DRAFT
PERMIT

PERMITTEE

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

Authorized Representative:
Jeff Smith, Plant General Manager

Air Permit No. PSD-FL-270E
Project No. 1270009-022-AC
Sanford Power Plant Units 4 and 5
Combustion Turbine Improvements
Permit Expires: June 1, 2014
Volusia County

PROJECT

This is the draft air construction permit, which modifies original Permit No. PSD-FL-270 that authorized the construction of Units 4 and 5, two "4-on-1" combined cycle systems. This revision authorizes the replacement and upgrade of certain components on the gas turbines. Units 4 and 5, each have a total capacity of approximately 1,000 megawatts (MW) in combined cycle operation. The proposed work will be conducted at the existing Sanford Power Plant, which is an electric utility power plant categorized under Standard Industrial Classification No. 4911. The existing facility is located in Volusia County 950 South Highway 17-92, in DeBary, Florida. The UTM coordinates are Zone 17, 468.1 km East and 3190.86 km North.

This draft permit is organized into the following sections: Section I (General Information); Section II (Administrative Requirements); Section III (Emissions Unit Specific Conditions); Section IV (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section IV 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 draft 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 will be 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, Administrator (Date)
Office of Permitting and Compliance
Division of Air Resources Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit with Appendices) 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 _____ to the persons listed below.

Mr. Jeff Smith, FPL: jeff_smith@fpl.com
Mr. Kevin Washington, FPL: kevin.washington@fpl.com
Mr. Randy Hopkins, FPL: randy.hopkins@fpl.com
Mr. Kennard Kosky, P.E., Golder Associates: ken_kosky@golder.com
Ms. Caroline Shine, DEP Central District: caroline.shine@dep.state.fl.us
Ms. Heather Ceron, EPA Region 4: ceron.heather@epa.gov
Ms. Lynn Scearce, DEP OPC Reading File: 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.

(DRAFT)

_____ _____
(Clerk) (Date)

REPOWERED COMBINED CYCLE UNITS 4 AND 5 (EU-005 to EU-012)

FACILITY DESCRIPTION

The existing facility consists of the following emissions units.

EU No.	Brief Description
Regulated Emissions Units	
001	Electric Utility Steam Generating Unit 3
004	Miscellaneous Engines
005	Combined Cycle Combustion Turbine Unit 4A
006	Combined Cycle Combustion Turbine Unit 4B
007	Combined Cycle Combustion Turbine Unit 4C
008	Combined Cycle Combustion Turbine Unit 4D
009	Combined Cycle Combustion Turbine Unit 5A
010	Combined Cycle Combustion Turbine Unit 5B
011	Combined Cycle Combustion Turbine Unit 5C
012	Combined Cycle Combustion Turbine Unit 5D
Unregulated Emissions Units	
013	Two evaporative equipment coolers

PROPOSED PROJECT

The applicant proposes to upgrade the eight Combustion Turbines during an otherwise routine maintenance outage. The changes will increase the efficiency and power output of each CT by installing new hot gas path components, combustion liners, flow sleeves and new control software characteristic of the more recent GE Model 7FA.04 CT to increase firing temperature. Details of the project are provided in the application and the enclosed Technical Evaluation and Preliminary Determination. The combined-cycle combustion turbines are Acid Rain Units.

FACILITY REGULATORY CLASSIFICATION

- The facility is not a major source of hazardous air pollutants (HAP).
- The facility operates units subject to the Acid Rain provisions of the Clean Air Act (CAA).
- The facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. PSD

SECTION II – ADMINISTRATIVE REQUIREMENTS

REPOWERED COMBINED CYCLE UNITS 4 AND 5 (EU-005 to EU-012)

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance, Division of Air Resource Management, Florida Department of Environmental Protection (Department). The Office of Permitting and Compliance mailing address 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 Central District at: 3319 Maguire Boulevard, Suite 232, Orlando, FL 32803-3767.

3. Appendices: The following Appendices are attached as a 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, 62-296 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: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be 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: 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.]

8. Actual Emissions Reporting: This permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C. for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject to the reporting and recordkeeping provisions as described in Section III, Specific Condition No. 3. [Rule 62-210.370, F.A.C.]

