CTs are subject to 40 CFR 63, Subpart A - Identification of General Provisions and 40 CFR 63, Subpart YYYY - National Emissions Standard for Hazardous Air Pollutants for Stationary Combustion Turbines.

EQUIPMENT AND CONTROL TECHNOLOGY

4. **Combustion Turbines (CTs):** The permittee is authorized to install, tune, operate, and maintain five Model SGT6-5000F CT-electrical generator sets. Each CT shall include an automated control system and have dual-fuel capability. Ancillary equipment includes an inlet air filtration system, evaporative inlet air-cooling system and a nominal 120 foot exhaust stack for simple cycle operation.
[Application No. 1030011-010-AC; Design]
5. **Heat Recovery Steam Generators (HRSGs):** The permittee is authorized to install, operate, and maintain four new duct-fired HRSGs that recover exhaust heat energy from four of the CTs and deliver steam to a nominal 420 MW steam turbine electrical generator. Each HRSG shall be equipped with a nominal 120 foot

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Combined Cycle Unit 4 and Simple Cycle Unit 5 (EU-038, 039, 040, 041 and 042)

exhaust stack for combined cycle operation. [Application No. 1030011-010-AC; Design]

6. **DLN Combustion:** The permittee shall install, operate and maintain Dry Low NO_x (DLN) systems to control NO_x emissions from each CT when firing natural gas. Prior to the initial emissions performance tests required for each CT, the DLN combustors and automated combustion turbine control system shall be tuned without a selective catalytic reduction (SCR) system in operation to achieve the permitted CO, VOC and NO_x levels for simple cycle operation. For VOCs, while the intent is to tune for compliance with the permit limit, emissions of CO are a representative surrogate. Therefore, VOC monitoring is not required during the tuning process. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations or industry standards.
[Application No. 1030011-010-AC; Design]
7. **Water Injection:** The permittee shall install, operate, and maintain a water injection system to reduce NO_x emissions from each CT when firing distillate fuel oil. Prior to the initial emissions performance tests, the water injection system shall be tuned without an SCR system in operation to achieve the NO_x value for simple cycle operation. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations or industry standards. [Application No. 1030011-010-AC; Design]
8. **Selective Catalytic Reduction Systems:** The permittee is authorized to install, tune, operate, and maintain a selective catalytic reduction (SCR) system within each HRSG to control NO_x emissions from each of the four CT/Duct-fired HRSGs comprising the combined cycle unit. The SCR system consists of an ammonia (NH₃) injection grid, catalyst, ammonia storage, monitoring and control system, electrical, piping and other ancillary equipment. The SCR system shall be designed, constructed and operated to achieve the permitted levels for NO_x and NH₃ emissions. Operation of the SCR systems is not required when the NO_x emission limits can be met without their use.
[Application No. 1030011-010-AC; Design, and 62-210.650 (Circumvention), F.A.C.]
9. **Oxidation Catalyst Systems:** The permittee shall design and build the project to facilitate future installation of an oxidation catalyst system within each HRSG to control CO and VOC emissions from each of the four CTs/Duct-fired HRSGs comprising the combined cycle unit. The permittee may install oxidation catalyst during project construction or, after notifying the Department, at a future date as described in Specific Condition 18.f. [Rule 62-4.070(3) F.A.C.]
10. **Ammonia Storage:** In accordance with 40 CFR 60.130, the storage of ammonia shall comply with all applicable requirements of the Chemical Accident Prevention Provisions in 40 CFR 68.
[Rule 62-4.070 F.A.C.]

