



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

March 13, 2001

Mr. J. A. Scalice
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWN FERRY NUCLEAR PLANT, UNIT 2 - ISSUANCE OF AMENDMENT
REGARDING SAFETY LIMIT MINIMUM CRITICAL POWER RATIO
(TAC NO. MB0436)

Dear Mr. Scalice:

The Commission has issued the enclosed Amendment No. 270 to Facility Operating License No. DPR-52 for the Browns Ferry Nuclear Plant, Unit 2. This amendment is in response to your application No. TS-396 dated November 21, 2000, as supplemented by a February 9, 2001 reply to a request for additional information. It revises the minimum critical power ratio safety limit specified in the facility Technical Specifications.

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

Sincerely,

A handwritten signature in black ink, reading "William O. Long", is positioned above the typed name.

William O. Long, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management

Docket No. 50-260

Enclosures: 1. Amendment No. 270 to
License No. DPR-52
2. Safety Evaluation

cc w/enclosures: See next page

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 270
License No. DPR-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Tennessee Valley Authority (the licensee) dated November 21, 2000, 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-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 270, are hereby incorporated in the license. The licensee 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 for operation beginning with cycle 12.

FOR THE NUCLEAR REGULATORY COMMISSION



Richard P. Correia, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: **March 13, 2001**

ATTACHMENT TO LICENSE AMENDMENT NO. 270

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

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 a marginal line indicating the area of change.

REMOVE

2.0-1

INSERT

2.0-1

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

- 2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be $\leq 25\%$ RTP.

- 2.1.1.2 With the reactor steam dome pressure ≥ 785 psig and core flow $\geq 10\%$ rated core flow:

MCPR shall be ≥ 1.07 for two recirculation loop operation or ≥ 1.10 for single loop operation.

- 2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be ≤ 1325 psig.

2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

- 2.2.1 Restore compliance with all SLs; and
2.2.2 Insert all insertable control rods.
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UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 270 TO FACILITY OPERATING LICENSE NO. DPR-52
TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT, UNIT 2
DOCKET NO. 50-260

1.0 INTRODUCTION

By letter dated November 21, 2000, as clarified by letter dated February 9, 2001, the Tennessee Valley Authority (TVA, the licensee) proposed changes to the Technical Specifications (TS) for the Browns Ferry Nuclear Plant - Unit 2 (BFN-2). The requested change would revise the safety limit minimum critical power ratios (SLMCPR) specified in TS 2.1.1.2. This change is based on new analytical methodology being used for BFN-2 beginning with Cycle 12 operation. The Cycle 12 core is a homogeneous core of 764 fuel assemblies, of which there are 256 fresh GE13 bundles, 300 once-burned GE13 bundles, and 208 twice-burned GE13 bundles. The February 9, 2001, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

2.1 TS 2.1.1.2

The safety limit MCPR is proposed to change from 1.10 to 1.07 for two recirculation loop operation, and to change from 1.12 to 1.10 for single loop operation. These MCPR values are for the reactor steam dome pressure ≥ 785 psig and core flow ≥ 10 percent of rated core flow.

The licensee described the methodology to calculate the new SLMCPR values for the TS in its submittals. The BFN-2 Cycle 12 SLMCPR analysis was performed by Global Nuclear Fuel - Americas (GNF-A) using the plant- and cycle-specific fuel and core parameters, NRC approved methodologies including GESTAR-II (NEDE-24011-P-A-13, Sections 1.1.5 and 1.2.5), NEDE-32505P, Revision 1 (R-Factor Calculation Method for GE11, GE12 and GE13 Fuel), NEDC-32601P, NEDC-32694P, and Amendment 25 to NEDE-24011P (GESTAR-II, Revision 14).

The staff has reviewed the justification for the SLMCPR value of 1.07 for two recirculation loop operation and 1.10 for single loop operation using the approach stated in GESTAR-II, Revision 14, NEDC-32601P and NEDC-32694P. Based on review of the application and the response to the request for additional information, the staff has concluded that the SLMCPR

ENCLOSURE

analysis for BFN-2 Cycle 12 operation using the plant- and cycle-specific calculation in conjunction with the approved method is acceptable. The BFN-2 Cycle 12 SLMCPR will ensure that 99.9% of the fuel rods in the core will not experience boiling transition which satisfies the requirements of Generic Design Criterion 10 of Appendix A to Title 10, *Code of Federal Regulations* (10 CFR) Part 50 regarding acceptable fuel design limits. Therefore, the staff has concluded that the justification for analyzing and determining the SLMCPR value of 1.07 for two recirculation loop operation and 1.10 for single recirculation loop operation for BFN-2 is acceptable since approved methodologies were used. The licensee provided two approximation correlations to estimate the difference in SLMCPR using the approved method in licensing topical report (LTR) NEDC-32601P and to estimate the General Electric Thermal Analysis Basis SLMCPR decrease using the approved method in LTR NEDC-32694P in order to justify that the calculation results shown in Table 2 of Enclosure 4 of the application are within the range of values that one may reasonably expect. Those two approximation correlations are documented in the GNF-A Technical Design Procedures (TDP-0049 Revision 4, Appendix D). The staff has reviewed the physical meaning of those approximation correlations in the February 9, 2001, response to the request for additional information and concluded that the clarification of the application to BFN-2 Cycle 12 SLMCPR analysis is acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Alabama State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement 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 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 (65 FR 77927). 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

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: Tai Huang, NRR

Date: **March** 13, 2001

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Tennessee Valley Authority

BROWNS FERRY NUCLEAR PLANT

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