



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

ENCLOSURE 4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 173 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 176 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 144 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

The Tennessee Valley Authority (TVA or the licensee) requested by letter dated August 9, 1989 that the Browns Ferry Nuclear Plant (BFN) Technical Specifications (TS) be revised to reflect the design capabilities of the High Pressure Coolant Injection (HPCI) system and Reactor Core Isolation Cooling (RCIC) system. In addition, the licensee proposes to change the language of the surveillance requirements for the HPCI and RCIC systems from 'once/operating cycle' to 'once/18 months'. The expected length of an operating cycle at BFN is 18 months.

The current BFN TS require the HPCI/RCIC pumps to be demonstrated operable when reactor pressure is greater than 122 psig. The proposed TS would change these requirements to demonstrate HPCI/RCIC operability after reactor vessel pressure reaches 150 psig. In addition, operability of HPCI/RCIC would be permitted to be demonstrated within 12 hours after reactor pressure reaches 150 psig.

2.0 EVALUATION

The accidents and operational transients for which the HPCI and RCIC systems are required to provide core cooling are generally analyzed for occurrence at full reactor power and pressure. During these events, the HPCI/RCIC systems intended functions are to maintain adequate reactor vessel water level until reactor pressure decreases to the injection range of the Core Spray (CS) or Residual Heat Removal systems (Low Pressure Coolant Injection mode, (RHR/LPCI)). The CS/LPCI systems can inject reactor cooling water when the reactor vessel pressure is greater than 150 psig in addition to providing all reactor core cooling requirements for those conditions below 150 psig. The BFN Final Safety Analysis Report (FSAR), Chapters 6 and 14, describe the performance of HPCI and RCIC systems over the pressure range from 150 to 1120 psig for those events where HPCI/RCIC are required to perform their intended function. Both of these systems provide full design flow in this reactor pressure range. These systems

will continue to operate at a reduced flow below 150 psig until they automatically isolate due to low steam pressure. The CS/LPCI will begin injecting into the vessel at approximately 230 psig and continue providing flow down to zero reactor pressure. This provides sufficient overlap with the HPCI/RCIC systems to ensure that adequate water inventory is provided to the reactor core below 150 psig. This change would bring the TS into conformance with the design capabilities of the HPCI and RCIC turbine/pump combinations as well as the analyzed accident/transient demands for these systems over the range of 150 to 1120 psig reactor pressure.

The proposed change would also require that the HPCI/RCIC pumps be demonstrated operable within 12 hours after the reactor pressure has reached 150 psig. The HPCI/RCIC pumps are not designed to operate at full capacity until reactor pressure reaches 150 psig. This proposed change would permit certain operational flexibility during startup. The BFN TSs currently require that the Automatic Depressurization System (ADS), Core Spray (CS), and LPCI systems be operable when starting up from a Cold Condition (0 psig). Steam pressure is sufficient at 150 psig to run the HPCI/RCIC turbines for operability testing. This is still below the shutdown head of the CS and LPCI pumps (approximately 230 psig) so they will inject water into the vessel if required during this 12 hour period until the HPCI/RCIC systems are demonstrated to be operable. The ADS provides additional backup to reduce pressure to the range where the CS and LPCI will inject into the vessel if necessary. Therefore, these systems would be available during the 12-hours before HPCI/RCIC are declared operable.

Based upon the above, the staff finds the proposed changes acceptable. In addition, considering the overlap and availability of CS, LPCI and ADS during startup from a cold shutdown, a twelve hour period to demonstrate HPCI/RCIC operability once sufficient steam pressure (150 psig) becomes available is an acceptable time period.

The TS surveillance periods are being changed from once/operating cycle to once/18 months. Operating cycles at Browns Ferry extend from one refueling to the next. The operating cycle at Browns Ferry is usually expected to be 18 months in duration. Longer operating cycles could result from operating at lower power levels, numerous reactor mini outages, and other extenuating circumstances. BFN TS 1.0.LL allows a maximum extension of a surveillance requirement not to exceed 25% of the surveillance interval. This would allow a maximum of 22.5 months to perform the above surveillances. Specifically, this time would be the period that the unit is shutdown (tripped) to start the refueling to just prior to startup for the subsequent cycle of operation as defined in BFN TS 1.0.D. Changing the surveillance interval provides consistency with the BFN TS, industry practices, and NRC guidance. Based on this, changing the surveillance interval to read once every 18 months is acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

The amendments involve a change to a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes to the surveillance requirements. The 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 these amendments involve no significant hazards consideration and there has been no public comment on such finding. 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 nor environmental assessment need be prepared in connection with the issuance of these amendments.

4.0 CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (54 FR 40934) on October 4, 1989 and consulted with the State of Alabama. No public comments were received and the State of Alabama did not have any comments.

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributor: G. Gears

Dated: November 24, 1989