Florida Department of Environmental Protection

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(Sent by Electronic Mail – Return Receipt Requested)

Jeff Smith: Jeff_Smith@fpl.com
Martin Plant Regional General Manager
Florida Power and Light Company
21900 SW Warfield Blvd
Stuart, FL 34956

Re: Title V Air Operation Permit Revision
Proposed Permit No. 0850001-040-AV
Martin Power Plant

Dear Jeff Smith:

One copy of the proposed permit determination for the revision of the Title V air operation permit for the Martin Power Plant located in Martin County at 21900 SW Warfield Blvd, FL 34956, is enclosed. This letter is only a courtesy to inform you that the draft permit has become a proposed permit.

An electronic version of this determination has been posted on the Division of Air Resource Management's world wide web site for the United States Environmental Protection Agency (USEPA) Region 4 office's review. Interested persons may view the proposed permit by visiting the following website: https://fldep.dep.state.fl.us/air/emission/apds/default.asp and entering the permit number shown above.

Pursuant to Section 403.0872(6), Florida Statutes, if no objection to the proposed Title V air operation permit is made by the USEPA within 45 days, the proposed permit will become a final permit no later than 55 days after the date on which the proposed permit was mailed (posted) to USEPA. If USEPA has an objection to the proposed permit, the final permit will not be issued until the permitting authority receives written notice that the objection is resolved or withdrawn.

If you should have any questions, please contact Scott Lauder, at 850/717-9077, or by email at scott.lauder@dep.state.fl.us.

Sincerely,

David Lyle Read, P.E.

David Lyle Read, P.E.
2018.03.21 10:45:04 -04'00'

For:
Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

SA/dlr/srl

Copies sent by electronic mail to the following:

Mr. Jeff Smith, Florida Power and Light: Jeff_Smith@fpl.com
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Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

2018.03.23
13:15:48 -04'00'

Permit No. 0850001-040-AV

I. Public Notice.

An Intent To Issue Air Permit issued to Florida Power and Light Company for the Martin Power Plant located in Martin County at 21900 SW Warfield Blvd, FL 34956, was clerked on February 7, 2018. The Public Notice Of Intent To Issue Air Permit was published in The Stuart News on February 13, 2018. The draft Title V air operation permit was available for public inspection at the permitting authority's office in Tallahassee. Proof of publication of the Public Notice Of Intent To Issue Air Permit was received on February 15, 2018.

II. Public Comment(s).

No Comments were received from the public during the 30-day public comment period; however, comments were received from the Permittee. The comments were not considered significant enough to reissue the draft Title V air operation permit and require another Public Notice; therefore, the draft Title V air operation permit was changed. Those comments are addressed below. Additions to the permit are indicated by a double underline. Deletions from the permit are indicated by a ~~strike through~~.

Letter from FPL dated March 8, 2018.

Comment 1. The applicant requested that the header in Section III., Subsection C. of Draft Permit No. 0850001-040-AV, which refers to Emissions Unit (EU) No. 007, be replaced with EU No. 026 to reflect the new auxiliary boiler that replaced EU No. 007 (previous auxiliary boiler).

Response 1. EU No. 026, which replaced EU No. 007, is now the working auxiliary boiler at Martin Power Plant. The header in Section III., Subsection C. has been changed as follows:

SECTION III. EMISSIONS UNITS AND SPECIFIC CONDITIONS.

Subsection C. Emissions Unit ~~007~~026
13.23 MMBtu/hr Auxiliary Boiler – New

Comment 2. The applicant requested that provisions and language that apply to simple cycle operation of Unit 8, which is contained in Section III., Subsection D. of Draft Permit No. 0850001-040-AV, be removed, because Unit 8 is no longer capable of simple cycle operation.

Response 2. Units 8A and 8B were capable of operating in a limited simple cycle mode. Because the bypass stacks have been removed, the Department agrees with removing all language regarding simple cycle operation with the exception of language describing when Unit 8 commenced simple cycle operation. The following changes throughout Section III., Subsection D, are made as follows:

1. The second paragraph of the EU description has been removed as follows:

   ~~These CTs may also operate in a simple cycle mode for an average of 1000 hours per consecutive 12 months. While operating in simple cycle mode, each CT bypasses the HRSG and exhausts through a separate stack. The stack parameters for these bypass stacks are 80 ft in height and 22.0 ft in diameter. The exhaust temperature in simple cycle mode is 1,116□F with a flow rate of 2,389,500 acfm while burning natural gas and 1,098□F with a flow rate of 2,735,300 acfm while burning oil.~~

2. The third paragraph of the EU description has been revised as follows:

   The CT use natural gas as the primary fuel and distillate oil as a restricted alternate fuel. The efficient combustion of natural gas at high temperatures minimizes emissions of CO, PM/PM_{10}, SAM, SO_2, and VOC. NO_X emissions are reduced by Dry Low-NO_X (DLN) combustion technology ~~(simple cycle mode)~~. A selective catalytic reduction (SCR) system combined with DLN combustion technology further reduces NO_X emissions during combined cycle mode. Each CT is equipped with CEMS to measure and record CO and NO_X emissions as well as flue gas O_2 or CO_2 content. CAM does not apply since these emissions units have NO_X CEMS which are used to demonstrate continuous compliance.

