

February 14, 1989

Docket No. 50-302

DISTRIBUTION
See attached sheet

Mr. W. S. Wilgus
Vice President, Nuclear Operations
Florida Power Corporation
ATTN: Manager, Nuclear Licensing
P. O. Box 219
Crystal River, Florida 32629

Dear Mr. Wilgus:

SUBJECT: CRYSTAL RIVER UNIT 3 - ISSUANCE OF AMENDMENT RE: ULTIMATE HEAT SINK
TEMPERATURE (TAC NO. 69298)

The Commission has issued the enclosed Amendment No. 109 to Facility Operating License No. DPR-72 for the Crystal River Unit No. 3 Nuclear Generating Plant (CR-3). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated November 16, 1987, as revised August 25, 1988 and supplemented October 31, 1988.

This amendment revises the maximum allowable temperature of the ultimate heat sink.

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

Sincerely,
Original signed by

Harley Silver, Project Manager
Project Directorate II-2
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 109 to DPR-72
2. Safety Evaluation

cc w/enclosures:
See next page

[AMEND/TAC NO. 69298]

LAJ/PDII-2
DMSilver
1/31/89

PM:PDII-2
HSilver:jd
1/31/89

D:PDII-2
HBerkow
1/31/89

OGC
APA
2/16/89

CP-1
JFOI
11
CW

DATED: February 14, 1989

AMENDMENT NO. 109 TO FACILITY OPERATING LICENSE NO. DPR-72-CRYSTAL RIVER UNIT 3

[REDACTED]
NRC & Local PDRs
PDII-2 Reading
S. Varga, 12/G/18
G. Lainas, 14/E/4
H. Berkow
D. Miller
H. Silver
OGC-WF
D. Hagan, 3302 MNBB
E. Jordan, 3302 MNBB
B. Grimes, 9/A/2
T. Meek(4), P1-137
Wanda Jones, P-130A
E. Butcher, 11/F/23
C. Li, 8/D/1
ACRS (10)
GPA/PA
ARM/LFMB
PD Plant-specific file [Gray File]
B. Wilson, R-II
Others as required

cc: Plant Service list



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

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
SEBRING UTILITIES COMMISSION
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. 109
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 November 16, 1987, as revised August 25, 1988 and supplemented October 31, 1988, 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. 109, 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.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 14, 1989

ATTACHMENT TO LICENSE AMENDMENT NO.109

FACILITY OPERATING LICENSE NO. DPR-72

DOCKET NO. 50-302

Replace the following page of the Appendix "A" Technical Specifications with the attached page. The revised page is identified by amendment number and contains vertical lines indicating the area of change. The corresponding overleaf page is also provided to maintain document completeness.

Remove

3/4 7-18

Insert

3/4 7-18

PLANT SYSTEMS

DECAY HEAT SEA WATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.4.2 Two independent decay heat sea water loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With only one decay heat sea water loop OPERABLE, restore the inoperable loop to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.4.2 Each decay heat sea water loop shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) servicing safety related equipment that is not locked, sealed or otherwise secured in position, is in its correct position.
- b. At least once per 18 months, during shutdown, by verifying that each decay heat sea water pump starts automatically upon receipt of an ESAS test signal.

PLANT SYSTEMS

3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

3.7.5.1 The ultimate heat sink shall be OPERABLE with:

- a. A ~~minimum~~ water level at or above elevation 81 feet Plant Datum,
- b. An inlet water temperature of $\leq 95^{\circ}\text{F}$, and
- c. A ~~maximum~~ elevation of the intake canal bottom of 74 feet Plant Datum.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With the water level < 81 feet Plant Datum or the inlet water temperature $> 95^{\circ}\text{F}$, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With the elevation of the intake canal bottom > 74 feet Plant Datum, restore the elevation of the intake canal bottom to ≤ 74 feet Plant Datum within 90 days or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.5.1 The ultimate heat sink shall be determined OPERABLE:

- a. At least once per 24 hours by verifying the inlet water temperature and water level to be within their limits, and
- b. At least once per 24 months by determining that the ~~maximum~~ elevation of the intake canal bottom is ≤ 74 feet Plant Datum.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 109 TO FACILITY OPERATING LICENSE NO. DPR-72

FLORIDA POWER CORPORATION, ET AL.

