

December 12, 1997

Mr. Roy A. Anderson  
Senior Vice President,  
Nuclear Operations  
Florida Power Corporation  
ATTN: Manager, Nuclear Licensing  
Crystal River Energy Complex (SA2A)  
15760 W. Power Line Street  
Crystal River, Florida 34428-6708

SUBJECT: CRYSTAL RIVER UNIT 3 - STAFF EVALUATION AND ISSUANCE OF AMENDMENT  
RE: EMERGENCY DIESEL GENERATOR AIR HANDLING SYSTEM (TAC NO. M99484)

Dear Mr. Anderson:

The Commission has issued the enclosed Amendment No. 160 to Facility Operating License No. DPR-72 for the Crystal River Unit 3. This amendment is in response to your request dated August 26, 1997, in which Florida Power Corporation proposed to revise the Final Safety Analysis Report (FSAR) and the Improved Technical Specification Bases to reflect a change in the design basis of the Emergency Diesel Generator Air Handling System.

The amendment approves changes to the FSAR, and requires that the changes be submitted with the next update of the FSAR pursuant to 10 CFR 50.71(e). A copy of the related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by:

L. Raghavan, Project Manager  
Project Directorate II-3  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosures:

1. Amendment No. 160 to DPR-72
2. Safety Evaluation

cc w/enclosures: See next page

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Mr. Roy A. Anderson  
Florida Power Corporation

CRYSTAL RIVER UNIT NO. 3

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

FLORIDA POWER CORPORATION  
CITY OF ALACHUA  
CITY OF BUSHNELL  
CITY OF GAINESVILLE  
CITY OF KISSIMMEE  
CITY OF LEESBURG  
CITY OF NEW SMYRNA BEACH AND UTILITIES COMMISSION,  
CITY OF NEW SMYRNA BEACH  
CITY OF OCALA  
ORLANDO UTILITIES COMMISSION AND CITY OF ORLANDO  
SEMINOLE ELECTRIC COOPERATIVE, INC.  
CITY OF TALLAHASSEE

DOCKET NO. 50-302

CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

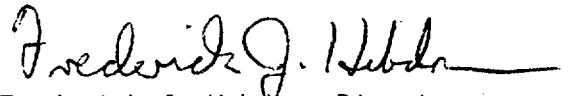
Amendment No. 160  
License No. DPR-72

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Florida Power Corporation, et al. (the licensees) dated August 26, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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2. Accordingly, the license is hereby amended to authorize revision of the Final Safety Analysis Report (FSAR) as set forth in the application for amendment by Florida Power Corporation dated August 26, 1997. The licensee shall submit the revised description authorized by this amendment with the next update of the UFSAR in accordance with 10 CFR 50.71(e).
3. This license amendment is effective as of its date of issuance and shall be implemented as specified in (2), above.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director  
Project Directorate II-3  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Date of Issuance: December 12, 1997



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

CONCERNING TECHNICAL SPECIFICATION BASES CHANGES REGARDING

THE EMERGENCY DIESEL GENERATOR AIR HANDLING SYSTEM

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

DOCKET NO. 50-302

1.0 INTRODUCTION

By letter dated August 26, 1997, Florida Power Corporation (FPC or the licensee) submitted License Amendment Request 216 (LAR-216) which proposed an amendment to Operating License No. DPR-72 for Crystal River Unit 3 (CR3) to change the design basis of the emergency diesel generator (EDG) air handling system. The proposed change to the design basis became necessary as a result of EDG upgrade modifications to increase the 200-hour and 2000-hour service ratings for each EDG. To reflect the change to the design basis, the licensee has proposed revisions to Sections 8.2.3 (Sources of Auxiliary Power) and 9.7 (Plant Ventilation Systems) of the Final Safety Analysis Report (FSAR), and revisions to Bases Sections B 3.8.1 (AC Sources-Operating) and B 3.8.2 (AC Sources-Shutdown) of the CR3 Technical Specifications. The proposed changes identify that for EDG operability either one or two cooling fans must be operable depending upon the air inlet temperature.

