FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

BOB MARTINEZ CENTER
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

PERMITTEE

Duke Energy Florida, Inc. (DEF)
299 First Avenue North
Mail Code CN77
St. Petersburg, Florida 33701

Authorized Representative:
Mr. Robby Odom, Station Manager

Air Permit No. 0170004-048-AC
Facility ID No. 0170004
SIC N
Revised CAM Plan
Permit Expires: December 31, 2015

PROJECT

This is the final air construction permit revision, which authorizes new conditions and changes to an air construction permit related to sulfuric acid mist (SAM) compliance assurance monitoring (CAM) planning at the Crystal River Power Plant. The facility is located in Citrus County at 15760 West Power Line Street, Crystal River, Florida. This final permit revision is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and Section 4 (Appendices). As noted in the Final Determination provided with this final permit, no changes and clarifications were made to the draft permit.

STATEMENT OF BASIS

This air pollution construction permit revision is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

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for: Jeffery F. Koerner, Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

JFK/dlr/tbc

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FINAL PERMIT

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Air Permit package was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons.

Mr. Robby Odom, DEF: (Robby.Odom@duke-energy.com)
Mr. Jamie Hunter, DEF: (Jamie.Hunter@duke-energy.com)
Mr. Michael Ballenger, P.E., Trinity Consultants: (mballinger@trinityconsultants.com)
Ms. Kelley M. Boatwright, DEP Southwest: (kelley.m.boatwright@dep.state.fl.u)
Mr. Justin Green, DEP Siting Office: (justine.green@dep.state.fl.us)
Ms. Heather Ceron, EPA Region 4: (ceron.heather@epa.gov)
Ms. Katy Lusky, EPA Region 4: (lusky.kathleen@epa.gov)
Ms. Natasha Hazziez, EPA Region 4: (hazziez.natasha@epa.gov)
Ms. Ana Oquendo, EPA Region 4: (oquendo.ana@epa.gov)
Ms. Lynn Scearce, DEP OPC: (lynn.scearce@dep.state.fl.us)
Ms. Alisa Coe, Earth Justice: (acoe@earthjustice.org)

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.

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FACILITY AND PROJECT DESCRIPTION

EU No.	Brief Description
Primary Regulated Emissions Units	
001	FFSG, Unit 1
002	FFSG, Unit 2
003	FFSG, Unit 5
004	FFSG, Unit 4
013	Cooling Towers for FFSG Units 1, 2
015	Cooling Towers for FFSG Units 4 and 5

This facility consists of: four coal-fired fossil fuel steam generating (FFSG) units with electrostatic precipitators; two natural draft cooling towers for FFSG Units 4 and 5; helper mechanical cooling towers for FFSG Units 1, 2; coal, fly ash, and bottom ash handling facilities; limestone and gypsum material handling activities; hydrate lime storage and transfer system for Units 4 and 5; and, various fire pumps and generators. The facility continuously operates low-NO_X burners, selective catalytic reduction systems (SCR), flue gas desulfurization systems (FGD) which includes limestone and gypsum material handling activities and acid mist mitigation (AMM) systems for existing Units 4 and 5, as authorized by permits No. 0170004-023-AC (PSD-FL-383C) and 0170004-037-AC (PSD-FL-383E). In conjunction with the new control equipment, Units 4 and 5 are now also authorized to burn a blend of bituminous/sub-bituminous coal.

Requested Changes

- DEF requested that Figure 1 and the associated tables in Appendix CAM for Emission Units 003 and 004 (SAM emissions controlled by AMM system) in the facility's current Title V air operation permit be revised to reflect analysis utilizing the April 2014 and July 2014 test results as described in the Technical Evaluation and Preliminary Determination document. These test results are used to modify the current injection curve for both boilers.
- In addition to these system changes, DEF also requested that the SAM CAM Plan reflect the option of injecting high reactive hydrated lime or the standard hydrated lime. Currently, the Title V permit specifies that the AMM system is designed to use hydrated lime which includes both standard and high reactive varieties. Tests show that high reactive hydrated lime is a more efficient means of acid mist removal since it achieves the same level of control at lower injection rates. Therefore, DEF requested that a separate SAM CAM curve be incorporated into the SAM CAM Plan to accommodate the high reactive hydrated lime's injection rates that demonstrate compliance.
- Based on the recent testing, DEF also requested that the permit condition language associated with the required operating protocols for the AMM systems be modified to remove the specificity in operating scenarios. As observed and noted during recent testing, the purpose of the tests was to statistically determine the sorbent injection rate at varying loads and operating conditions that would be required for DEF to remain in compliance with the permit limit of 0.009 lb/MMBtu H_2SO_4. Operating conditions, such as sorbent injection location, sulfur content in coal, and temperature, were varied and analyzed. The operating conditions detailed in the Title V air operation permit Specific Condition **B.23.** do not provide a full representation of the variance in SAM emission rates. Therefore, DEF requested that this specificity be removed from the permit. Implementing this change requires a revision to an underlying air construction permit (0170004-037-AC).