3. Simple cycle mode hours of operation limits no longer apply to Unit 8. Paragraph **c.** of **Specific Condition D.3.** has been removed as follows:

   ~~c. *Simple Cycle Operation*. Each gas turbine may operate individually in simple cycle mode to produce only direct, shaft-driven electrical power subject to the following operational restrictions.~~
   ~~(1) Each gas turbine shall operate in simple cycle mode for no more than 3390 hours during any consecutive 12 months.~~
   ~~(2) After demonstrating initial compliance in combined cycle mode, the combined group of four gas turbines shall operate in simple cycle mode for no more than an average of 1000 hours per gas turbine during any consecutive 12 months.~~

4. Methods of operation applicable to simple cycle operation no longer apply to Unit 8. Paragraph **e.**, **f.** and **g.** of **Specific Condition D.3.** has been revised as follows:

   e. *Inlet Fogging*. In accordance with the manufacturer's recommendations and appropriate ambient conditions, the evaporative cooling system may be operated to reduce the compressor inlet air temperature and provide additional direct, shaft-driven electrical power. This method of operation is commonly referred to as "fogging" and may be used in ~~either simple cycle or~~ combined cycle mode~~s~~.
   f. *Peaking*. When firing natural gas, each gas turbine may operate in a high-temperature peaking mode to generate additional direct, shaft-driven electrical power to respond to peak demands. During any consecutive 12 months, each gas turbine shall operate while in the peaking mode for ~~no more than 60 hours of simple *cycle operation and*~~ *no more than 400 hours of combined cycle operation.*
   g. *Power Augmentation*. When firing natural gas in ~~either simple cycle or~~ combined cycle mode~~s~~, steam may be injected into each gas turbine to generate additional direct, shaft-driven electrical power to respond to peak demands. To qualify as "power augmentation", the CT must operate at a load of 95% or greater than that of the manufacturer's maximum base load rate adjusted for the compressor inlet air conditions. Prior to activating and after deactivating the power augmentation mode, the operator shall log the date, time, and new mode of operation. The gas turbines shall not operate simultaneously in peaking and power augmentation modes. Total combined operation of power augmentation and peaking modes shall not exceed 400 hours per unit during any consecutive 12 months.

5. Structures that allow simple cycle operation are no longer present. **Specific Condition D.5.** has been revised as follows:

   D.5. Gas Turbines. The permittee is authorized to tune, operate and maintain the four General Electric model PG7241FA CT. Each CT shall include a modern automated gas turbine control system and have dual-fuel capability. Ancillary equipment includes an inlet air filtration system~~,~~ and an evaporative inlet air-cooling system~~, and a bypass stack for simple cycle operation~~. The gas turbines utilize DLN combustors. Electric fuel heaters preheat the natural gas ~~during simple cycle operation and~~ during startup to combined cycle operation. For full combined cycle operation, feedwater heat exchangers preheat the natural gas. [Permit No. 0850001-010-AC (PSD-FL-327)]

6. NO_X operating requirements for simple cycle operation no longer apply to Unit 8. Paragraphs **a.** and **b.** of **Specific Condition D.6.** has been revised as follows:

   a. *DLN Combustion.* The permittee shall operate and maintain the General Electric DLN 2.6 combustion system (or better) to control NO_X emissions from each gas turbine when firing natural gas. ~~Prior to the initial emissions performance tests required for each gas turbine, the DLN combustors and automated gas turbine control system shall be tuned to achieve the simple cycle permitted levels for CO and NO_X emissions. Thereafter, e~~Each system shall be maintained and tuned in accordance with the manufacturer's recommendations.
   b. *Water Injection*. The permittee shall install, operate, and maintain a water injection system to reduce NO_X emissions from each gas turbine when firing distillate oil. Prior to the initial emissions performance tests required for each gas turbine, the water injection system shall be tuned to achieve the permitted levels for CO and NO_X emissions. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations. ~~The automated control system shall be programmed to~~

~~establish a water-to-fuel ratio designed to achieve the NO_X emission standard for simple cycle oil firing on a 1-hour basis.~~

7. Because Unit 8 is no longer capable of simple cycle operation, emissions standards during simple cycle operation no longer apply to this unit. **Specific Condition D.8.** and paragraphs **b.**, **c.** and **d.** have been revised as follows:

D.8. Emissions Standards. Emissions from each gas turbine shall not exceed the following standards.

