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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 211 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 225 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 184 TO FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

DOCKET NOS. 50-259, 50-260, AND 50-296

1.0 INTRODUCTION

By letter dated August 25, 1992, the Tennessee Valley Authority (the licensee) requested an amendment of the Technical Specifications for the Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3. The proposed amendment revises surveillance requirements associated with reactor coolant system piping to delete reference to equalizer valves which cross-connect the recirculation piping loops. The licensee has removed these valves from BFN Unit 3, and may remove them from BFN Units 1 and 2 in the future.

2.0 DISCUSSION

The existing Technical Specification (TS) 4.6.E.2 for BFN Units 1, 2, and 3 reads as follows:

> "Whenever there is recirculation flow with the reactor in the STARTUP or RUN Mode and one recirculation pump is operating with the equalizer valve closed, the diffuser to lower plenum differential pressure shall be checked daily..."

The proposed revision to this specification deletes the phrase "with the equalizer valve closed."

The reactor coolant systems for the BFN units include two recirculation loops, which consist, in part of a recirculation pump, jet pumps, and associated piping. The original BFN design included provisions to cross-connect the two recirculation loops via two equalizer valves to permit one recirculation pump to deliver flow to both loops. However, operation in this configuration did not prove practical, due to pump performance limitations. Therefore, for BFN Unit 2, during normal operations, one equalizer valve is kept open and the other closed, with power removed from the valve operators. This configuration prevents pressure buildup between the valves.

The equalizer valves and cross-connect piping were removed from BFN Unit 3 when the licensee removed and replaced recirculation system piping to mitigate intergrannular stress corrosion cracking problems. The licensee has stated

that it intends to perform a similar modification for BFN Unit 1 prior to returning that reactor to service. Modifications for BFN Unit 2 are dependent on the condition of piping welds, which is monitored on a routine basis. Therefore, two configurations exist; one with the equalizer valves in place, but unused (as at BFN Unit 2), and another where the valves and associated piping have been removed (as at BFN Unit 3, and Unit 1 before restart).

3.0 DISCUSSION

For the case where the equalizer valves are in place, operation in accordance with the proposed revision is not materially different from the current situation. Under the proposed revision, the licensee will be obligated to perform the differential pressure surveillance regardless of the status of the equalizer valves. Thus, there is no reduction in the level of protection provided by this surveillance requirement. Therefore, the proposed change is acceptable if the equalizer valves remain in place.

For the case where the equalizer valves have been removed, the licensee has stated that it expects the removal to yield a slight change in the jet pump flow distribution. However, this change is not expected to affect the core power and flow distribution because of the mixing effect of the reactor vessel lower plenum. Furthermore, the operating limits on linear heat rate, critical power ratio, and the ratio of the fraction of rated power to the core maximum fraction of limiting power density (TS 3/4.5.I, 3/4.5.J, 3/4.5.K, and 3/4.5.L), ensure that adequate thermal margin will be maintained regardless of any minor change in the overall flow distribution resulting from removal of the equalizer valves. Therefore, the proposed change is acceptable if the equalizer valves have been removed.

In summary, the proposed revision to TS 4.6.E.2 is acceptable for cases where the recirculation equalizer valves remain in place (as is currently the case for BFN Unit 2), or where the valves have been removed (as for BFN Unit 3).

4.0 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.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes the surveillance requirements. 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 the amendments involve no significant hazards consideration, and there has been no public comment on such finding (57 FR 48829). Accordingly, the amendments meet 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 amendments.

6.0 CONCLUSION

The Commission has concluded, based upon 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 (3) issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: August 4, 1994