PERFORMANCE RESTRICTIONS

11. **Authorized Fuels:** Each CT shall fire only natural gas and distillate oil. The maximum sulfur content of natural gas shall not exceed 2.0 grains of sulfur per 100 standard cubic feet of natural gas. The maximum sulfur content of distillate oil shall not exceed 0.05% by weight.
[Design; Rules 62-4.070 and 62-210.200 (Definitions – PTE), F.A.C.; 40 CFR 60, Subpart KKKK]
12. **Permitted Capacity - Combustion Turbines:** The nominal heat input rate excluding steam for power augmentation to each CT is 1,972 MMBtu per hour when firing natural gas and 1,876 MMBtu per hour when firing distillate fuel oil based on a compressor inlet air temperature of 59° F, the higher heating value (HHV) of each fuel, and 100% load. Heat input rates will vary depending upon CT characteristics, ambient conditions, alternate methods of operation, and evaporative cooling. The permittee shall provide 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. [Rule 62-210.200(Definitions - PTE), F.A.C.]

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Combined Cycle Unit 4 and Simple Cycle Unit 5 (EU-038, 039, 040, 041 and 042)

13. Permitted Capacity - Duct Burners: The total nominal heat input rate to the duct burners (DBs) located within each HRSG is 500 MMBtu per hour based on the higher heating value (HHV) of natural gas. Only natural gas shall be fired in the duct burners. [Rule 62-210.200(Definitions - PTE), F.A.C.]

14. ~~Temporary Simple Cycle Operation of Two CTs Prior to Permanent Shutdown of Units 1, 2 and 3~~: The permittee may select any two of the five new CTs to be operated as simple cycle units prior to shutdown of Units 1, 2 and 3. The restrictions included in this condition apply only to those CTs chosen, and only during the described period. Once selected, only those CTs chosen may be operated prior to shutdown of Units 1, 2 and 3 in accordance with the following restrictions:

a. ~~Restriction on SC Operation~~:

- ~~• The combined operation of the two CTs shall not exceed 1,100 hours.~~
- ~~• A NO_x CEMS shall be installed and operating in each stack prior to startup of the CTs in order to collect and record data for the purpose of demonstrating compliance with this requirement. Notwithstanding the relative accuracy test audit (RATA) grace period described in 40 CFR 75 Appendix B, the NO_x CEMS shall be fully certified in accordance with the requirements of 40 CFR 75 (including a RATA), within 30 operating days but not later than 60 calendar days after startup of the CTs.~~
- ~~• Total emissions of NO_x from the two CTs shall not exceed 39 tons during all operation including startups, shutdowns and malfunctions as measured and recorded by the required NO_x continuous emissions monitoring systems (CEMS) during the temporary period. Data recorded before and after CEMS certification shall be included in the calculation.~~
- ~~• Each CT shall be stack tested to demonstrate initial compliance with the applicable Subpart KKKK NO_x emission standard for each fuel to be fired. The tests shall be conducted within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after the initial startup of each unit. Data collected during the above described RATA may be used to satisfy this 60 day test requirement provided all requirements of 40 CFR 60.8 and Subpart KKKK are met.~~
- ~~• The BACT emissions standards of specific condition 18 do not apply to these CTs prior to Unit 1, 2 and 3 shutdown. Following shutdown of Units 1, 2 and 3 all restrictions of this permit apply, including the BACT limits of specific condition 18.~~

b. ~~Restriction on CC Operation~~: No combined cycle operation of any unit is allowed prior to permanent shutdown of Units 1, 2, and 3.

e. ~~Monthly Operations Summary~~: By the 10th calendar day of each month, the permittee shall record the following in a written or electronic log for each CT for the previous month of operation: fuel consumption, hours of operation, NO_x emissions in total tons for the month, and NO_x emissions in total tons for the described restricted period of operation. Information recorded and stored as an electronic file shall be available for inspection and printing within at least three days of a request by the Department. The fuel consumption shall be monitored in accordance with the provisions of 40 CFR 75 Appendix D.

