



June 17, 2007

Florida Department of Environmental Protection
Division of Air Resource Management
2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400

RECEIVED

JUN 20 2008

BUREAU OF AIR REGULATION

Attention: Mr. A. A. Linero

RE: Response to request for Additional Information
Bartow Power Plant Repowering Project
Facility ID No: 1030011

Dear Mr. Linero:

This letter is in response to your request for additional information (RAI) regarding the requested permit revisions for the Bartow Power Plant Repowering Project submitted on May 6, 2008. Specifically, the Department has requested a rationale for each of the requested permit revisions. For reference, the requested revised permit language is included as an attachment to this letter response.

Section III.A - Table:

Addition of "and Simple Cycle Unit 5" - To be consistent with the content of the table that includes Unit 5 - one 195 MW (ISO) Combustion Turbine in addition to Units 4A, 4B, 4C and 4D.

Condition No. 6.

Addition of "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." This change is to address the inherent difficulty of continuously monitoring for VOC while tuning. Continuously monitoring for CO while tuning the combustion turbine is less expensive and just as accurate. In addition, CO has generally been an acceptable surrogate for VOC. As required by the permit, Progress Energy will conduct compliance testing for VOCs after the tuning is completed.

Condition No. 14.

The facility no longer intends to operate in the identified mode; i.e., "Temporary Simple Cycle Operation of Two CTs Prior to Permanent Shutdown of Units 1, 2 and 3". Therefore, in order to eliminate any ambiguity in interpretation by the compliance authority regarding any part of this condition, Progress Energy requests that this condition be eliminated.

Condition No. 15:

Based on conversations with the DARM Permitting Staff, the intent of this condition was to present the number of operational hours as an aggregate total and was not intended to restrict operational flexibility. Therefore, Progress Energy requests that Condition 15.b, c & d be revised to specifically note the hours are intended to be an aggregate so as to avoid ambiguity and to provide the maximum operational flexibility to the facility.

Condition No. 15.e:

Progress Energy believes that if the combustion turbines can demonstrate compliance with applicable emission standards by conducting an initial test while operating at less than 70 percent load, thereby providing reasonable assurance, that the facility should not be limited in its operational flexibility. Therefore, Progress Energy respectfully requests the addition of the proposed language.

Condition No. 16:

Progress Energy requests clarification of this condition in an effort to minimize any misunderstanding by either Progress Energy or the Compliance Authority. Specifically, Progress Energy will be operating the combustion turbines in combined and simple cycle modes before the shutdown of Unit Nos. 1, 2 and 3; however, the operation of the turbines will be specifically for the purposes of commissioning, tuning and compliance testing before Progress Energy accepts the units for transfer of ownership. However, performing these tasks requires the combustion turbine units to "sync to the grid" (i.e., production and distribution of power); therefore, Progress Energy requests the change in the condition language for clarification purposes.

Condition 17.b

Progress Energy requests this change so that the permit condition language is consistent with the federal rule language contained in 40 CFR Part 60, Subpart KKKK.

Condition No. 18.c:

Progress Energy believes that if the combustion turbines can demonstrate compliance with applicable emission standards by conducting an initial test while operating at less than 70 percent load, thereby providing reasonable assurances, that the facility should not be limited in its operational flexibility. Therefore, Progress Energy respectfully requests the addition of the proposed language.

Condition No. 18.f:

Progress Energy requests the inclusion of the enforcement discretion for the 8.0 ppmvd @ 15 percent O₂ 24-hour block on CO in addition to the enforcement discretion associated with the 12-month rolling average for CO. The discretion should logically apply to both standards.

Condition No. 19:

Progress Energy requests the addition of this language for clarification purposes.

Condition No. 20.b:

Progress Energy requests the removal of what appears to be a typographical error.

Condition No. 25.d

Progress Energy requests the removal of this condition as it is more restrictive than the two (2) hours of possible exclusion under the Florida Administrative Code (F.A.C.).

Condition 27:

Progress Energy requests the removal of EPA Method 20 as an acceptable method so that the permit condition language is consistent with the federal rule language.

Condition Nos. 17.b, 30 & 31

Progress Energy requests the proposed language changes for these conditions in an effort to reflect current regulations and regulator language.

Mr. A. A. Linero
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In accordance with Rule 62-4.050(3), F.A.C., attached to this RAI response is a professional engineer certification. Please do not hesitate to contact me at (727) 820-5962, if you should require additional information.

Sincerely,

A handwritten signature in cursive script that reads "Chris Bradley". The signature is written in black ink and is positioned below the word "Sincerely,".

Chris Bradley
Senior Environmental Specialist

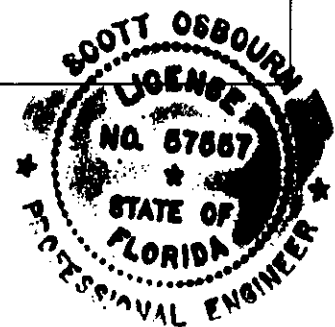
Enclosures

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: <u>sosbourn@golder.com</u>
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) 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> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) 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> <i>(4) 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> <i>(5) 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 (seal) _____ Date

* 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 YYYYY - 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.~~

~~c. 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)

14. Restricted Operation: The permittee shall not exceed the following parameters following shutdown of Units 1, 2 and 3:
- a. The hours of operation of the CTs are not limited (8,760 hours per year).
 - b. Distillate oil firing is limited to ~~4,000 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.
 - c. 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.
 - d. 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.
 - e. 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.

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
- a. *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.
 - b. *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.
 - c. *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.
 - d. *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.
 - e. *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

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	
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- 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]

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 19a 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 Oxide, 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 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