Department of
Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

August 29, 2006

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
Mr. Paul Plotkin, Plant General Manager
Florida Power & Light Company (FP&L)
Manatee Power Plant
700 Universe Boulevard
Juno Beach, Florida 33408

Re: FP&L Manatee Power Plant
DEP File No. 0810010-012-AC (PSD-FL-328A)
Combined Cycle Unit 3 PSD Permit Modification

Dear Mr. Plotkin:

The Department has reviewed FP&L's letter of March 3, 2006 and the rationale (attached) received on April 27, 2006 requesting the modification on Air Construction/PSD Permit 0810010-012-AC (PSD-FL-328) issued April 15, 2003. FP&L requested to delete the bypass stacks and gas heaters that were not installed. FP&L also requested to revise the excess emissions period from 6 to 8 hours during the cold startup process of the Unit 3 steam turbine-electric generator. The requests are acceptable as presented.

Specific conditions Section III, Part A, No. 4 and No. 16 and Section III Part B No. 1 are hereby modified as shown below. Double-underline denotes additions and strikethrough (~~strikethrough~~) indicates deletions.

SECTION III PART A.

4. Gas Turbine Units 3A throughout 3D: The permittee is authorized to install, tune, operate, and maintain four new General Electric Model PG7241FA gas turbine-electrical generator sets each with a nominal capacity of 170 MW (EU 006, 007, 008 and 009). Each gas turbine shall include the Speedtronic™ automated gas turbine control system. 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 will utilize the "hot nozzle" DLN combustors, which require natural gas to be preheated to approximately 290° F before combustion to increase overall unit efficiency. ~~Gas-fired fuel heaters (EU 010)~~ Hot water/electric heaters will preheat the natural gas during simple cycle operation and during startup to combined cycle operation. For full combined cycle operation, feedwater heat exchangers will preheat the natural gas. [Application; Design]

16. Excess Emissions Allowed: As specified in this condition, excess emissions resulting from startup, shutdown, 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 resulting from startup, shutdown, or documented malfunctions shall not exceed two hours in any 24-hour period except for the following specific cases.

a. For cold startup of the steam turbine system, excess emissions from any gas turbine/HRSG system shall not exceed ~~six~~ eight 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. *{Permitting 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}.*

The remainder of Condition 16 is unchanged.

SECTION III PART B

~~This section of the permit addresses the following emissions units.~~

ID	Emission Unit Description
010	~~Four gas-fired fuel heaters, 24MMBtu/hour each and an~~ Ammonia Storage Tank

~~REGULATION~~

~~1. NSPS Subpart Dc Regulation Exemption: The gas-fired fuel heaters are exempt from Subpart Dc, 40 CFR 60, and New Source Performance Standards. These units are considered Process Heaters. A "process heater" is defined as a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst. *{Permitting Note: EPA has determined that these heaters are not considered steam generating units but process heaters: "As indicated in the definitions provided in Subpart Dc, a heat transfer medium must transfer heat from one point to another point in order for a combustion unit to be considered a steam generating unit affected facility. The only material which could be considered a heat transfer medium in the fuel heaters described by FPL would be the natural gas which is being heated. However, the natural gas is not being heated for the purpose of transferring heat from one point to another. Since the natural gas is being heated prior to its use as a fuel, it is considered to be a reactant in a chemical reaction (i.e., combustion). As such the fuel heaters would be considered process heaters"}.*~~

~~[40 CFR 60.40c; 40 CFR 60.41c; Rule 62-204.800(7) (b), F.A.C., EPA's letter dated February 5, 2003.]~~

~~EQUIPMENT SPECIFICATIONS~~

~~2. Equipment: The permittee is authorized to install, operate, and maintain four fuel heaters fired exclusively with natural gas at a maximum heat input rate of 24 MMBtu per hour. The fuel heaters will be designed to preheat the natural gas during simple cycle operation and during startup to combined cycle operation. For full combined cycle operation, feedwater heat exchangers will preheat the natural gas.~~

~~[Applicant Request; Rule 62-210.200(PTE), F.A.C.]~~

~~EMISSIONS AND PERFORMANCE REQUIREMENTS~~

~~3. Hours of Operation: The hours of operation for the gas-fired fuel heaters are not restricted (8760 hours per year).~~

~~[Applicant Request; Rule 62-210.200(PTE), F.A.C.]~~

~~4. Good Combustion: If visible emissions are greater than 5% opacity, the permittee shall investigate the cause, take appropriate corrective actions, and document the incident. This condition does not impose any initial or periodic testing.~~

~~[Rules 62-4.070(3) and 62-210.700(4), F.A.C.; 40 CFR 60, Appendix A]~~

~~RECORDS~~

~~5. Reporting: The permittee shall maintain records of the amount of natural gas used in the heaters. These records shall be submitted to the Compliance Authority on an annual basis or upon request.~~

~~[Rule 62-4.070(3] F.A.C.]~~

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permit modification is issued pursuant to Chapter 403, Florida Statutes. Any party to this order (permit modification) has the right to seek judicial review of it under Section 120.68, F.S., by the filing of 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 of Appeal must be filed within (thirty) days after this Notice is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

Sincerely,

Joseph Kahn, P.E., Acting Director
Division of Air Resource
Management

JK/THV/AAL/th

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this PERMIT MODIFICATION (including the final permit determination) was sent by U.S. certified mail (*) and copies were sent by electronic mail (e-mail) before the close of business on 8/30/06 to the person(s) listed:

Paul Plotkin*, R.O.
Kevin Washington, FP&L (e-mail)
Kennard F. Kosky, P.E. (e-mail)
Mara Nasca, FDEP-SWD Office (e-mail)
Buck Oven, DEP-PPS Office (e-mail)
Clarence Troxell*

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk) 8/30/06 (Date)

Florida Power and Light Rationale Behind The Request To Extend The Excess Emissions Period From 6-Hours To 8-Hours When Conducting A Cold Start-Up Of The Steam Turbine/Generator At Manatee Plant Combined Cycle Unit 3

Although a Cold Steam Start-Up is a complex procedure done infrequently, actual operating experience now shows that the six hours originally permitted by the PSD and AC permits is inadequate to successfully, and smoothly, execute a cold Steam Turbine start. The Steam Turbine Start Up process has CTs sequentially started so that the respective Heat Recovery Steam Generator (HRSG) is able to provide a sufficient quantity of steam at the appropriate temperature, pressure, and flow to maintain accurate Steam Turbine speed control and warm the Steam Turbine slowly. This requires that the CT's be run at low loads. Typically, one CT is started ahead of the others, and a second CT is started somewhat later. When the steam conditions from the second CT/HRSG matches the pressure and temperature of the first HRSG, it is "blended" by means of valving operations with the first CT/HRSG steam and the start-up progresses. Later, a third CT/HRSG combination is started, warmed up, and "blended". This is done in order to "unblend" the first CT/HRSG as it approaches the 6-hour excess emissions window. That is, the steam from the first CT's HRSG is routed by means of valving operations from the Main Steam Turbine Header to the condenser. The first CT's load is then ramped up to a point where the SCR can be placed into service and render the CT in compliance with its normally permitted emissions. Afterward, it is "re-blended" with the other two starting units.

This process of "unblending" one CT while ensuring the other CT's have been sequentially started up, and in the right configuration to provide steam of adequate temperature, pressure, and quantity to be "blended" to the steam turbine has proven to be challenging. During the "unblending" and "blending" valving operations, CT HRSG's temperatures, pressure and drum levels become very difficult to control. Any HRSG instability can trip the CT's which would require a new restart and potentially more excess emissions, either from a restart of the CTs, or more typically, the start-up must postponed until the next calendar day as insufficient start-up time remains in the current 24-hour period. Postponing the start-up until the next day necessitates that the needed generation is supplied from elsewhere. In the case of Manatee Unit 3, any alternate source is a higher emitting source. Manatee Plant Units 1 or 2 would likely provide that replacement generation.

Extending the 6 hour emission limit to 8 hours would significantly reduce the number of "unblending/blending" operations, and provide more certainty of a successful timely start using as few as two CTs. It also will allow more operational flexibility in cases where the load from 3 or 4 CT's is not needed, or when 2 CT's are out of service for routine maintenance.

Manatee Unit 3 conducted a cold start-up of the Steam Turbine System on June 12, 2005. Three CTs were used during the start-up. To remain within the 6-hour excess emissions window, CT-A was unblended at the end of its 6-hour period, ramped up in firing rate, and the SCR placed into service. The CEM emissions data in Table 1 below is from that start-up. The "Additional 2 hours" of emissions data is projected from the actual emissions of the last 2 hours (hours 5 and 6) of CT-A and CT-C operation.

PMT UNIT 3 COLD TURBINE S/U JUNE 12, 2005
NOx emissions in pounds from CEM data

	CT-A	CT-B	CT-C	A+C	A+B+C
First 6 hours	554	509	574		
Additional 2 hours *Projected from hours 5 and 6 actual emissions	209*		230*		
Projected total for 2 CTs @ 8 hours each (CTs A & C)	763		804	**1,567**	
Total for 3 CTs @ 6 hours each	554	509	574		**1,637**

Table 1

A two CT start-up with 8-hours of excess emissions versus a three CT start-up with 6-hours of excess emissions allows:

- Greater operational flexibility,
- Simplifies the start-up process,
- Has less risk from unintended CT trips associated with blending/unblending operations, and
- Offers a modest net reduction in NOx mass emissions over the duration of the start-up.

This same 8-hour, two CT scenario has applicability to Martin Unit 8, and Turkey Point Unit 5 as well.

FINAL DETERMINATION
Florida Power & Light Company
Manatee Power Plant
DEP File No. 0810010-012-AC
Permit Modification to PSD-FL-328

The Department distributed a public notice package on June 20, 2006 for modifications of certain specific conditions of the Air Construction/PSD Permit (PSD-FL-328) for the 1,150 megawatt gas-fired combined cycle project (Unit 3) at the FPL Manatee Power Plant. The project, already constructed, consists of four combustion turbine-electrical generators with supplementary-fired heat recovery steam generators that in turn provide steam for a single large steam turbine-electrical generator.

The Public Notice of Intent to Issue Air Permits (Air Construction/PSD Permit Modification and Title V Operation Permit Revision) was published in the Bradenton Herald on July 11, 2006. The proof of publication was received on July 17, 2006. No comments were received by the Department from the public, EPA or any other government agencies as a result of this Public Notice.

The final action of the Department is to issue the permit modification to allow excess emissions during the cold startup of the steam turbine electric generator and exclusion of natural gas heaters that were not constructed. "Initial steam blows" and "initial compliance determinations" have been conducted. Conditions related to those events do not need to be removed from the Air Construction Permit.