{Permitting note: The limitation on total NO_x emissions and adherence to the emissions standards in Specific Conditions 18, 19 and 20 along with the compliance and recordkeeping requirements of this condition will effectively ensure that emissions increases of all PSD pollutants from the selected CTs operated in SC mode prior to Unit 1, 2 and 3 shutdown will be less than their respective Significant Emissions Rates per Rule 62-210.200 (Definitions - SER), F.A.C.}

{Rules 62-4.070(3), 62-210.200(PTE) and 62-212.400(12)(PSD Avoidance), F.A.C.; 40 CFR 60.8, and 40 CFR Subpart KKKK}

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Combined Cycle Unit 4 and Simple Cycle Unit 5 (EU-038, 039, 040, 041 and 042)

- ~~15.14. Restricted Operation:~~ The permittee shall not exceed the following parameters following shutdown of Units 1, 2 and 3:
- The hours of operation of the CTs are not limited (8,760 hours per year).
 - Distillate oil firing is limited to ~~1,000 hours per CT (i.e. 5,000 hours total aggregate for all five CTs) (based on an average of 1,000 hours per CT)~~ during any consecutive 12-month period.
 - Operation of the DBs is limited to ~~2,434 hours per DB (i.e. 9,736 hours aggregate for four DBs) (based on an average of 2,434 hours per DB)~~ during any consecutive 12-month period.
 - Power (steam) augmentation shall be limited to ~~6,752 hours aggregate for four CTs (based on an average of 1,688 hours per CT)~~ during any consecutive 12-month period.
 - Other than startup, shutdown, fuel switching or documented malfunction the CTs shall operate above 70% load during simple cycle operation, or the lowest minimum load where compliance is demonstrated during initial compliance testing.
- ~~16.15. Methods of Operation:~~ Subject to the restrictions and requirements of this permit, the CTs may be commercially available for dispatch operate under the following methods of operation after shutdown of Units 1, 2 and 3
- Simple Cycle (SC) Operation:* All five CTs may operate in simple cycle (SC) mode whereby the turbine exhaust gas (TEG) exits through or is diverted to a stack unassociated with a DB-fired HRSG. This method of operation will be an infrequent occurrence for the four CTs that will typically operate in combined cycle mode as described.
 - Combined Cycle (CC) Operation:* The four CTs associated with combined cycle Unit 4 may operate in combined cycle (CC) mode whereby the TEG is exhausted to their respective duct-fired HRSGs for energy recovery in order to raise steam to drive the single steam turbine-electrical generator (STG) subject to the restrictions of this permit.
 - Inlet Conditioning:* In accordance with the manufacturer's recommendations and appropriate ambient conditions, the evaporative cooling systems may be operated to reduce the compressor inlet air temperature and provide additional direct, shaft-driven electrical power.
 - Duct Firing:* The DB within each HRSG may be fired with natural gas to reheat the TEG in order to provide additional steam to the STG or the CTs for power augmentation.
 - Power augmentation:* Power (Steam) Augmentation (PA): Steam for PA is taken from the HRSG and is introduced into the CT compressor discharge, thus increasing the power produced by the expander portion of the turbine.

[Application; Rules 62-210.200(PTE) and 62-212.400(BACT), F.A.C.]

EMISSIONS STANDARDS

- ~~17.16. New Source Performance Standards for NO_x:~~ Emissions of NO_x shall not exceed the following emission limits for each CT or CT/DB-fired HRSG determined pursuant to 40 CFR 60, Subpart KKKK.

Pollutant	Fuel	Method of Operation ^a	CEMS ^b Rolling Average ppmvd (uncorrected)
NO _x ^c	Oil	CT (SC)	42 on 4-hour basis
		CT (CC)	42 on 30-operating days basis
	Gas	CT (SC)	15 on 4-hour basis
		CT (CC)	15 on 30-operating days basis

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Combined Cycle Unit 4 and Simple Cycle Unit 5 (EU-038, 039, 040, 041 and 042)

		CT & DB	
--	--	---------	--

- a. CT (SC) means operation of CT in simple cycle mode. CT (CC) means operation of CT in combined cycle without use of the DB. CT & DB means operation in combined cycle mode and using the DB.
- b. A CEMS for NO_x shall be installed on the CT stacks and on the HRSG stacks. Correction to 15% O₂ is required, not allowed consistent with the provisions of 40 CFR 60, Subpart KKKK.
- c. Compliance with the continuous NO_x standards shall be demonstrated based on data collected by the required CEMS.