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Department Response

These changes were approved by the Department and are noted below as new permit specific conditions and as a revision to a prior issued air construction permit (0170004-037-AC).

REGULATORY CLASSIFICATION

Title III: The facility is a potential major source of hazardous air pollutants (HAP).

NESHAP: The facility operates units subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) in 40 Code of Federal Regulations (CFR) 63.

NSPS: The facility operates units subject to the New Source Performance Standards (NSPS) of 40 CFR 60.

Title V: The facility is a Title V major source of air pollution in accordance with Chapter 213, Florida Administrative Code (F.A.C.).

PSD: The facility is a Prevention of Significant Deterioration (PSD)-major stationary source in accordance with Rule 62-212.400, F.A.C.

RELEVANT DOCUMENTS

The following relevant documents are not a part of this permit, but helped form the basis for this permitting action: the permit application and additional information received to make it complete, the draft air construction permit, and the Technical Evaluation and Preliminary Determination.

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SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The Permitting Authority for this project is the Office of Permitting and Compliance in the Division of Air Resource Management of the Department. The mailing address for the Office of Permitting and Compliance is 2600 Blair Stone Road, MS #5505, Tallahassee, Florida 32399-2400.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Department's Southwest District Office. The mailing address and phone number are: 13051 N. Telecom Parkway, Temple Terrace, Florida 33637-0926, Telephone: (813) 470-5700, Fax: (813) 470-5995.

3. Appendices: The following Appendices are attached as part of this permit: Appendix A (Citation Formats and Glossary of Common Terms); Appendix B (General Conditions); and Appendix C (Common Conditions).

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-214, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications: No emissions unit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

7. Source Obligation:

(a) At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

(b) At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

[Rule 62-212.400(12), F.A.C.]

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The specific conditions in this section apply to the following emissions units:

EU No.	Brief Description
003	FFSG, Unit 5
004	FFSG, Unit 4

Specific Condition 1.

Other Permits: Except as specified below, these units remain subject to the applicable requirements established in all previous air construction permits issued for this facility. [Rule 62-4.070, F.A.C.]

Specific Condition 2.

Appendix CAM for Emission Units 003 and 004: The permittee shall operate the facility in accordance with the following changes to the compliance assurance monitoring (CAM) plan in the current Title V air operation permit:

Figure 1 and **Table 1** and **Table 2** in Appendix CAM for Emission Units 003 and 004 (SAM emissions controlled by AMM system) are revised as follows:

