APPENDIX G

SUMMARY OF EMISSIONS LIMITS IN FINAL PSD PERMIT ISSUED 12/22/2006

sufficient synthesis gas production to support operation of the combustion turbine. Operation of the combustion turbine may be accomplished by mixing the synthesis gas with natural gas. Synthesis gas may be directed to the flares during upset conditions such as trips of the CT/HRSG system to allow safe release of the pressurized gas.

c. *Integrated Operation:* The gasification system may operate to produce synthesis gas for combustion in the combustion turbine. All control equipment/technologies constructed to treat the gas stream prior to combustion of the synthesis gas in the combustion turbine shall be on line and functioning properly, in accordance with the specifications of the manufacturers, during the integrated operation of the gasification and CT/HRSG systems.

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

EMISSIONS AND TESTING REQUIREMENTS

15. Emission Standards: Emissions from the turbine/HRSG system shall not exceed the following standards.

Best Available Control Technology (BACT) – Rule 62-210.200, F.A.C.			
While Firing Natural Gas[a]			
Pollutant	Stack Test, 3-Run Average		CEMS Average
	ppmvd @ 15% O_2	lb/hr[e]	
CO (DB)[f]	27.2/4.1	138.0/20.8	24-hr rolling
CO (w/o DB)[f]	20.5/4.1	79.0/15.8	
VOC (DB)	6.5	19.0	N/A
VOC (w/o DB)	2.4	5.3	
SO_2[b]	2.0 gr S/100 SCF of gas		N/A
SAM[b]	2.0 gr S/100 SCF of gas		N/A
PM/PM_{10}[c]	2.0 gr S/100 SCF of gas		N/A
	10 % opacity, 6-minute block average		
Ammonia[d]	5.0	N/A	N/A
While Firing Synthesis Gas[a]			
CO (DB)	20.5	140.5	24-hr rolling
CO (w/o DB)	15.8	90.7	
VOC (DB)	4.6	17.9	N/A
VOC (w/o DB)	2.4	7.9	
SO_2[b]	2.7	35.5	30-day rolling
PM/PM_{10}	Compliance with SO_2/CO standards		N/A
	10 % opacity, 6-minute block average		
SAM[b]	Compliance with SO_2		N/A
Ammonia[d]	5.0	N/A	N/A

SECTION III - EMISSIONS UNITS SPECIFIC CONDITIONS

A. Unit B Integrated Gasification Combined Cycle (EU 030)

PSD Preconstruction Review Avoidance – Rule 62-212.400(2)(a), F.A.C.				
Pollutant	Fuel	ppmvd @ 15% O_2	TPY	CEMS Average
NO_X	Natural Gas	15.0	N/A	30-day rolling
	Syngas	20.0		30-day rolling
	Natural Gas/Syngas	N/A	1,006	12-month rolling
Mercury	Natural Gas/Syngas	10×10^{-6} lb/MWh	29 lb/yr	12-month rolling

a. For purposes of meeting the BACT and PSD preconstruction review avoidance limits of this subsection, an hour in which a synthesis gas/natural gas fuel mixture is fired, is subject to the limit for natural gas when the mixture contains greater than 75% natural gas (by heat input), and subject to the limit for synthesis gas when the mixture contains 75% or less natural gas (by heat input) for that hour. Any hour in which both synthesis gas and natural gas are combusted in the combustion turbine due to fuel switching, shall be subject to the limits for synthesis gas firing.

b. The fuel sulfur specifications, established in Condition 12 of this subsection, effectively limit the potential emissions of SO_2 and SAM from the combustion turbine while firing natural gas and represent BACT for these pollutants. Compliance with the fuel sulfur specifications shall be determined by the requirements in Condition 49 of this subsection. BACT for SO_2 while firing synthesis gas has been determined as 2.7 ppmvd and 35.5 lb/hr. Compliance with the SO_2 limit effectively limits the potential emissions of SAM while firing synthesis gas.

c. The fuel sulfur specifications for natural gas and the SO_2 standard for syngas, combined with the efficient combustion design and operation of the combustion turbine represent BACT for PM/PM_{10} emissions. Compliance with the fuel specifications, CO standards, and visible emissions standards shall serve as indicators of good combustion.

d. The SCR system shall be designed and operated for an ammonia slip limit of no more than 5 ppmvd corrected to 15% O_2 based on the average of three test runs. Notwithstanding this provision, ammonia slip may exceed 5 ppmvd but may not exceed 10 ppmvd corrected to 15% O_2 when the SCR system is voluntarily operated to reduce NOx emissions below 10 ppmvd.

e. Mass emission rate standards and concentrations are based on 100 percent full load operation, an ambient temperature of 70° F, and using the HHV of the fuel. The mass emission rate may be adjusted from actual test conditions in accordance with the performance curves and/or equations on file with the Department.

f. These emission standards for CO when firing natural gas shall be determined in accordance with Condition 16.a of this subsection.