Refer to Appendix KKKK of this permit for the full NSPS requirements. [40 CFR 60, Subpart KKKK]

18.17. Best Available Control Technology (BACT) Emissions Standards for CO and VOC: Emissions of VOC and CO shall not exceed the following emission limits for each CT or CT/DB-fired HRSG.

Pollutant	Fuel	Method of Operation ^a	Stack Test, 3-Run Average		CEMS ^c Block Average
			ppmvd @ 15% O ₂	lb/hr ^b	ppmvd @ 15% O ₂
<i>Unit 4 HRSG Stacks</i>					
CO	Oil	CT	8.0	40.4	8.0, 24-hr ^{d,f} 6, 12-month ^f
	Gas	CT	4.1	20.8	
		CT & DB	7.6	38.3	
VOC ^{e,g}	Oil	CT	2.8	7.6	Not Applicable
	Gas	CT	1.2	3.0	
		CT & DB	1.5	3.8	
<i>Unit 5 CT and Unit 4 Bypass Stacks</i>					
CO	Oil	CT	8.0	40.4	Not Applicable
	Gas	CT	4.1	20.8	
VOC ^e	Oil	CT	2.8	7.6	Not Applicable
	Gas	CT	1.2	3.0	

- a. CT means operation of a combustion turbine (CT) in simple cycle or in combined cycle without use of the duct burner (DB). CT & DB means operation in combined cycle mode and using the DB.
- b. The mass emission rate standards are based on a turbine inlet condition of 59° F and may be adjusted to actual test conditions in accordance with the performance curves and/or equations on file with the Department.
- c. CEMS for CO are required only on the HRSG stacks. Other than startup, shutdown, fuel switching or documented malfunction the CT shall operate above 70% load, or the lowest load at which compliance is demonstrated during initial testing, load during simple cycle operation.
- d. Compliance with the continuous 24-hour CO standards shall be demonstrated based on data collected by the required CEMS on the HRSG stacks. The initial and annual EPA Method 10 tests associated with the certification of the CEMS instruments may also be used to demonstrate compliance with the individual standards for natural gas, fuel oil, or duct burner modes. Separate CO tests shall be conducted under simple cycle mode on the CT stacks.
- e. Compliance with the VOC standards shall be demonstrated by conducting tests in accordance with EPA Method 25A on the HRSG stacks and, under simple cycle mode, on the CT stacks. Optionally, EPA Method 18 may also be performed to deduct emissions of methane and ethane. The emission standards are based on VOC measured as methane.

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Combined Cycle Unit 4 and Simple Cycle Unit 5 (EU-038, 039, 040, 041 and 042)

- f. ~~Rolling Averages.~~ Enforcement discretion may be exercised for up to 12 months with respect to the ~~8 ppmvd and the 6 ppmvd @15% O₂ limits~~ for any CT/Duct-fired HRSG upon notification by the permittee of intent to install oxidation catalyst. The permittee shall have 12 months to complete the oxidation catalyst installation. From time of notification to installation of the catalyst all partial or complete calendar months shall be excluded from the 12-month rolling average.
- g. Compliance with the CO CEMS based limits shall be deemed as compliance with the VOC limit.
[Rule 62-210.200(Definitions – BACT) and 62-212.400 F.A.C.]

~~19.18.~~ New Source Performance Standard for SO₂: Pursuant to §60.4330(a)(2), SO₂ emissions are limited in NSPS Subpart KKKK by a prohibition on the firing of any fuels that contain total potential sulfur emissions in excess of 0.060 lb SO₂/MMBtu heat input. Meeting the fuel sulfur limits in Condition 19.a of this permit will serve to demonstrate compliance with the Subpart KKKK standard for SO₂. Refer to Appendix KKKK of this permit for the full NSPS requirements. [40 CFR 60, Subpart KKKK]

