

October 23, 2007

Mr. Dale E. Young, Vice President
Crystal River Nuclear Plant (NA1B)
ATTN: Supervisor, Licensing & Regulatory Programs
15760 W. Power Line Street
Crystal River, Florida 34428-6708

SUBJECT: CRYSTAL RIVER UNIT 3 - ISSUANCE OF AMENDMENT RE: NUCLEAR
SERVICES CLOSED CYCLE COOLING WATER SYSTEM (TAC NO. MD3227)

Dear Mr. Young:

The Commission has issued the enclosed Amendment No. 225 to Facility Operating License No. DPR-72 for Crystal River Unit 3. The amendment is in response to your letter dated October 11, 2006.

The amendment revises Technical Specification 3.7.7, "Nuclear Services Closed Cycle Cooling Water (SW) System," to reduce the allowed outage time when one of the required SW heat exchangers is out of service.

A copy of the Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Stewart N. Bailey, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-302

Enclosures:

1. Amendment No. 225 to DPR-72
2. Safety Evaluation

cc w/enclosures: See next page

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OFFICIAL RECORD

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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.
DOCKET NO. 50-302
CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 225
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 October 11, 2006, 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.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-72 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 225, are hereby incorporated in the license. Florida Power Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Thomas H. Boyce, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License and Technical Specifications

Date of Issuance: October 23, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 225

FACILITY OPERATING LICENSE NO. DPR-72

DOCKET NO. 50-302

Replace the following page of Facility Operating License DPR-72 with the attached revised page. The revised page is identified by amendment number and contains a vertical line indicating the area of change.

Remove
4

Insert
4

Replace the following page of the Appendix "A" Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains vertical lines indicating the areas of change.

Remove
3.7-15

Insert
3.7-15

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 225 TO FACILITY OPERATING LICENSE NO. DPR-72
FLORIDA POWER CORPORATION, ET AL.
CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT
DOCKET NO. 50-302

1.0 INTRODUCTION

By application dated October 11, 2006, the Florida Power Corporation (the licensee) requested changes to the Technical Specifications (TSs) for Crystal River Unit 3 (CR-3). The proposed change would revise TS 3.7.7, "Nuclear Services Closed Cycle Cooling Water (SW) System," to reduce the allowed outage time (AOT) when one of the required SW heat exchangers is out of service. TS 3.7.7 requires three SW heat exchangers to be operable. Currently, TS 3.7.7 allows the plant to continue operation for up to 72 hours before initiating a shutdown when one of the required SW heat exchangers is inoperable. The proposed revision would only allow operation to continue for 8 hours when one of the required SW heat exchangers is inoperable.

The licensee proposed this change pursuant to the guidelines of Nuclear Regulatory Commission (NRC) Administrative Letter (AL) 98-10, "Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety." The CR-3 TS Bases state that a completion time of 72 hours is appropriate for a condition that results in a loss of redundancy for a system. For a loss of redundancy, the system can still perform its function if the remaining operable equipment performs as designed. The licensee determined that, under specific conditions, the inoperability of one of the required SW heat exchangers can potentially result in a loss of function of the SW system, not just a loss of redundancy. The licensee determined that an 8-hour completion time is appropriate for this condition. In accordance with AL 98-10, the licensee adopted administrative controls to prevent operation with less than three SW heat exchangers, and applied for a license amendment to implement more conservative TSs.

2.0 REGULATORY EVALUATION

Section 50.36(d)(2)(ii) of Title 10 of the *Code of Federal Regulations* (10 CFR) contains the requirements for items that must be included in the TSs. This regulation states that a TS limiting condition for operation must be established for each item meeting one or more of the following criteria:

Criterion 1: Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of, or presents a challenge to the integrity of a fission product barrier.

Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of, or presents a challenge to the integrity of a fission product barrier.

Criterion 4: A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The rule does not specify the particular requirements to be included in a plant's TSs. NRC and industry representatives have developed guidelines for the content and quality of TSs. The utility owners groups and the NRC staff developed Standard Technical Specifications for each primary reactor type that would comply with the Commission's policy. The Commission issued the NUREG-1430, "Standard Technical Specifications Babcock and Wilcox Plants," Revision 3, as a model for developing TSs for Babcock and Wilcox plants.