{Permitting Note: The above emissions standards effectively limit annual potential emissions from the combustion turbine/HRSG system to: 615 tons/year of CO, 83 tons/year of VOC, 155 tons/year of SO_2, less than 24 tons/year of SAM, and less than 156 tons/year of PM/PM_{10}.}

[Rules 62-4.070(3), 62-210.200 (BACT), and 62-212.400(PSD), F.A.C]

16. Carbon Monoxide (CO): Emissions of CO from the CT/HRSG system shall not exceed the following BACT limits on a 24-hr rolling average as measured by the required CEMS and during the required stack tests.

    a. *While firing natural gas CO emissions shall not exceed:*

    Duct burners on –27.2 ppmvd @ 15% O_2 and 138.0 lb/hr

    Duct burners off – 20.5 ppmvd @ 15% O_2 and 79.0 lb/hr

However, beginning with the 10th calendar year after the completion of the initial compliance tests, and for each calendar year thereafter, if, excluding startup, the total natural gas heat input to the combustion turbine for the prior 48 months exceeds 50% of the total heat input to the combustion turbine for that period, then CO emissions thereafter shall not exceed:

Duct burners on – 4.1 ppmvd @ 15% O_2 and 20.8 lb/hr

Duct burners off – 4.1 ppmvd @ 15% O_2 and 15.8 lb/hr

b. While firing synthesis gas CO emissions shall not exceed:

Duct burners on –20.5 ppmvd @ 15% O_2 and 140.5 lb/hr

Duct burners off – 15.8 ppmvd @ 15% O_2 and 90.7 lb/hr

[Rules 62-4.070(3), 62-210.200 (BACT), and 62-212.400(PSD), F.A.C]

17. Volatile Organic Compounds (VOCs): Emissions of VOC from the CT/HRSG system shall not exceed the following standards as determined by data collected during the required stack tests:

a. While firing natural gas, VOC emissions shall not exceed:

Duct burners on –6.5 ppmvd @ 15% O_2 and 19.0 lb/hr

Duct burners off –2.4 ppmvd @ 15% O_2 and 5.3 lb/hr

b. While firing synthesis gas, VOC emissions shall not exceed:

Duct burners on – 4.6 ppmvd @ 15% O_2 and 17.9 lb/hr

Duct burners off – 2.4 ppmvd @ 15% O_2 and 7.9 lb/hr

[Rules 62-4.070(3), 62-210.200 (BACT), and 62-212.400(PSD), F.A.C]

18. Sulfur Dioxide (SO_2):

a. *While firing natural gas*:

The fuel sulfur specifications, established in Condition 12 of this subsection, of 2.0 grains per 100 standard cubic feet effectively limit the potential emissions of SO_2 while firing natural gas from the combustion turbine.

b. *While firing synthesis gas*: Emissions of SO_2 from the CT/HRSG system shall not exceed 2.7 ppmvd @ 15% O_2 and 35.5 lb/hr on a 30-day rolling average as measured by the required CEMS and during the required stack tests.

[Rules 62-4.070(3), 62-210.200 (BACT), and 62-212.400(PSD), F.A.C]

19. Sulfuric Acid Mist (SAM, H_2SO_4): Sulfuric acid mist is effectively limited by the fuel sulfur specifications and the sulfur dioxide limits while burning natural gas and synthesis gas respectively. These requirements represent BACT for this pollutant. [Rules 62-4.070(3), 62-210.200 (BACT), and 62-212.400(PSD), F.A.C]

20. Particulate Matter (PM/PM_{10}):

a. *While burning natural gas*:

The fuel sulfur specifications, established in Condition 12 of this subsection, combined with the efficient combustion, design, and operation of the combustion turbine represent BACT for PM/PM10 emissions while firing natural gas. Compliance with the fuel specifications, CO standards, and visible emissions standards shall serve as indicators of good combustion. Visible emissions shall not exceed 10 % opacity as observed during the required visible emissions tests.