~~20.19.~~ Measures to Limit Particulate Emissions (PM/PM₁₀/Fine Particulate Matter): The following measures and limitations, in conjunction with decreases from other units, effectively limit combined annual PM/PM₁₀ emissions to a level that ensures net emissions increases are well below the significant emission rate at which PSD applies and a subsequent BACT determination is required. These measures also minimize fine particulate emissions and formation:

- a. *Fuel Sulfur Limits*: The sulfur concentration shall be limited to 2 grains per 100 standard cubic feet of natural gas. The sulfur concentration in the distillate fuel oil used shall be limited to 0.05 percent. Compliance with the fuel specifications shall be demonstrated by keeping records of the fuel sulfur content.
- b. *Visible Emissions*: Visible emissions shall not exceed 10 percent opacity for each 6-minute block average. Compliance with the visible emissions standard shall be demonstrated by conducting tests in accordance with EPA Method 9.23
- c. *Ammonia Emissions (Slip) Limits*: Ammonia emissions shall be limited to 5 ppmvd @15% O₂. Compliance with the ammonia slip standard shall be demonstrated by conducting tests in accordance with EPA Methods TM-027 or 320.

[62-212.400(12)(PSD Avoidance)]

EXCESS EMISSIONS

[Permitting Note: The following conditions apply only to the SIP-based emissions standards specified in Condition No. 18 of this section. Rule 62-210.700, F.A.C. (Excess Emissions) cannot vary or supersede any federal provision of the NSPS or Acid Rain programs.]

~~21.20.~~ Operating Procedures: The Best Available Control Technology (BACT) determinations established by this permit rely on "good operating practices" to reduce emissions. Therefore, all operators and supervisors shall be properly trained to operate and maintain the CTs, HRSGs, and pollution control systems in accordance with the guidelines and procedures established by each manufacturer. The training shall include good operating practices as well as methods of minimizing excess emissions.
[Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

~~22.21.~~ Alternate Visible Emissions Standard: Visible emissions due to startups, shutdowns, and malfunctions shall not exceed 10% opacity except for up to ten, 6-minute averaging periods during a calendar day, which shall not exceed 20% opacity. [Rule 62-212.400(BACT), F.A.C.]

~~23.22.~~ Definitions

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Combined Cycle Unit 4 and Simple Cycle Unit 5 (EU-038, 039, 040, 041 and 042)

- a. *Startup* is defined 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. [Rule 62-210.200(245), F.A.C.]
- b. *Shutdown* is the cessation of the operation of an emissions unit for any purpose. [Rule 62-210.200(230), F.A.C.]
- c. *Malfunction* is defined 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(159), F.A.C.]

24.23. 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 any compliance determinations based on CEMS data. [Rule 62-210.700(4), F.A.C.]

25.24. Allowable Data Exclusions: As per the procedures in this condition, limited amounts of CO CEMS emissions data may be excluded from the corresponding SIP-based compliance demonstration, provided that best operational practices to minimize emissions are adhered to and the duration of data excluded is minimized. As provided by the authority in Rule 62-210.700(5), F.A.C., these conditions replace the provisions in Rule 62-210.700(1), F.A.C. For each CT/HRSG system, excess emissions resulting from startup, shutdown, and documented malfunctions shall not exceed two hours in any 24-hour period except for the specific cases listed below. A "documented malfunction" means a malfunction that is documented within one working day of detection by contacting the Compliance Authority by telephone, facsimile transmittal, or electronic mail.

- a. *Steam Turbine/HRSG System Cold Startup:* For cold startup of the steam turbine system, up to 8 hours of excess emissions from any CT/HRSG system may be excluded in any 24-hour period. A cold "startup of the steam turbine system" is defined as startup of the 4-on-1 combined cycle system following a shutdown of the steam turbine lasting at least 48 hours.

[Permitting Note: During a cold startup of the steam turbine system, each CT/HRSG system is sequentially brought on line at low load to gradually increase the temperature of the steam-electrical turbine and prevent thermal metal fatigue. Note that shutdowns and documented malfunctions are separately regulated in accordance with the requirements of this condition.]

