Florida Power & Light Company, P.O. Box 088801, North Palm Beach, FL 33408-8801

FPL

April 12, 1995

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Bureau of
Air Regulation

Clair Fancy
Chief, Bureau of Air Regulation
State of Florida
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Florida Power & Light Company
Martin Power Plant
Temporary Permit Amendment

Dear Clair:

This correspondence is submitted to request from the Department a temporary permit amendment for FPL Martin Unit 4A combustion turbine. This emission unit is currently governed by PSD permit # PSD-FL-146 and Site Certification PA 89-27. This emission unit was placed into service on April 15, 1994. In September 1994, the Department granted a permit revision which allowed for testing of all four combustion turbines with redesigned combustor cans. Testing has been completed on three of the four combustion turbines as of this date.

However, FPL has, within the past few weeks, become aware of potential design issues in the compressor section of the GE combustion turbines. In order to adequately investigate these issues, FPL would like to conduct testing as described below.

Background

FPL has experienced two compressor failures on the 4A combustion turbine since October, 1994. There is no evidence that these failures are related to the dry low NOx combustors which, in their final design configuration, have performed well. The cause of these failures has not yet been determined. GE has identified additional problems with the same model combustion turbine in other installations outside of Florida. Some of these problems have been experienced at the Martin facility, but most were identified overseas. GE has initiated a world-wide test program to investigate the problems and identify their root cause. The root cause identification of the compressor failures and other related problems is the basis for a portion of the proposed test program.

Scope of Testing and Benefits

The test program that is contemplated for the 4A combustion turbine consists of five elements:

1. Compressor
2. Exhaust Diffuser
3. Vibration
4. Performance
5. Turbine Compartment

The purposes of the compressor testing are: 1) Verify the bolt clamping force at assembly and during machine operation; 2) Map the thermal response of the compressor rotor during operation; 3) Obtain rotor temperature data to determine the impact of temperatures on the compressor wheel; 4) Measure the dynamic response on stage 15 blades and stage 15 compressor wheel; and 5) Obtain operational data on the compressor.

The purpose of testing the exhaust diffuser is to determine the excitation mechanisms of the diffuser.

The purpose of the rotor vibration testing is to determine and understand vibrations during the various modes of operation.

The purpose of the performance testing is to determine the base load performance change with increased inlet guide vane (IGV) angle. This will allow determination of the firing temperature characteristics at current and future appropriate performance levels.

The purpose of the compartment temperature test is to monitor the turbine compartment during standard operating sequences.

Benefits of Testing

By performing this testing, FPL and GE will be able to determine what engineering design issues may exist in the compressor section of the combustion turbine, so they can be addressed and thus reduce the possibility of future failures of this component.

The Martin combined-cycle units are among the lowest-emitting as well as among the most efficient generating units in the FPL system. Therefore, when the Martin units are unavailable to provide generating capacity, other, higher-emitting units must be operated in order to make up the deficit in generating capacity.

Test Dates and Times

Unit 4A is currently out of service for an outage. The proposed test program is planned to commence on April 26, 1995, and to be completed on May 26, 1995 or 30 days after initial startup from the current outage. It is possible that the start date could change depending on when the unit is available to return to service. FPL has identified 75 to 100 hours of operation during the test period during which there is a potential for emissions to be higher than the current 25 ppm NOx permit *basis*. During that 75 to 100 hours,

emissions may at times be higher than the current permit limit of 177 pounds per hour of NOx.

Testing will be performed for 12-14 hours on a typical test day. However, the combustion turbine will be operated normally, in full compliance with current permit limits, during the remainder of each day during the testing period. During the evaluation and testing of the combustion turbine, all pollutant emissions will comply with applicable NSPS limits. Due to the fragile nature of the installed test instrumentation, the testing must be completed as soon as possible after the unit has been restarted from the current outage.

FPL understands that this temporary permit amendment will be in effect for 30 days after startup from the current outage or the completion of testing, whichever occurs first.

