



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

ENCLOSURE 4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 194 TO FACILITY OPERATING LICENSE NO. DPR-33  
AMENDMENT NO. 209 TO FACILITY OPERATING LICENSE NO. DPR-52  
AMENDMENT NO. 166 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 October 9, 1992, as supplemented on March 31, 1993, the Tennessee Valley Authority (TVA, the licensee) submitted proposed Technical Specification (TS) amendments for the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3. The proposed amendments consist of revised surveillance requirements for certain refueling equipment interlocks, revised core reactivity monitoring requirements for refueling, and provided new requirements for dedicated personnel assigned to refueling operations. The supplemental letter dated March 31, 1993, provided clarifying information that did not alter the staff's initial proposed determination of no significant hazards consideration.

2.0 EVALUATION

A new TS Definition 1.S, CORE ALTERATION, is proposed. The new definition states that:

"CORE ALTERATION shall be the movement of any fuel, sources, reactivity control components [such as control rods], or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel."

The new definition specifically states that movement of source range monitors (SRMs), intermediate range monitors, traversing in-core probes, or special movable detectors, including under-vessel replacement of these components, is not considered a core alteration. Though these detectors may contain fissionable material, their effect on core reactivity is insignificant because the quantities are very small. Furthermore, movement of these detectors does not change core geometry and increase core reactivity. Therefore, the proposed changes are acceptable.

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The existing BFN technical specifications provide for the surveillance testing of all refueling equipment interlocks, whether they are scheduled to be used in a certain operation or not.

TS 3.10.A.1 and 3.10.A.6 specify operability requirements for equipment interlocks required for the refueling operations. Refueling operations include the movement of spent and fresh fuel between the core and the fuel storage pool when the vessel head is removed. The refueling interlocks prohibit faulty fuel movements which could make the reactor critical. This is accomplished by restricting control rod movements and by restricting the movement of refueling equipment. The frame-mounted, the monorail-mounted and the service platform hoists are equipped with load cells to provide a signal to the refueling interlock circuitry and must be tested prior to use.

However, not all components are used in every refueling. The proposed change allows for testing the sensing interlocks of just the equipment that will actually be used for fuel handling. The proposed TS 3.10.A/4.10.A provide for surveillance testing of the refueling equipment required to be used in a certain refueling operation. Equipment not scheduled to be used for a specific refueling operation will still be tested but only at the beginning of the operation. It will not be tested every seven days thereafter, as required by the existing specification, unless the licensee elects to use the equipment. No credit is taken for equipment not used in the refueling operation to mitigate any design basis accident in the BFN Final Safety Analysis Report, Sections 14.6.4 and 7.6.4. Therefore, the proposed changes to TS 3.10.A/4.10.A are acceptable.

The current NRC required core monitoring during refueling operations consists of two source range monitors (SRMs). One is located in the quadrant where core operations are performed, and the other located in an adjacent quadrant. In addition, each channel is required to be demonstrated operable every 12 hours.

The proposed modification of TS 3.10.B requires a minimum of two operable SRMs during any fueling operation (or, alternatively, operable fuel loading chambers (FLC)); and requires operable SRMs in all fueled regions, the quadrant of core alterations and the region(s) or quadrants adjacent to it. A fueled region is described as any set of contiguous fuel cells containing one or more fuel assemblies. An operable SRM is considered to be included in the fueled region when one or more of the four locations adjacent to the SRM dry tube contains a fuel assembly. (An FLC may be considered to be in the fueled region even though its actual location is outside the fueled region if it is positioned such that it is monitoring the fuel assemblies in its associated core quadrant.) Therefore, a minimum of two and a maximum of four operable SRMs are required. The corresponding surveillance requirements in 4.10.B.1 define a minimum surveillance frequency of 12 hours. The minimum count rate is specified to be greater than or equal to 3 counts per second, and the signal-to-noise ratio must be greater than 3:1. The proposed technical specifications are more conservative from the existing in that they provide more operable SRMs during the fueling operation. Therefore, the proposed changes are acceptable.

Finally, changes are proposed to TS 6.2.2.f, revising requirements to have a licensed Senior Reactor Operator (SRO), or a licensed SRO limited to fuel handling, in direct supervision of all core alterations. The current specification requires this SRO to be present on the refueling floor while core alterations are performed. However, certain operations, such as control rod movement, may be better directed if the SRO is in another plant location, such as the control room. The revised specification provides this flexibility, but does not diminish the SRO requirements or responsibilities for fuel handling supervision, and is therefore acceptable.

### 3.0 SUMMARY AND CONCLUSIONS

We reviewed the submitted information regarding the proposed technical specification changes and we find them acceptable based on our assessment that they provide a conservative basis for core alterations and fuel movement.

### 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 revise requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes a surveillance requirement. The amendments also relate to changes in recordkeeping, reporting, or administrative procedures or requirements. The NRC staff has determined that these 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 amendment changes involve no significant hazards consideration, and there has been no public comment on such finding (57 FR 55592). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and (10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environment assessment need be prepared in connection with the issuance of the amendment.

### 6.0 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.

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Date: April 9, 1993