- b. *Shutdown Combined Cycle Operation:* For shutdown of the combined cycle operation, up to 3 hours in any 24-hour period of excess emissions from any CT/HRSG system can be excluded.
- c. *CT/HRSG System Cold Startup:* For cold startup of a CT/HRSG system, up to 4 hours in any 24-hour period can be excluded. "Cold startup of a CT/HRSG system" is defined as a startup after the pressure in the high-pressure (HP) steam drum falls below 450 psig for at least a one-hour period.
- ~~d. *Simple Cycle CT Startup:* For startup of a CT for the purpose of operation in simple cycle mode, up to 1 hour in any 24-hour period of excess emissions can be excluded.~~
- ~~e-d. *Fuel Switching:* For fuel switching, up to 2 hours in a 24-hour period can be excluded.~~

26.25. DLN Tuning: CEMS data collected during initial or other major DLN tuning sessions shall be excluded from the CEMS compliance demonstration provided the tuning session is performed in accordance with the manufacturer's specifications. A "major tuning session" would occur after completion of initial construction, a combustor change-out, a major repair or maintenance to a combustor, or other similar circumstances. Prior to performing any major tuning session, the permittee shall provide the Compliance Authority with an advance notice of at least 7 days that details the activity and proposed tuning schedule. The notice may be by telephone, facsimile transmittal, or electronic mail.

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Combined Cycle Unit 4 and Simple Cycle Unit 5 (EU-038, 039, 040, 041 and 042)

EMISSIONS PERFORMANCE TESTING

27-26. Test Methods: Any required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
CTM-027	Procedure for Collection and Analysis of Ammonia in Stationary Source. {Notes: This is an EPA conditional test method.} The minimum detection limit shall be 1 ppm.
320	Measurement of Vapor Phase Organic and Inorganic Emissions by Extractive Fourier Transform Infrared (FTIR) Spectroscopy
7E	Determination of Nitrogen Oxide Emissions from Stationary Sources
9	Visual Determination of the Opacity of Emissions from Stationary Sources
10	Determination of Carbon Monoxide Emissions from Stationary Sources {Notes: The method shall be based on a continuous sampling train.}
18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography {Note: EPA Method 18 may be used (optional) concurrently with EPA Method 25A to deduct emissions of methane and ethane from the measured VOC emissions.}
20	Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines
25A	Determination of Volatile Organic Concentrations

No other methods may be used unless prior written approval is received from the Department. [Rules 62-204.800, F.A.C.; 40 CFR 60, Appendix A]

28-27. Initial Compliance Determinations: Each CT shall be stack tested to demonstrate initial compliance with the emission standards for CO, NO_x, VOC, visible emissions, and ammonia slip. The tests shall be conducted within 60 days after achieving the maximum production rate at which the unit will be operated, but not later than 180 days after the initial startup of each unit configuration. Each unit shall be tested when firing natural gas, when using the duct burners and when firing distillate fuel oil. Reference method data collected during the required Relative Accuracy Test Audits (RATAs) may be used to demonstrate compliance with the initial CO and NO_x compliance tests. With appropriate flow measurements (or fuel measurements and approved F-factors), CEMS data may be used to demonstrate compliance with the CO and VOC mass rate emissions standards. CO and NO_x emissions recorded by the CEMS shall also be reported for each run during tests for visible emissions, VOC and ammonia slip. The Department may require the permittee to conduct additional tests after major replacement or major repair of any air pollution control equipment, such as the SCR catalyst, oxidation catalyst, DLN combustors, etc. [Rule 62-297.310(7)(a)1, F.A.C. and 40 CFR 60.8]

29-28. Continuous Compliance: The permittee shall demonstrate continuous compliance with the 24-hour and 12-month CO emission standards, and the NO_x emissions standards based on data collected by the certified CEMS. Within 45 days of conducting any RATA on a CEMS, the permittee shall submit a report to the Compliance Authority summarizing results of the RATA. Compliance with the CO emission standards also serves as an indicator of efficient fuel combustion and oxidation catalyst operation, which reduces emissions of particulate matter and volatile organic compounds. [Rule 62-212.400 (BACT), F.A.C.]