9. NSPS, Subpart KKKK Applicability Determination: The permittee shall submit an applicability analysis related to 40 CFR 60, Subpart KKKK – Standards of Performance for Stationary Combustion Turbines as detailed in Section III, Specific Condition No. 4. [Rule 62-4.070(3), F.A.C.]

SECTION III – EMISSION(S) UNIT SPECIFIC CONDITIONS

REPOWERED COMBINED CYCLE UNITS 4 AND 5 (EU-005 to EU-012)

This section of the permit addresses the following emissions units.

EU No.	Sanford Combustion Turbines (CT)			Unfired HRSG	Total
	Unit No.	CT No.	MW, Shaft		
Combined Cycle Unit No. 4					
005	Combined Cycle Combustion Turbine 4A	PSNCT4A	170 MW	320 MW	1000 MW
006	Combined Cycle Combustion Turbine 4B	PSNCT4B	170 MW		
007	Combined Cycle Combustion Turbine 4C	PSNCT4C	170 MW		
008	Combined Cycle Combustion Turbine 4D	PSNCT4D	170 MW		
Combined Cycle Unit No. 5					
009	Combined Cycle Combustion Turbine 5A	PSNCT5A	170 MW	320 MW	1000 MW
010	Combined Cycle Combustion Turbine 5B	PSNCT5B	170 MW		
011	Combined Cycle Combustion Turbine 5C	PSNCT5C	170 MW		
012	Combined Cycle Combustion Turbine 5D	PSNCT5D	170 MW		

PREVIOUS APPLICABLE REQUIREMENTS

1. Other Permits: The conditions of this permit supplement all previously issued air construction and operation permits for these emissions units. Unless otherwise specified, these conditions are in addition to all other applicable permit conditions and regulations. [Rule 62-4.070, F.A.C.]

EQUIPMENT

2. Combustion Turbine Improvements on Units 4 and 5: The permittee is authorized to conduct work on Units 4 and 5 (EU 005 – 012) to replace various components of the Series 7FA.03 gas turbines with upgraded components of the Series 7FA.04 version including (but not limited to) the following:

   - New hot gas path components;
   - New combustion liners and flow sleeves; and
   - New control software.

   [Application No. 1270009-022-AC]

REPORTING REQUIREMENTS

{Permitting Note: Continuous compliance with the NO_X standards will be demonstrated by CEMS. Other required stack tests may be conducted during the next scheduled period in accordance with existing permit conditions.}

3. Actual Emissions Reporting: This permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C. for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject to the following monitoring, reporting and recordkeeping provisions.

   a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year (TPY) on a calendar year basis, for a period of 5 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C., which are provided in Appendix C of this permit.

b. The permittee shall report to the Department within 60 days after the end of each calendar year during the 5-year period setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:

1) The name, address and telephone number of the owner or operator of the major stationary source;

2) The annual emissions calculations pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;

3) If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

4) Any other information that the owner or operator wishes to include in the report.

c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

d. The Department has identified NO_X as the only PSD pollutant that could reasonably increase as a result of this modification. For informational purpose, the permittee estimated the baseline actual emissions of NO_X as 1,328 TPY. The permittee shall use the installed CEMS to determine and report the actual annual emissions of NO_X for the purpose of comparisons with baseline actual emissions.

e. Heat input rates will vary depending upon gas turbine 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(PTE), F.A.C.]

[Application 1270009-022-AC; and Rules 62-212.300(1)(e) and 62-210.370, F.A.C.]

4. <u>NSPS, KKKK Applicability Determination</u>: The permittee shall conduct tests in accordance with 40 CFR 60, Appendix C - Determination of Emission Rate Change. The permittee shall submit the data for each combustion turbine within 60 days after tests are completed. The submittal shall include a preliminary inference whether the short-term NO_X emission rates (in pounds per hour), while operating in the normal combined cycle mode and burning natural gas, after the change are greater than before the change with 95% confidence and an analysis regarding the applicability of 40 CFR 60, Subpart KKKK – Standards of Performance for Stationary Combustion Turbines. The tests shall be conducted using the installed NO_X CEMS with the units operated as if a manual test were being performed. Valid data using the averaging time, which would be required if a manual emission test were being conducted, shall be used. The number (n) of runs shall be between 20 and 29. If test data shows NO_X emissions for any combustion turbine increases, the permittee will become subject to 40 CFR 60, Subpart KKKK, and shall immediately begin complying with all of the provisions applicable to the unit. In such case, the applicable provisions of 40 CFR 60, Subpart KKKK will be incorporated into the Title V air operation permit during the next revision or renewal. [Rule 62-4.070, F.A.C., and Application 1270009-022-AC]

