FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

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Florida Power and Light Company (FPL)
700 Universe Boulevard
Juno Beach, Florida 33408

Authorized Representative:
Mr. Paul Plotkin, Plant General Manager

Air Permit No. 0810010-018-AC
Facility ID No. 0810010
SIC No. 4911
Excess Emissions Revision

Permit Expires: December 31, 2013

PROJECT

This is the final air construction permit, which authorizes the revision of the language of air construction permits 0810010-013-AC and 0810010-006-AC, dealing with excess emissions for the Unit 3 combined cycle gas turbine system located at the Manatee Power Plant (the facility). The facility is located in Manatee County at 19050 State Road 62, Parrish, Florida 34219-9220.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit. As noted in the Final Determination provided with this final permit, only minor changes and clarifications were made to the draft permit.

STATEMENT OF BASIS

This air pollution construction permit 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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Jeffery F. Koerner, Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

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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. Paul Plotkin, FPL (pplotkin@fpl.com)
Mr. Kevin Washington, FPL (kevin_washington@fpl.com)
Mr. Ken Kosky, Golder Associates (kkosky@golder.com)
Ms. Kelley Boatwright, SWD (kelley.boatwright@dep.state.fl.us)
Ms. Cindy Mulkey, DEP Siting Office (cindy.mulkey@dep.state.fl.us)
Ms. Kathleen Forney, EPA Region 4 (forney.kathleen@epa.gov)
Ms. Heather Ceron, US EPA Region 4 (ceron.heather@epa.gov)
Ms. Barbara Friday, DEP OPC (barbara.friday@dep.state.fl.us)
Ms. Lynn Scearce, DEP OPC (lynn.scearce@dep.state.fl.us)

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

This nominal 2,750 megawatt (MW) facility consists of two fossil fuel steam generators, a "4-on-1" gas-fired combined cycle unit and associated support equipment.

Fossil Fuel Steam Generators, Unit 1 and Unit 2: Each unit is a Foster-Wheeler Steam Generator rated at 800 MW (900 MW gross capacity) output. These units burn a variable combination of natural gas, No. 6 fuel oil, No. 2 fuel oil, propane, and used oil from Florida Power and Light Company (FPL) operations, discharging pollutants through a stack 499 feet above ground level. Each unit is equipped with an electrostatic precipitator (ESP), a flue gas recirculation system and staged combustion and also operates a Westinghouse tandem compound, reheat-type extraction turbine.

Combined Cycle Gas Turbine System, Unit 3: This unit consists of four ("4-on-1") nominal 170 MW General Electric Model PG7241(FA) gas-fired turbine-electrical generator sets with evaporative inlet cooling systems, an automated gas turbine control system, an inlet air filtration system, four 495 million British thermal units per hour (MMBtu/hr) supplementary-fired heat recovery steam generators (HRSG) with selective catalytic reduction (SCR) reactors, a single nominal 470 MW steam-electrical generator that serves all four gas turbine/HRSG systems, four 120 feet high exhaust stacks, and associated support equipment. The total generating capacity of the "4-on-1" combined cycle system Unit 3 is 1150 MW.

ID	Emission Unit Description
005	Unit 3A Gas Turbine (170 MW) with Heat Recovery Steam Generator (HRSG) (495 MMBtu/hr)
006	Unit 3B Gas Turbine (170 MW) with Heat Recovery Steam Generator (HRSG) (495 MMBtu/hr)
007	Unit 3C Gas Turbine (170 MW) with Heat Recovery Steam Generator (HRSG) (495 MMBtu/hr)
008	Unit 3D Gas Turbine (170 MW) with Heat Recovery Steam Generator (HRSG) (495 MMBtu/hr)

Both the current Title V air operation permit and underlying air construction (AC) permits have language concerning the combined cycle unit system that addresses excess emissions resulting from startup, shutdown, or documented malfunctions (i.e., imposes a limit of two hours in any 24-hour period per unit). Because FPL is striving to gain more consistency in its Title V permits for the 7 FA combustion turbine fleet, it has proposed common language to certain specific conditions that pertain to like combustion turbines. This common language has evolved as FPL has gained experience in operating and maintaining these turbines and developing proper protocol. These changes, primarily affecting excess emissions identification during startup (both cold and warm), shutdown and malfunction periods, and during tuning sessions (including full speed no load trip tests and green rotor run-in periods), are acceptable to the Department because proper operator management of these transient conditions results in less steady state emissions and is therefore beneficial to the environment. This approach is described in the Technical Evaluation and Preliminary Determination document associated with this project. In addition to these changes, FPL requested that the certification of CO monitors protocol be allowed to use quality assurance procedures that conform to the requirements of 40 CFR 60 Part 75.

