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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 227 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 242 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 201 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 January 4, 1995, Tennessee Valley Authority (the licensee) requested changes to the Technical Specifications (TS) for the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3. The propsed changes revise the applicability and surveillance requirements for the Intermediate Range Monitor (IRM), Average Power Range Monitor (APRM) High Flux (15% Scram), and APRM Inoperative Trip Functions.

The current TS require that the IRM Reactor Protection System (RPS) Trip Functions must be functionally tested per TS Table 4.1.A at least once per week during refueling and before each startup. APRM RPS High Flux (15% Scram) trip operability must be functionally tested per TS Table 4.1.A at least weekly when required to be operable and before each startup. The IRM RPS High Flux Trip Function is required to be operable in the Startup/Hot Standby, Shutdown and Refuel Modes. The IRM RPS Inoperative, APRM RPS High Flux (15% Scram), and APRM RPS Inoperative Trip Functions are required to be operable in the Startup/Hot Standby and Refuel Modes. Also, the APRM RPS Inoperative Trip Function is required to be operable in the Run Mode.

In order to eliminate unnecessary testing and unavailability of RPS instrumentation, and for consistency with the Improved Standard Technical Specifications (ISTS), the licensee proposes to adopt the ISTS applicability and functional testing provisions for these trip functions. The ISTS require the functional test for each trip function within 12 hours after entering Startup/Hot Standby (Mode 2) from RUN (Mode 1) and every 7 days during applicable Modes. The licensee proposes to adopt the ISTS Limiting Condition for Operation applicability for Startup/Hot Standby Mode and Refuel Mode with any control rod withdrawn from a core cell containing one or more fuel assemblies.

ENCLOSURE

2.0 BACKGROUND

The IRM subsystem monitors neutron flux from the top of the source range to the bottom of the power range. The IRM subsystem is the primary source of information on the approach of the reactor to the power range. It has eight IRM channels, each of which includes one detector that can be physically positioned in the core by remote control. The detectors are inserted into the core for a reactor startup and are withdrawn after the reactor mode selector switch is turned to "RUN." They are normally inserted any time the reactor is not at power.

The APRM channels receive input signals from the 43 local power range monitors (LPRMs) within the reactor core to provide an indication of the power distribution and local power changes. The APRM channels average these LPRM signals to provide a continuous indication of average reactor power from a few percent to greater than Rated Thermal Power (RTP). The design basis setpoint for neutron monitoring in the "STARTUP" Mode is the APRM High Flux (15% Scram) trip.

3.0 EVALUATION

The IRM, the APRM High Flux (15% Scram), and the APRM Inoperative Trip Functions must be OPERABLE during Startup/Hot Standby when control rods may be withdrawn and the potential for criticality exists. In Refuel, they provide monitoring for and protection against unexpected reactivity excursions. Although current TS require the IRM High Flux Trip Function to be operable in the Shutdown Mode, the trip function serves no useful purpose because rod withdrawal is precluded by the mode switch.

The IRM and APRM detectors and electronics are tested under operating conditions and verified to have the operational characteristics that provide the level of precision and reliability required by the RPS design basis. Current TS require the IRM and APRM High Flux (15% Scram) Trip Functions to be functionally tested before each startup and weekly during refueling (for the IRMs) or when required to be operable (for the APRM High Flux). This could result in unnecessary testing if two startups occur within 7 days of each other since these trip functions will still be within the 7-day periodicity of the functional test requirement but would still have to be retested due to literal interpretation of the TS. The required periodic frequency has been determined to be sufficient to verify that the IRMs and APRMs are functioning properly. A reactor startup does not impact the ability of the monitors to perform their required function; therefore, an additional surveillance, required "before each startup," is not necessary.

One of the objectives of this proposed TS is to make the requirements of the BFN TS consistent with the requirements of the ISTS for these IRM and APRM Trip Functions. Section 3.3.1.1 of the ISTS provides the requirements for RPS instrumentation. The ISTS require that the IRM, APRM High Flux (15% Scram) and APRM Inoperative Trip Functions to be OPERABLE in Mode 2 (equivalent to BFN's Startup/Hot Standby Mode), and Mode 5 (equivalent to BFN's Refuel Mode)

with any control rod withdrawn from a core cell containing one or more fuel assemblies. They also require a functional test to demonstrate operability within 12 hours of entering Mode 2 from Mode 1 (equivalent to BFN's Run Mode) and every 7 days while in applicable Modes. The APRM Inoperative Trip Function is also required to be OPERABLE in Mode 1.

The intent of the ISTS is to ensure that the IRM and APRM High Flux (15% Scram) functions are tested every 7 days while in Mode 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies and within 7 days prior to startup. This is accomplished by requiring the functional test to be performed within 12 hours of entering Mode 2 from Mode 1 and weekly during applicable modes. The functional test is not required to be performed prior to entering Mode 2 from Mode 1, since testing of the Mode 2-required trip functions cannot be performed without using jumpers, lifted leads, or movable links.

The staff finds that the testing requirements proposed by the licensee are sufficient to provide reasonable assurance that the APM and IRPM are functioning properly in all applicable modes. The proposed changes are acceptable.

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 (60 FR 29888). 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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Dated: November 2, 1995