30-29. Annual Compliance Tests: During each federal fiscal year (October 1st to September 30th), each CT shall be tested to demonstrate compliance with the emission standards for visible emissions. CO emissions data collected during the required continuous monitor Relative Accuracy Test Audits (RATAs) may be used to demonstrate compliance with the CO standards. Annual testing to determine the ammonia slip shall be

SECTION III. EMISSIONS UNIT SPECIFIC CONDITIONS

A. Combined Cycle Unit 4 and Simple Cycle Unit 5 (EU-038, 039, 040, 041 and 042)

conducted while firing the primary fuel. NO_x emissions recorded by the CEMS shall be reported for each ammonia slip test run.

{Permitting Note: After initial compliance with the VOC standards is demonstrated, annual compliance tests for VOC-emissions are not required. Compliance with the continuously monitored CO standards shall indicate efficient combustion and low VOC emissions. The Department retains the right to require VOC testing for the reasons such as exceedance of the CO limit or those given in Appendix SC, Special Compliance Tests.}

[Rules 62-212.400, 62-210.200 (243) (BACT), 62-4.070 (3) and 62-297.310(7)(a)4, F.A.C.]

CONTINUOUS MONITORING REQUIREMENTS

~~31-30.~~ **CEM Systems:** The permittee shall install, calibrate, maintain, and operate continuous emission monitoring systems (CEMS) to measure and record the emissions of CO from the HRSG stacks and NO_x from all stacks in a manner sufficient to demonstrate continuous compliance with the CEMS emission standards of this section. Each monitoring system shall be installed, calibrated, and properly functioning prior to the initial performance tests. Within one working day of discovering emissions in excess of a CO or NO_x standard (and subject to the specified averaging period), the permittee shall notify the Compliance Authority.

- a. **CO Monitors.** The CO monitors shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 and/or 4A within 60 calendar days of achieving permitted capacity as defined in Rule 62-297.310(2), F.A.C., but no later than 180 calendar days after initial startup. Quality assurance procedures 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 semiannually to the Compliance Authority. The RATA tests required for the CO monitor shall be performed using EPA Method 10 in Appendix A of 40 CFR 60, ~~and shall be based on a continuous sampling train.~~ The CO monitor span values shall be set appropriately considering the allowable methods of operation and corresponding emission standards.
- b. **NO_x Monitors.** Each NO_x monitor shall be certified, operated, and maintained in accordance with the requirements of 40 CFR 75. Record keeping and reporting shall be conducted pursuant to Subparts F and G in 40 CFR 75. The RATA tests required for the NO_x monitor shall be performed using EPA Method ~~20 or~~ 7E in Appendix A of 40 CFR 60.
- c. **Diluent Monitors.** The oxygen (O₂) or carbon dioxide (CO₂) content of the flue gas shall be monitored at the locations where NO_x and CO are monitored to correct the measured emissions rates to 15% oxygen. If a CO₂ monitor is installed, the oxygen content of the flue gas shall be calculated using F-factors that are appropriate for the fuel fired. Each monitor shall comply with the performance and quality assurance requirements of 40 CFR 75.

~~32-31.~~ **CEM Data Requirements:**

- **Data Collection:** Emissions shall be monitored and recorded at all times including startup, operation, shutdown, and malfunction except for continuous monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments. The CEMS shall be designed and operated to sample, analyze, and record data evenly spaced over an hour. If the CEMS measures concentration on a wet basis, the CEM system 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, the owner or operator may develop through manual stack test measurements a curve of moisture contents in the exhaust gas versus load for each allowable fuel, and use these typical values in an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). Final results of the CEMS shall be expressed as ppmvd of NO_x and CO corrected to 15% oxygen, ~~and as ppmvd of NO_x (uncorrected).~~ The CEMS shall be used to demonstrate compliance with the CEMS emission standards