REGULATORY CLASSIFICATION

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

NESHAP: The facility does not operate units subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) in 40 Code of Federal Regulations (CFR) 63.

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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 Southwest District Office. The mailing address and phone number of the Southwest District Office are: 13051 North Telecom Parkway, Temple Terrace, Florida 33637-0926, Telephone: 813/632-7600, Fax: 813/744-6084.
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.]

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

EU No.	Brief Description
005	Unit 3A Gas Turbine (170 MW) with Heat Recovery Steam Generator (HRSG) (495 MMBtu/hr)
006	Unit 3B Gas Turbine (170 MW) with Heat Recovery Steam Generator (HRSG) (495 MMBtu/hr)
007	Unit 3C Gas Turbine (170 MW) with Heat Recovery Steam Generator (HRSG) (495 MMBtu/hr)
008	Unit 3D Gas Turbine (170 MW) with Heat Recovery Steam Generator (HRSG) (495 MMBtu/hr)

{Permitting Note: Except as specified below, these units remain subject to the applicable requirements established in all previous air construction permits issued for this facility, as included in the current Title V Air Operation Permit No. 0810010-015-AV.}

PREVIOUS APPLICABLE REQUIREMENTS

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.]

Note: ~~Strikethrough~~ indicates deleted text. Double underline indicates additions.

2. To make the excess emissions provisions for these units consistent with other FPL permits by clarifying excludable periods of operation from the CEMS data during periods of start up and shut down of the combined cycle systems, this Condition revises Specific Condition 2 of air construction permit No. 0810010-013-AC as follows:
   Excess Emissions Allowed: As specified in this condition, excess emissions resulting from startup, shutdown, fuel switches, and documented malfunctions are allowed provided that operators employ the best operational practices to minimize the amount and duration of emissions during such incidents. ~~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.~~ For each gas turbine/HRSG system, excess emissions of NO_x and CO resulting from startup, shutdown, or ~~documented~~ malfunction~~s~~ shall be excluded from CEMS data ~~shall not exceed two hours~~ in any 24-hour period (or shall not exceed eight hours per 4-unit site, with the additional provision of a limit of 2 startup periods per 24 hours per unit) ~~except~~ for the following ~~specific cases~~ conditions. (These conditions are considered separate events and each event may occur independently within any 24-hour period):

   a. *Steam Turbine Cold Startup*: For cold startup of the steam turbine ~~system~~, ~~excess~~ excluded emissions from any gas turbine/HRSG system shall not exceed eight ~~(8)~~ hours in any 24-hour period. Cold startup of the steam turbine system shall be completed within twelve hours. 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. *{Note: During a cold startup of the steam turbine ~~system~~, each gas turbine/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. *Gas Turbine/HRSG System Cold Startup:* For cold startup of a gas turbine/HRSG system, excluded emissions shall not exceed four hours in any 24-hour period. "Cold startup of a gas turbine/HRSG system" is defined as a startup after the pressure in the high-pressure (HP) steam drum falls below 450 pound per square inch gauge (psig) for at least a one-hour period.

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c. *Gas Turbine/HRSG System Warm Startup:* For warm startup of a gas turbine/HRSG system, excluded emissions shall not exceed two hours in any 24-hour period (or shall not exceed 8 hours per 4-unit site, with the additional provision of a limit of 2 startup periods per 24 hours per unit). "Warm startup of a gas turbine/HRSG system" is defined as a startup after the pressure in the high-pressure (HP) steam drum is above 450 psig.

d. *Shutdown Combined Cycle Operation:* For shutdown of the ~~steam turbine system~~ combined cycle operation, ~~excess~~ excluded emissions from any gas turbine/HRSG system shall not exceed three ~~(3)~~ hours in any 24-hour period.

e. *Gas Turbine/HRSG System Shutdown: For shutdown of the gas turbine/HRSG operation,* excluded emissions from any gas turbine/HRSG system shall not exceed two hours in any 24-hour period.