CRYSTAL RIVER UNIT NO. 3 NUCLEAR GENERATING PLANT

DOCKET NO. 50-302

1.0 INTRODUCTION

By letter dated November 16, 1987, as revised August 25, 1988 and supplemented October 31, 1988, Florida Power Corporation (the licensee) requested a Technical Specification (TS) change to Section 3.7.5.1, Ultimate Heat Sink (UHS) for Crystal River Unit 3 which revises the maximum allowable UHS water temperature from 105 degrees F to 95 degrees F. The UHS temperature limit reflects the maximum seawater temperature used for the Nuclear Service and Decay Heat Seawater (RW) System and is referenced in Crystal River Unit 3 FSAR Section 9.5.1.

During a recent NRC Operational Safety Team Inspection at Crystal River 3, it was found that the temperature of the UHS, the Gulf of Mexico, was above the value of 85 degrees F assumed in the FSAR analysis for adequate heat removal capability for safe plant shutdown after a loss-of-coolant accident (LOCA). However, the current TS permits plant operation with a UHS temperature of 105 degrees F, which is inconsistent with the design basis analysis assumption of 85 degrees F. To resolve this discrepancy, the licensee performed an analysis to establish the basis for a revised UHS temperature limit of 95 degrees F to be specified in the TS and revised FSAR.

2.0 EVALUATION

The RW system removes heat from the Nuclear Services Closed Cycle Cooling Systems (SW) and Decay Heat Closed Cycle Cooling System (DC), which are designed to cool many components essential to the safety of the plant. Elevated seawater temperatures will reduce the heat removal capability of the RW system and affect the ability to adequately cool the SW and DC systems and their associated components. In order to determine the effect of increased UHS temperatures on heat removal capability, the licensee performed a thermal and hydraulic analysis of the SW and DC systems heat balance and flow distribution. With an assumed RW (UHS) temperature of 85 degrees F, the resulting maximum temperature of the SW and DC systems was 105 degrees F following a LOCA. For an assumed RW temperature of 95 degrees F, the licensee's analyses showed post-accident peak temperatures of 110 degrees F

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and 120 degrees F for the SW and DC systems, respectively. During normal operation, the SW temperatures are 95 and 100 degrees F, corresponding to RW temperatures of 85 and 95 degrees F, respectively.

The impact of elevated temperatures in the SW and DC systems on equipment operation and decay heat removal has been identified, evaluated and summarized in Section 5 of the licensee's submittal of August 25, 1988. The following are the impacts determined from the higher UHS temperature limit:

- a. A slightly increased duration may be required to cool the contents of the RC drain tank when required in normal plant operating modes.
- b. The spent fuel pool will have slightly higher temperatures.
- c. The spent fuel pumps air handling units will supply air at a slightly elevated temperature to the spent fuel cooling pumps.
- d. The control complex chiller will be modified to improve reliability.
- e. The waste evaporator package and reactor coolant evaporator package will require a slightly longer period of time to condense and cool the batch processed radioactive waste during normal plant operation.
- f. The elective use of the waste gas compressor could be curtailed until the SW temperature rises above 95 degrees F during normal operation.
- g. The temperatures of the pressurizer and steam generator sample will be slightly higher during normal operation.
- h. The cooldown rate of the post-LOCA reactor building (RB) atmosphere will be slightly decreased. Peak pressure and temperature will not be significantly affected.
- i. During normal plant cooldown, the cooldown rate from 280 degrees F (when using the decay heat removal system) will be slightly reduced.
- j. During emergency cooldown from 240 degrees F, the decay heat sump water temperature will be 243 degrees F instead of 240 degrees F.
- k. During refueling operation, the RCS temperature will be held at 145.5 degrees F instead of 140 degrees F, which will be reduced as core decay heat falls.

The licensee evaluated the above listed impacts and concluded that even with the slightly higher SW and DC systems temperature, heat removal capabilities are maintained such that design limits for safety-related and normal plant operating equipment cooled by these systems will not be exceeded. The licensee confirmed with equipment vendors that acceptable operating temperatures will be maintained for equipment served by the RW, SW and DC systems. The staff has reviewed the licensee's analysis and concurs with the licensee on its conclusion. Further, the staff has evaluated the post-LOCA RB pressure and temperature, the temperature profile used for equipment qualification, and the reactor coolant pump (RCP) seal water temperature during normal operation, and finds negligible impact due to an increased RW temperature from 85 to 95 degrees F.

3.0 CONCLUSION

Based on the above, the staff concludes that the proposed TS change to the allowable UHS temperature limit to 95 degrees F satisfies the requirements of GDC 44 for ensuring adequate post-accident cooling water requirements, and is therefore acceptable.

ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this 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 this amendment.

CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: February 14, 1989

Principal Contributor:

C. Li