SECTION III - EMISSIONS UNITS SPECIFIC CONDITIONS

A. Unit B Integrated Gasification Combined Cycle (EU 030)

b. *While burning synthesis gas*:

The SO_2 standard for synthesis gas, combined with the efficient combustion design and operation of the combustion turbine represent BACT for PM/PM_{10} emissions. Compliance with the SO_2 and CO standards, and visible emissions standard shall serve as indicators of good combustion. Visible emissions shall not exceed 10 % opacity as observed during the required visible emissions tests. Results from the particulate matter stack tests, as required in Conditions 30 of this subsection, shall be reported to the compliance authority.

{Permitting Note: The SO_2 limit of 2.7 ppm is approximately equal to 0.019 lb SO_2/mmBtu of synthesis gas which is below the sulfur dioxide fuel specification of 60.49Da(u)(2)}

[Rules 62-4.070(3), 62-210.200 (BACT), and 62-212.400(PSD), F.A.C, 40 CFR 60.49, and Chapter 403.061(18), F.S.]

21. Ammonia: Ammonia slip shall not exceed 5 ppmvd @ 15% O_2 as determined by data collected during the required stack tests, except as provided in Condition 15, note d of this subsection.

22. Mercury (Hg): Emissions of mercury from the CT/HRSG system shall not exceed 10 x 10^{-6} lb/MWh on a 12 month rolling average based on methods and requirements as described in 40 CFR 60.45Da(b) and 60.50Da(g).
[Rules 62-4.070(3), and 62-212.400(12)(PSD Avoidance), F.A.C, and 40 CFR 60.45Da (b) and 60.50Da(g)]

23. Nitrogen Oxides (NO_X): Emissions of NO_X from the CT/HRSG system shall not exceed the following standards as measured by the required CEMS for the averaging period specified, and as measured during the required stack tests.

a. *While burning natural gas*:

15 ppmvd @ 15% O_2 on a rolling 30-day average

b. *While burning synthesis gas:*

20.0 ppmvd @ 15% O_2 on a rolling 30-day average

[Rules 62-4.070(3), and 62-212.400(12)(PSD Avoidance), F.A.C, Applicant Request, and 40 CFR 60.4325]

24. NO_X Emissions Cap:

a. *Existing Units 1 and 2*: The combined NO_X emissions from existing coal fired boiler steam electric generating Stanton Unit 1 and Stanton Unit 2 shall not exceed 8,300 tons per year on a 12-month rolling total beginning the first month of first fire of Unit B and thereafter. Total NO_X emissions shall be based on data collected from the Unit 1 and Unit 2 NO_X CEMS and the rolling 12-month total from each unit shall be computed in accordance with Condition 46 of this subsection.

b. *New Unit B*: Total NO_X emissions from the new Unit B CT/HRSG stack, gasifier startup stack, and flare shall not exceed 1,006 tons on a 12-month rolling total. Total NO_X emissions from the CT/HRSG stack shall be based on data collected from the required NO_X CEMS and computed in accordance with Condition 46 of this subsection. Total NO_X emissions from the flare and gasifier startup stack shall be estimated in accordance with 62-210.370, F.A.C.

c. If the combined NO_X emissions from Units 1 and 2 exceed 8,300 tons during any 12-month period, and/or the total NO_X emissions from Unit B exceeds 1,006 tons during any 12-month period, Unit B shall be subject to PSD preconstruction review at that time, and a determination of BACT for NO_X shall be made.

d. For purposes of meeting the NO_X emissions caps, annual emission of NO_X from existing Units 1 and 2, and Unit B shall be calculated without the Allowable Data Exclusions of Condition 37 of this

subsection. All valid hours of data (including startup and shutdown) must be included in the rolling 12-month totals. Also, the data substitution procedures of Part 75 for missing data shall not be used in these calculations.

[62-210.200 (net emissions increase), 62-210.370 (emissions computation), and 62-212.400(12) (Source Obligation), F.A.C.]

{Permitting Note: This project did not trigger PSD for NO_X due to a NO_X emissions cap taken on existing coal fired boiler steam electric generating Unit 1 and Unit 2. The above conditions establish the requirements for meeting the NO_X emission limitations for purposes of avoiding PSD preconstruction review. These requirements in no way supersede any federal requirement of the applicable NSPS or NESHAP provisions.}

25. Unconfined Particulate Emissions: During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering, confining, or applying water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]

26. Test Methods: Required tests shall be performed in accordance with the following reference methods.

Method	Description of Method and Comments
1 - 4	Determination of Traverse Points, Velocity and Flow Rate, Gas Analysis, and Moisture Content. Methods shall be performed as necessary to support other methods.
5	Determination of Particulate Emissions. The minimum sample volume shall be 30 dry standard cubic feet.
6C	Determination of SO2 Emissions (Instrumental).
7E	Determination of NOx Emissions (Instrumental).
9	Visual Determination of Opacity
10	Measurement of Carbon Monoxide Emissions (Instrumental). The method shall be based on a continuous sampling train.
25A	Measurement of Gaseous Organic Concentrations (Flame Ionization – Instrumental)
CTM-027	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.