MODIFIED PERMIT CONDITIONS

5. In addition, this permit changes the excess emissions provisions contained in Specific Condition 1 of permit No. 1270009-008-AC (PSD-FL-270A) (which changed the original excess emissions provisions established in Specific Condition 24. of permit No. 1270009-004-AC (PSD-FL-270)) in order to establish provisions for excess emissions due to dry low NO_X (DLN) tuning and full speed no load (FSNL) testing as shown below. Pursuant to Rules 62-210.200(220) and 62-213.410(2), F.A.C., this change in the PSD-established excess emissions provisions is considered an operating change that does not require a Title V permit revision, since it does not contravene an applicable requirement for the source and does not constitute a modification. The

provisions of this condition supersede the excess emissions provisions established in Specific Condition B.12. of permit No. 1270009-018-AV and will be incorporated into the Title V permit as an applicable requirement at the next opportunity. New text is shown with double underline and deleted text is shown with ~~strikethrough~~.

1. ~~Excess emissions resulting from startup, shutdown, or malfunction of the *combustion turbines (CTs) and associated heat recovery steam generators (HRSGs)* shall be permitted provided that best operational practices are adhered to and the duration of excess emissions shall be minimized. Excess emissions occurrences shall in no case exceed two (2) hours in any 24-hour period except during both "cold startup" to or "shutdowns" from combined cycle operation [CT and associated HRSG]. During cold startup to combined cycle operation, up to four (4) hours of excess emissions are allowed. During shutdowns from combined cycle operation, up to three (3) hours of excess emissions are allowed. Cold startup is defined as a startup to combined cycle operation when the heat recovery steam generator high-pressure drum is below 450 psig for at least one (1) hour.~~

   ~~Excess emissions from the CTs resulting from startup of the *steam turbine system* shall be permitted provided that best operational practices are adhered to and the duration of excess emissions shall be minimized. Excess emissions occurrences shall in no case exceed 12 hours per CT per cold startup of the steam turbine system [CT(s) and associated HRSG(s), Steam Turbine and Generator]. Cold startup of the steam turbine system shall be completed within twelve (12) hours.~~

   ~~[Rule 62-297.310(2), F.A.C.; and, 1270009-008-AC/PSD-FL-270(A)]~~

   Allowable Excess Emissions. Subject to the following conditions, excess emissions resulting from startup, shutdown, tuning and malfunction of the combustion turbines shall be permitted provided that best operational practices are adhered to and the duration of excess emissions shall be minimized.

   a. Except during "cold startup to combined cycle operation" or "shutdown from combined cycle operation" excess emissions occurrences shall not exceed two hours in any 24-hour period.

   b. Cold startup to combined cycle operation is defined as operation when the HRSG high-pressure drum has been below 450 psig for at least one hour. During cold startup to combined cycle operation, up to four hours of excess emissions are allowed.

   c. During shutdown from combined cycle operation, up to three hours of excess emissions are allowed.

   d. During cold startup of the steam turbine system (combustion turbines, HRSG and steam turbine electrical generator), up to 12 hours per combustion turbine per cold startup of the steam turbine system are allowed. Cold startup of the steam turbine system shall be completed within 12 hours.

   e. 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 as identified by the equipment manufacturer. . Prior to performing any major tuning session, the permittee shall provide the Compliance Authority with an advance notice that details the activity and proposed tuning schedule. The notice may be by telephone, facsimile transmittal, or electronic mail.

   f. Subject to the following conditions, excess emissions resulting from full speed no load (FSNL) testing shall be permitted for limited periods:

      (1) The permittee notifies the Compliance Authority for each day that FSNL testing is required;

      (2) The duration of excess emissions shall not exceed 15 hrs for the entire test period

      (3) The permittee submits a report to the Compliance Authority summarizing the hourly NO_X

emissions during the FSNL period; and

(4) This authorization does not waive any applicable federal requirements of NSPS Subparts A or GG.

[Rules 62-4.070(3), 62-4.130 & 62-210.700, F.A.C.; applicant request from project No. 1270009-017-AC; and, Permit No. 1270009-008-AC/PSD-FL-270(A)]