2.0 EVALUATION

The EDG air handling system provides continuous ventilation, and dissipates internal heat gains in the EDG engine room and EDG control room (i.e., EDG rooms) when the diesel is operating. The system safety function is to supply sufficient air to maintain the temperature of the EDG rooms equal to or less than 120 degrees fahrenheit (°F), the manufacturer's limit. Each EDG is provided with two axial flow cooling fans. According to the original design requirements, two full capacity cooling fans were provided for each EDG, but only one of the two was required to maintain the EDG room temperature within the manufacturer's limits. Thus, the original design consisted of two 100 percent capacity cooling fans that supplied air to the EDG rooms.

In 1987, the licensee recognized that combustion air was being drawn directly from the EDG engine room at unacceptably high temperatures. The temporary solution was to install additional duct work to discharge air from the cooling fans to the area of the EDG turbocharger inlet. As a result, the cooling fans had to supply combustion air in addition to room cooling air, and the total system air flow increased above the capacity of one fan. Therefore, two cooling fans were required to operate to support EDG operation. At that time,

the FSAR was revised to reflect that the fans were each 50 percent capacity and both were required for EDG operation.

In 1990, the licensee installed a permanent modification to provide a dedicated combustion air flow path to the turbocharger of each EDG with a cooler air source from outside the EDG engine room. That permanent solution restored the EDG air handling system cooling fans to the original design margin requiring one of the two fans to supply air to the EDG rooms. However, although plant documentation was updated, the FSAR was not updated to reflect that only one fan was required to support EDG operation. Therefore, the current FSAR (Revision 23) incorrectly states that the EDG air handling system design basis requires both cooling fans.

During the current extended outage, which began in 1996, the licensee upgraded the capacity of the EDGs. The heat load in the EDG rooms will increase due to operating the EDGs at higher power levels. Accordingly, single fan or dual fan operation provides adequate cooling depending on the fan supply air temperature. Dual fan operation is required at fan supply temperatures equal to or greater than 85°F. The licensee's new analysis showed that with both fans operating the EDG room temperatures will not exceed the design temperature of 120°F. Currently, both EDG air handling system cooling fans start automatically when the associated EDG starts.

The licensee's proposed changes to the design basis of the EDG air handling system results in a slight increase in the probability of inadequate EDG room cooling since the air handling system cooling fans will now be susceptible to a single failure at higher temperatures since two fans are required above 85°F. This was the licensee's basis for concluding that an unreviewed safety question existed. However, the air handling system has always been susceptible to some single failures since the system includes a single roughing filter and a common power supply to the fans. The staff has no requirements for redundant air handling systems for individual EDGs. Redundancy to meet the requirements of General Design Criterion (GDC) 17 "Electric Power Systems," is provided by the redundant EDGs and their associated supporting systems, including ventilation systems. Accordingly, a single 100 percent capacity cooling fan would be acceptable (and has been found acceptable at other plants) to meet the design basis for EDG ventilation cooling. However, the dual fan design at CR3 provides greater than minimal protection. If the EDG air supply temperature is less than 85°F and one fan fails, the system could maintain EDG room cooling within the design limits with the remaining fan. In the event the air supply temperature exceeds 85°F and one fan fails, the remaining fan may allow the temperature to rise above the design limit but should not result in immediate EDG failure, although the life of some electrical equipment may be shortened.

### 3.0 STATE CONSULTATION

Based upon written notice of the proposed amendment, the Florida State official had no comments.

#### 4.0 ENVIRONMENTAL CONSIDERATIONS

The amendment changes requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding (62 FR 50004). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

#### 5.0 CONCLUSION

Based on its evaluation, the staff concludes that the change to the design basis requiring single or dual cooling fan operation, depending on fan supply air temperature, for EDG operability is in accordance with the single failure requirements of GDC 17 and is consistent with the single failure protection capability afforded by other EDG support systems, i.e., a single failure cannot affect both EDGs. The staff, therefore, concludes that the licensee's proposed changes to FSAR and Bases sections of the plant technical specifications are acceptable.

Principal Contributor: W. LeFave

Date: December 12, 1997