Method CTM-027 is published on EPA's Technology Transfer Network Web Site at "http://www.epa.gov/ttn/emc/ctm.html". The other methods are described in 40 CFR 60, Appendix A, and adopted by reference in Rule 62-204.800, F.A.C. No other methods may be used for compliance testing unless prior written approval is received from the administrator of the Department's Emissions Monitoring Section in accordance with an alternate sampling procedure pursuant to 62-297.620, F.A.C.
[Rules 62-204.800, F.A.C.; 40 CFR 60, Appendix A]

27. Testing Requirements: Initial tests shall be conducted between 90% and 100% of permitted capacity; otherwise, this permit shall be modified to reflect the true maximum capacity as constructed. Subsequent annual tests shall be conducted between 90% and 100% of permitted capacity in accordance with the requirements of Rule 62-297.310(2), F.A.C. Tests shall be conducted for each required pollutant when firing natural gas, when firing syngas, and when using the duct burners while firing each fuel in the CT. For each run during tests for visible emissions and ammonia slip, emissions of CO and NO_X recorded by the CEMS shall also be reported. Particulate matter testing and reporting shall include front and back half catches. Data collected from the reference method during the required CEMS quality assurance RATA tests may substitute for annual compliance tests for those pollutants, provided the owner or operator indicates this

intent in the submitted test protocol, and obtains approval prior to testing. [Rule 62-297.310(7)(a), F.A.C.; 40 CFR 60.8]

28. Initial Compliance Demonstration:

    a. *Natural Gas:* Initial compliance stack tests shall be conducted within 60 days after achieving the maximum production rate on natural gas, but not later than 180 days after the initial startup on natural gas. In accordance with the test methods specified in this permit, the combustion turbine shall be tested to demonstrate initial compliance with the emission standards for CO, SO_2, NO_X, Hg, ammonia slip, VOC, and visible emissions. The permittee shall provide the Compliance Authority with any other initial emissions performance tests conducted to satisfy vendor guarantees.

    b. *Synthesis Gas*: Initial compliance stack tests shall be conducted within 60 days after achieving the maximum heat input to the combustion turbine on synthesis gas, but not later than 180 days after the initial operation of the combustion turbine on synthesis gas. In accordance with the test methods specified in this permit, the combustion turbine shall be tested to demonstrate initial compliance with the emission standards for CO, SO_2, NO_X, Hg, ammonia slip, VOC, and visible emissions. The permittee shall provide the Compliance Authority with any other initial emissions performance tests conducted to satisfy vendor guarantees.

    [Rules 62-4.070, 62-297.310(7)(a), F.A.C. and 40 CFR 60.8]

29. Subsequent Compliance Testing: Annual compliance stack tests for CO, SO_2, NO_X, ammonia slip, VOC, and visible emissions shall be conducted during each federal fiscal year (October 1st, to September 30th). Annual testing to determine VOC emissions, visible emissions, and ammonia slip shall be conducted while firing the primary fuel. Data collected from the reference method during the CO, SO_2, and NO_X CEMS quality assurance RATA tests may be used to satisfy the annual compliance stack test requirements for these pollutants, provided the owner or operator indicates this intent in the submitted test protocol, and obtains approval prior to testing. Additional testing for CO and NO_X may be required following catalyst replacement. If normal operation on natural gas is less than 400 hours per year, then subsequent compliance testing on natural gas is not required for that year. If normal operation on natural gas exceeds 400 hours per year, the Department may require compliance testing for visible emissions, ammonia slip, and VOC emissions while firing natural gas.
    [Rules 62-4.070, 62-210.200(BACT), and 62-297.310(7)(a)4, F.A.C., and 40 CFR 60.50Da]

30. Additional Testing: Concurrent with initial and subsequent compliance testing, particulate matter testing (front and back half) shall be conducted while firing synthesis gas and the results shall be reported to the Department.

31. Continuous Compliance: Continuous compliance with the permit standards for emissions of CO, NO_X, and SO_2 shall be demonstrated with data collected from the required continuous monitoring systems. Compliance with the permit standards for mercury shall be demonstrated with data collected in accordance with Condition 41. [Rules 62-4.070, and 62-210.200(BACT), F.A.C., 40 CFR 60.50Da]

32. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the emissions unit to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions unit and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]