3.0 TECHNICAL EVALUATION

The SW system is described in Section 9.5, "Cooling Water Systems," of the CR-3 Final Safety Analysis Report (FSAR). The system is designed to remove process and operating heat from safety-related components during normal operations and transient or accident conditions. The system consists, in part, of one normal service pump, two emergency pumps, and various heat exchangers. The largest postaccident heat loads on the SW system are from the spent fuel pool cooling system (SFPCS) heat exchangers and the reactor building cooling units (RBCUs).

There are four SW heat exchangers that reject heat from the SW system to the ultimate heat sink (UHS) via the nuclear services seawater (RW) system. TS 3.7.7 requires three SW heat exchangers to be operable. Section 9.5.2.1, "Nuclear Services Cooling Water Function," of the CR-3 FSAR states that three of the four SW heat exchangers supply the full normal and emergency cooling requirements, with the fourth SW heat exchanger in reserve.

The licensee performed an evaluation and determined that, under specific conditions, the SW system may not be able to perform its design function with one of the three required SW heat exchangers inoperable. The particular scenario is a loss-of-coolant accident (LOCA) with all emergency core cooling system (ECCS) trains in operation, with high UHS temperature, and the failure of one RW pump. This scenario results in the maximum heat addition (e.g., from the RBCUs) to the SW system with the minimum heat removal (e.g., from low RW system flow and high RW system temperature) from the SW system. The licensee determined that the SW temperature can exceed its limit of 110°F under these conditions. A high SW temperature could impact the operation of safety-related equipment such as the high pressure injection pumps and the RBCUs.

The licensee noted that there are significant conservatisms in the evaluation. Heat addition to the SW system from the SFPCS heat exchangers assumes a conservatively high number of fuel assemblies were discharged 26 days before the postulated event. Heat addition to the SW system from the RBCUs was determined based on an SW temperature of 100° F, and would be less at the SW design temperature of 110° F. The licensee also stated that the effects of SW heat exchanger tube blockage were considered, and that regularly-scheduled preventive maintenance, including cleaning of tubes, is performed on the SW heat exchangers to insure that their safety function is maintained.

The licensee described how the design of the engineered safeguards systems and the available operator actions provide defense in depth for the SW system. Operator actions, such as suspending SFPCS operation or realigning equipment to other cooling systems, can be used to prevent overheating of the SW system. Also, if the SW temperature becomes too high and the RBCUs cannot perform their safety function, the two trains of reactor building spray (BS) are sufficient to cool the containment postaccident.

The licensee proposed to reduce the AOT for the condition where one of the required SW heat exchangers is out of service. The licensee requested an 8-hour AOT based on similar CR-3 TSs involving a loss of design function. The licensee also stated that the 8-hour timeframe is adequate to perform cleaning or other maintenance activities that could restore the SW heat exchanger to an operable status. To implement the 8-hour AOT, the licensee proposed to add new Action B to TS 3.7.7. As an administrative change, current Action B of TS 3.7.7 is renamed Action C.

The NRC staff reviewed the information submitted by the licensee and the design of the SW system and its supported systems. The licensee proposed a more conservative TS AOT for the SW heat exchangers due to the potential for exceeding the SW system temperature limit when one of the required heat exchangers out of service. The 8-hour AOT is consistent with the current CR-3 TSs and with NUREG-1430 for a condition that potentially leads to a loss of function. The 8-hour completion time will also allow a reasonable timeframe for the licensee to return an SW heat exchanger to service.

The NRC staff notes the conservatisms in the licensee's evaluation of SW temperature. In addition to the stated conservatisms, the staff notes that BS would actuate and cool the containment in the design scenario of interest (LOCA with both trains of ECCS operating, and the failure of one RW pump), which would reduce heat input to the SW system. The staff finds that an 8-hour AOT is acceptable due to the low probability of an event that would result in exceeding the maximum SW system temperature. Therefore, the staff finds the proposed changes to TS 3.7.7 acceptable.

4.0 STATE CONSULTATION

Based upon a letter dated May 2, 2003, from Michael N. Stephens of the Florida Department of Health, Bureau of Radiation Control, to Brenda L. Mozafari, Senior Project Manager, U.S. Nuclear Regulatory Commission, the State of Florida does not desire notification of issuance of license amendments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the 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 amendment involves 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 the amendment involves no significant hazards consideration and there has been no public comment on such finding (72 FR 6783, published on February 13, 2007). 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.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Stewart N. Bailey

Date: October 23, 2007