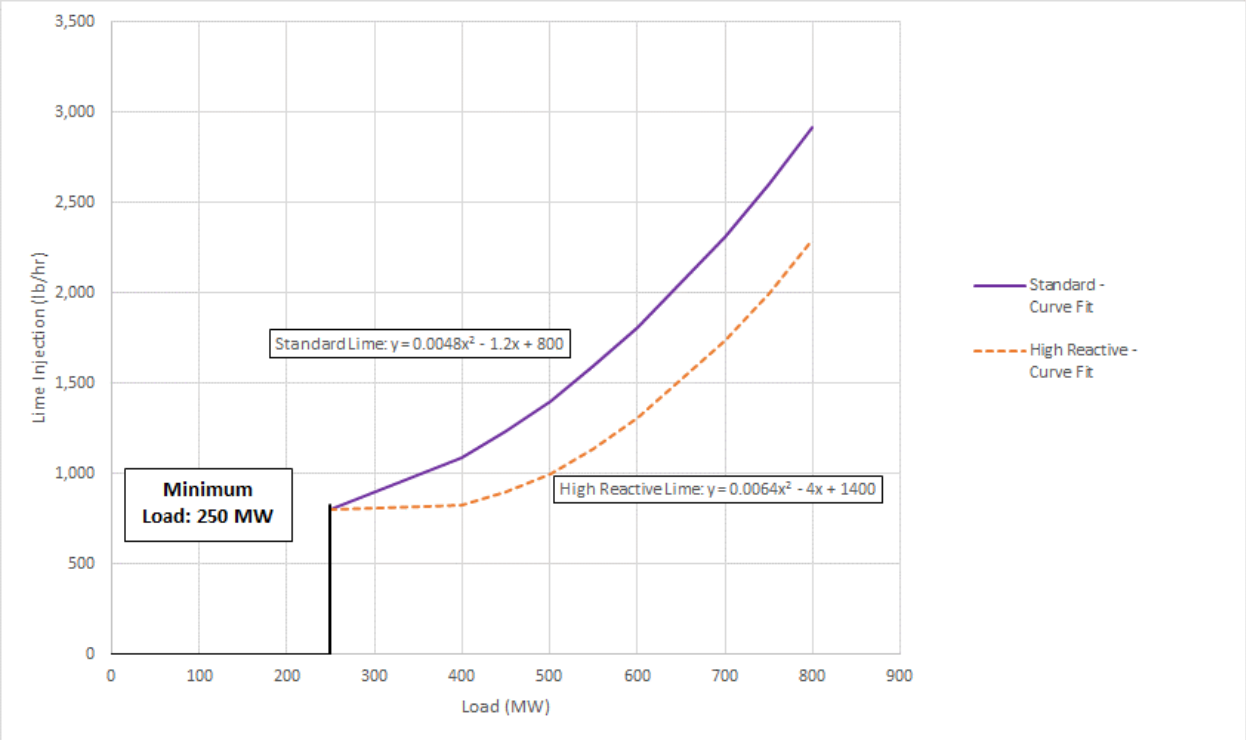

Figure 1. Appendix CAM.

TABLE 1 - STANDARD LIME QUADRATIC FIT INJECTION RATES.

Lime	Load	Hydrated Lime Injection Rate
	(MW)	(lb/hr)
Standard	250	800
Standard	400	1,088

Standard	450	1,232
Standard	500	1,400
Standard	550	1,592
Standard	600	1,808
Standard	700	2,312
Standard	725	2,453
Standard	750	2,600

TABLE 2 - HIGH REACTIVE LIME QUADRATIC FIT INJECTION RATES.

Lime	Load	Hydrated Lime Injection Rate
	(MW)	(lb/hr)
High Reactive	250	800
High Reactive	400	824
High Reactive	450	896
High Reactive	500	1,000
High Reactive	550	1,136
High Reactive	600	1.304
High Reactive	700	1,736
High Reactive	725	1,864
High Reactive	750	2,000

[Rule 62-4.070, F.A.C.]

Specific Condition 3.

Title V Air Operation Permit Revision: The permittee shall be allowed to operate in accordance with the changes specified in this air construction permit revision (i.e., revised **Figure 1**, see above) in lieu of the SAM CAM Plan protocol (current Figure 1) contained in the facility's current Title V air operation permit, until the time that the SAM CAM Plan appendix of the Title V permit is formally revised. [Rule 62-4.070, F.A.C.]

Specific Condition 4.

Specific Condition **16.** of air construction permit 0170004-037-AC is revised as follows:

16. Preliminary SAM Performance Tests: Within 60 days after completing construction on the pollution control systems, the permittee shall conduct a series of preliminary performance tests on either unit to determine the SAM emissions rate under a variety of operating scenarios. The purpose of the tests is to document the impact of the AMM systems on reducing SAM emissions and results in the development of correlation/curves between injection rates, operating conditions and emissions. When collecting data during the SAM performance tests, the permittee is exempt from the SAM emissions standards of this permit.

a. For each set of operating conditions being evaluated, the permittee shall conduct at least a 1-hour test run to determine SAM emissions. At least nine test runs shall be conducted to evaluate ~~the effect of~~ SAM emissions ~~on parameters such as: the SO_2 emissions rate prior to the SCR catalyst, the unit load, the flue gas flow rate, the ammonia injection rate, the current catalyst oxidation rate, and the operating level of the FGD system~~.

b. Tests shall be conducted with the fuel blends and load rates that are representative of the actual operating ranges intended for Units 4 and 5. Sufficient tests shall be conducted to establish the

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SAM emissions rates under varying operating conditions and levels of ammonia injection ~~(e.g., bypass of the SCR reactor, SCR reactor in service without ammonia injection, SCR reactor in service, etc.)~~.

c. At least 15 days prior to initiating the performance tests, the permittee shall submit a test notification, preliminary test schedule and test protocol to the Bureau of Air Regulation and the Compliance Authority.

d. Within 45 days following the last test run conducted, the permittee shall provide a report summarizing the emissions tests and results. All SAM emissions test data shall be provided with this report.

e. Within 45 days following the submittal of the performance test report and no later than 90 days following the last test run conducted, the permittee shall submit an operating protocol summarizing the following: identify each set of operating conditions evaluated; identify each operating parameter evaluated; identify the relative influence of each operating parameter; describe how the automated control system will adjust the ammonia and/or hydrated lime injection rate based on the selected parameters; identify the frequency with which operational parameters will be reevaluated and adjusted within the automated control system; provide a description of the algorithm used for the automated control system or a series of related performance curves; and provide details for calculating and estimating the SAM emissions rate based on the level of ammonia and/or hydrated lime injection and operating conditions. The performance tests shall be used to set the AMM control systems and estimate SAM emissions.

f. The permittee shall operate the AMM systems in accordance with the operating protocol determined by the performance tests.

Using these procedures, the permittee may later conduct additional SAM performance tests to establish a new operating protocol for the AMM system due to changes with the fuel blends, control equipment, operating methods or other circumstances.

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

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