~~f. *Gas Turbine/HRSG System Cold Startup*: For cold startup of a gas turbine/HRSG system, excess emissions shall not exceed four (4) hours in any 24-hour period. "Cold startup of a gas turbine/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.~~

g. *Documented Malfunction:* For the gas turbine/HRSG system, excess emissions of NO_x and CO resulting from documented malfunctions shall not exceed two hours in any 24-hour period. 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.

Ammonia injection shall begin as soon as operation of the gas turbine/HRSG system achieves the operating parameters specified by the manufacturer. As authorized by Rule 62-210.700(5), F.A.C., the above conditions allow excess emissions only for specifically defined periods of startup, shutdown, and documented malfunction of the gas turbines. [Design; Rules 62-212.400(BACT) and 62-210.700, F.A.C.; Applicant's requests dated March 6, 2006, & July 3, 2008; and, Application No. 0810010-018-AC.]

3. To make the excess emissions provisions for these units consistent with other FPL permits by clarifying excludable periods of operation from the CEMS data during necessary periods of tuning of the combined cycle systems, this Condition revises Specific Condition 19 of air construction permit No. 0810010-006-AC as follows:

   DLN Tuning/FSNL Testing/Green Rotor Run-in: CEMS data collected during initial or other major DLN tuning sessions and during manufacturer required Full Speed No Load (FSNL) trip tests or Green Rotor Run-in periods 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, FSNL, or Green Rotor Run-in activities, the permittee shall provide the Compliance Authority with an advance notice of at least one working (business) day that details the activity and proposed tuning schedule. The notice may be by telephone, facsimile transmittal, or electronic mail. [Application No. 0810010-018-AC]

4. To allow flexibility to certification procedures for the CO monitors, this Condition revises Specific Condition 25.a. of air construction permit No. 0810010-006-AC as follows:

   CO Monitors. Each CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4 or 4A. Quality assurance procedures shall conform to the requirements of 40 CFR 60, Appendix F, or Part 75, 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.

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5. To clarify the testing frequency for particulate matter and visible emissions for fossil fuel fired steam electric generator Units 1 and 2, Specific Condition 10. of air construction permit No. 0810010-016-AC is revised as follows:

10. Annual and Renewal Compliance Tests: ~~During each federal fiscal year (October 1st to September 30th) the stack associated with each EU shall be tested to demonstrate compliance with the emissions standards for VE given in **Specific Conditions 4 and 5** of this subsection and the emissions standards for PM/PM10 given in **Specific Conditions 6 and 7** of this subsection~~ Compliance tests shall be performed for these units according to the requirements in **Specific Condition 11**. and at the following frequencies:

a. *Annual Tests Required Under Normal Operation.* During each federal fiscal year (October 1st to September 30th) in which fuel oil is fired, either alone or in combination with other fuels for more than 400 hours, other than during startup, the stack associated with each EU shall be tested to demonstrate compliance with the emissions standards for VE given in **Specific Condition 4** of this subsection and the emissions standards for PM/PM_{10} given in **Specific Condition 6** of this subsection. [Rules 62-4.070(3) and 62-297.310(7)(a)4. & 5., F.A.C.]

b. *Annual Tests Required While Soot Blowing.* A compliance test shall also be conducted annually while the emissions unit is operating under soot blowing conditions in each federal fiscal year during which soot blowing is part of normal emissions unit operation, except that such test shall not be required in any federal fiscal year in which fuel oil is not fired, either alone or in combination with other fuels, for more than 400 hours, other than during startup, to demonstrate compliance with the emissions standards for VE given in **Specific Condition 5** of this subsection and the emissions standards for PM/PM_{10} given in **Specific Condition 7** of this subsection. [Rule 62-297.310(7)(a)2., F.A.C.]

c. *Renewal Tests*. Prior to obtaining a renewed operation permit, the stack associated with each EU shall be tested to demonstrate compliance with the emissions standards for VE given in **Specific Conditions 4 and 5** of this subsection and the emissions standards for PM/PM10 given in **Specific Conditions 6 and 7** of this subsection. [Rule 62-297.310(7)(a)3., F.A.C.]

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