Pollutant	Fuel	Method of Operation	Stack Test, 3-Run Average		CEMS Block Average
			ppmvd @ 15% O2	lb/hour	ppmvd @ 15% O2
CO [a]	Oil	~~Simple or~~ Combined Cycle	14.4	64.7	15.0, 24-hr
	Gas	~~Simple Cycle~~	~~7.4~~	~~27.5~~	~~8.0, 24-hr~~
		~~Simple Cycle w/PA~~	~~12.0~~	~~45.0~~	~~12.0, 24-hr~~
		Combined Cycle, Normal	7.4	27.5	10.0, 24-hr
		Combined Cycle, All Modes	NA	NA	
NO_X [b]	Oil	~~Simple Cycle~~	~~42.0~~	~~319.2~~	~~42.0, 3-hr~~
		Combined Cycle w/SCR	10.0	76.0	10.0, 24-hr
	Gas	~~Simple Cycle~~	~~9.0~~	~~58.7~~	~~9.0, 24-hr~~
		~~Simple Cycle w/PA~~	~~12.0~~	~~76.2~~	~~12.0, 24-hr~~
		~~Simple Cycle w/Peaking~~	~~15.0~~	~~95.3~~	~~15.0, 24-hr~~
		Combined Cycle w/SCR, Normal	2.5	16.3	2.5, 24-hr
		Combined Cycle w/SCR and DB	2.5	23.6	
		Combined Cycle w/SCR, All Modes	NA	NA	
NO_X (NSPS)[g]	Gas	All modes (> 75% of peak load)	15[h]	N/A	N/A
	Oil		42[i]	N/A	N/A
	Oil/Gas	All modes (< 75% of peak load)	96[j]	N/A	N/A
PM/PM_{10} [c]	Oil/Gas	~~Simple or~~ Combined Cycle	Fuel Specifications		
		~~Simple or~~ Combined Cycle	Visible emissions shall not exceed 10% opacity for each 6-minute block average.		
SAM/SO_2 [d]	Oil/Gas	~~Simple or~~ Combined Cycle	Fuel Specifications		
SO_2 (NSPS)[g]	Oil/Gas	~~Simple or~~ Combined Cycle	0.060 lb SO_2/MMBtu heat input[k]		
VOC [e]	Oil	~~Simple or~~ Combined Cycle	2.5	6.0	NA
	Gas	~~Simple or~~ Normal Combined Cycle	1.3	2.8	NA
		Combined Cycle, w/DB and/or PA	4.0	10.5	NA

Ammonia [f]	Oil/Gas	Combined Cycle w/SCR	5	NA	NA

b. Compliance with the NO_X standards shall be demonstrated based on data collected by the required CEMS. Compliance may also be determined by EPA Method 7E or 20. NO_X mass emission rates are defined as oxides of nitrogen expressed as NO_2. ~~Compliance with the 24-hour NO_X CEMS standards during simple cycle operation shall be determined separately for each method of operation based on the hours of operation for each method.~~ *{Note: A 24-hour compliance average may be based on as little as 1-hour of CEMS data or as much as 24-hours of CEMS data.}*

c. The fuel specifications established in Specific Condition **D.3** of this section, combined with the efficient combustion design and operation of each gas turbine represents the Best Available Control Technology (BACT) determination for PM/PM_{10} emissions. Compliance with the fuel specifications, CO standards, and visible emissions standards shall serve as indicators of good combustion. Compliance with the fuel specifications shall be demonstrated by keeping records of the fuel sulfur content. Compliance with the visible emissions standard shall be demonstrated by conducting tests in accordance with EPA Method 9. *{Note: PM_{10} emissions for gas firing are estimated at ~~9 lb/hour for simple cycle operation,~~ 11 lb/hour for combined cycle operation~~,~~ and 17 lb/hour for combined cycle operation with duct burning. PM10 emissions for oil firing are estimated at ~~17 lb/hour for simple cycle operation and~~ 37 lb/hour for combined cycle operation.}*

d. The fuel sulfur specifications in Specific Condition **D.3** of this section effectively limit the potential emissions of SAM and SO_2 from the gas turbines and represent the Best Available Control Technology (BACT) determination for these pollutants. Compliance with the fuel sulfur specifications shall be determined by the requirements in Specific Condition ~~**D.26.**~~**D.33.** *{Note: SO_2 emissions for gas firing are estimated at 9.8 lb/hour for ~~simple and~~ combined cycle operation and 12.8 lb/hour for combined cycle operation with duct burning. SO_2 emissions for oil firing are estimated at 99 lb/hour for ~~simple and~~ combined cycle operation. SAM emissions are estimated to be less than 10% of the SO_2 emissions.}*

8. NSPS Subpart KKKK provisions that apply to simple cycle operation no longer apply to Unit 8. **Specific Condition D.16.** has been revised as follows:

D.16. NSPS Subpart KKKK Excess NO_X Emissions Definition. Excess emissions for ~~simple and~~ combined cycle operation are defined as follows:

~~a. *Simple Cycle Operation.* For simple cycle operation without heat recovery, excess emissions are defined as any unit operating period in which the 4-hour rolling average NO_X emission rate exceeds the applicable emission limit in 40 CFR 60.4320 (see Specific Condition **D.8**). A "4-hour rolling average NO_X emission rate" is the arithmetic average of the average NO_X emission rate in ppm or ng/J (lb/MWh) measured by the CEMS for a given hour and the three unit operating hour average NO_X emission rates immediately preceding that unit operating hour. Calculate the rolling average if a valid NO_X emission rate is obtained for at least 3 of the 4 hours.~~

b. *Combined Cycle Operation.* For combined cycle operation, excess emissions are defined as any unit operating period in which the 30-day rolling average NO_X emission rate exceeds the applicable emission limit in 40 CFR 60.4320 (see Specific Condition **D.8**). A "30-day rolling average NO_X emission rate" is the arithmetic average of all hourly NO_X emission data in ppm or ng/J (lb/MWh) measured by the CEMS for a given day and the 29 unit operating days immediately preceding that unit operating day. A new 30-day average is calculated each unit operating day as the average of all hourly NO_X emissions rates for the preceding 30 unit operating days if a valid NO_X emission rate is obtained for at least 75% of all operating hours.

c. For operating periods during which multiple emissions standards apply, the applicable standard is the average of the applicable standards during each hour. For hours with multiple emissions standards, the applicable limit for that hour is determined based on the condition that corresponded to the highest emissions standard.

[Rule 62-204.800(8)(b)83., F.A.C.; and, 40 CFR 60.4350(g)-(h), 60.4380(b)(1) & (3)]

{Permitting Note: If the permittee wishes to comply with the output-based standards in NSPS Subpart KKKK, the equations in 40 CFR 60.4350(f) shall be used to assess excess emissions on ~~either~~ a ~~4-hour or~~ 30 unit operating day rolling average for ~~simple or~~ combined cycle operation~~, respectively~~ (see Appendix NSPS Subpart KKKK)}.

9. 3-hour block averages only apply to simple cycle operation while firing oil. Paragraph **e.** of **Specific Condition D.20.** has been removed as follows:

   ~~e. *3-hour Block Averages*. For oil firing during simple cycle operation, the 3-hour block average shall be calculated from three consecutive hourly average emission rate values. For purposes of determining compliance with the CEMS emission standards of this permit, missing (or excluded) data shall not be substituted. Instead, the 3-hour block average shall be determined using the remaining hourly data in the 3-hour block. [Rule 62-212.400(BACT), F.A.C.]~~

10. Simple cycle operation is no longer possible for Unit 8. Thus, testing requirements during simple cycle operation are no longer applicable. **Specific Condition D.27.** has been revised as follows:

    D.27. Special Compliance Determinations. Based on a specific condition of permit No. 0850001-010-AC, 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, DLN combustors, etc. Each gas turbine shall be stack tested to demonstrate 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 for each unit configuration (i.e., ~~simple cycle and~~ combined cycle operation), but not later than 180 days after startup of each unit configuration. Each unit shall be tested when firing natural gas and distillate oil. CEMS data collected during the required Relative Accuracy Test Assessments (RATA) may be used to demonstrate compliance with the CO and NO_X standards. With appropriate flow measurements (or fuel measurements and approved F-factors), CEMS data may be used to demonstrate compliance with the CO and NO_X 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. ~~CO and VOC emissions tests performed during simple cycle operation may be used to satisfy the test requirements for similar operation in combined cycle mode.~~ [Rule 62-297.310(7)(a)1, F.A.C.; 40 CFR 60.8; and, Permit No. 0850001-010-AC, Specific Condition 20]

11. Reporting of simple cycle startups and shutdowns no longer apply to Unit 8. **Specific Condition D.36.** has been revised as follows:

    D.36. Quarterly Permit Excess Emission Report. Within 30 days following the end of each quarter, the permittee shall submit a report to the Compliance Authority summarizing periods of excess CO and NO_X emissions. Such information shall also be summarized for ~~simple/~~combined cycle startups, ~~simple/~~combined cycle shutdowns, malfunctions, and major tuning sessions. In addition, the report shall summarize the CEMS systems monitor availability for the previous quarter. [Rules 62-4.130, 62-204.800, 62-210.700(6), F.A.C.; and 40 CFR 60.7 and Permit No. 0850001-010-AC (PSD-FL-327)]

III. Conclusion.

The enclosed proposed Title V air operation permit includes the aforementioned changes to the draft Title V air operation permit. The permitting authority will issue the proposed permit No. 0850001-040-AV, with the changes noted above.