Attachment 1 to this letter is potential language for a Temporary Permit Amendment which FPL requests the Department issue, allowing the short-duration testing proposed herein.

FPL recognizes and is appreciative of the Department's cooperation in resolving this situation. Please do not hesitate to contact me at (407) 625-7661 if you have any questions. Thank-you in advance for your consideration of this matter.

Very Truly Yours,

Vince Slonaker for Richard Piper

Richard Piper
Environmental Specialist
Florida Power & Light Company

cc: Hamilton S. Oven FDEP/Tallahassee
Tom Tittle FDEP/West Palm Beach

ATTACHMENT 1 (PROPOSED VERSION
TEMPORARY PERMIT AMENDMENT SEE REVISED VERSION FROM FPL ATTACHED)

Florida Power & Light Company is hereby authorized to perform operational testing on combustion turbine 4A for a maximum period of 30 days in order to evaluate potential design issues in the compressor section of the unit, subject to the following conditions:

1. The Department's Southeast District Air Program Administrator shall be notified either in writing or by facsimile, at least 3 days prior to the commencement of testing.

2. To allow time for evaluation and testing of alterations to the compressor section of the combustion turbine, the emission limitations in Specific Condition 4 of the referenced permit (PSD-FL-146) shall not apply on any day during which testing is being conducted during a 30-day period following startup after the current outage. This temporary permit amendment shall remain in effect for 30 days from startup after the current outage or until the testing is completed on combustion turbine 4A, whichever occurs first.

3. During the evaluation and testing of the combustion turbine all pollutant emissions shall comply with the emission limits specified by the New Source Performance Standards (NSPS) for CTs, 40 CFR 60, Subpart GG. The annual allowable emissions (TPY) of NOx for CT 4A in permit PSD-FL-146 shall not be exceeded.

4. During the test period, the currently permitted pounds per hour emission limits for NOx, CO and VOC shall apply as 24-hour average emission limits.

5. After completion of the testing period, CT 4A must be in compliance with all limitations in the referenced permit.

ATTACHMENT 1 (REVISED)

Pursuant to the letter from FPL dated April 12, 1995, and subsequent conversations with the FDEP Southeast District Office, Florida Power & Light Company is hereby authorized to perform operational testing on combustion turbine 4A (CT4A) on natural gas fuel in order to evaluate potential design issues in the compressor section of the unit, subject to the following conditions:

1. The Department's Southeast District Air Program Administrator shall be notified either in writing or by facsimile, at least 3 days prior to the commencement of testing of CT4A.

2. To allow time for evaluation and testing of alterations to the compressor section of CT4A, except as indicated below, the pound-per-hour emission limitations in Specific Condition 4 of the referenced permit (PSD-FL-146) for NOx, CO** and VOC** shall not apply to CT4A on any hour during which testing is being conducted pursuant to this temporary permit amendment. This temporary permit amendment shall remain in effect for 30 calendar days from startup after the current outage or until the testing is completed on combustion turbine 4A, whichever occurs first.

3. During the evaluation and testing of CT4A, all CT4A pollutant emissions shall comply with the emission limits specified by the New Source Performance Standards (NSPS) for CTs, 40 CFR 60, Subpart GG.

4. Within 45 days after the completion of the test period, FPL shall furnish the Department with a report summarizing the results of the testing of the compressor and identify any operational problems with the CT units remaining to be resolved.

5. After completion of the testing period, CT 4A must be in compliance with all limitations in the referenced permit.

** Based on previous testing of several GE model MS-7001-FA combustion turbines under worst-case conditions, VOC and CO emissions can be expected to reach levels as high as 446 lb/hour and 2,800 lb/hour respectively. The permittee shall utilize the data derived from the aforementioned previous testing of GE model MS-7001-FA combustion turbines in determining the emissions of VOC and CO for the purposes of determining annual emissions and fees for CT4A for the test period.