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

ENCLOSURE 3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 180 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 172 TO FACILITY OPERATING LICENSE NO. DPR-79

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

1.0 INTRODUCTION

By application dated February 7, 1994, the Tennessee Valley Authority (TVA or the licensee) proposed amendments to the Technical Specifications (TS) for Sequoyah Nuclear Plant (SQN) Units 1 and 2. The requested changes would revise Technical Specification 5.3.1, "Fuel Assemblies," to allow the substitution of filler rods for fuel rods in fuel assemblies by incorporating the guidance in Generic Letter 90-02, Supplement 1.

TS 5.3.1 presently consists of a somewhat detailed description of the fuel assemblies that are used in the SQN reactor core. The description includes the number of fuel assemblies in the core (193), the number of fuel rods in each assembly (264) and the cladding material (Zircaloy-4), the nominal active fuel length of each fuel rod (144 inches), the maximum enrichment of the initial core loading (3.15 weight percent), the maximum enrichment of reload fuel (5 weight percent), and a statement that indicates all reload fuel will be of similar design to the initial core load.

The revision proposed by the licensee would replace this descriptive information with a statement from GL 90-02, Supplement 1. The new requirement would retain the number of fuel assemblies, but would allow the limited substitution of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC-approved designs. These fuel assemblies would be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods, and shown by tests or analysis to comply with all fuel safety design bases. In addition, a limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core locations.

2.0 EVALUATION

On July 31, 1992, the staff issued Supplement 1 to GL 90-02 as a line-item improvement to accommodate limited fuel reconstitution based on NRC-approved generic topical reports. The licensee has proposed incorporating the generic letter guidance to provide flexibility to deviate from the specification in order to permit timely removal of fuel rods that are found to be leaking

during a refueling outage or are determined to be the probable sources of future leakage. The licensee has indicated that this change in the fuel performance program will provide for reduction in future occupational radiation exposure and plant radiological releases.

The methodology that would be used in the core reload analysis in the event fuel reconstitution is needed would be supplied by the Westinghouse Electric Corporation in a report such as WCAP-13060, "Westinghouse Fuel Assembly Reconstitution Evaluation Methodology," dated September 1991. This report provided the results of a mechanical evaluation demonstrating that the effects of reconstitution with a significant percentage of filler rods would be acceptable for Westinghouse designs. Based on evaluations of the safety aspects of reconstitution, performed by the functional disciplines (thermal-hydraulics, nuclear, fuel rod performance, Loss of Coolant Accident (LOCA) and non-LOCA), the report found that the effects of fuel assembly reconstitution on reactor core performance would be minimal. The report described the methodology that would be used each cycle to evaluate applicable design criteria associated with reconstituted fuel assemblies that use solid filler rods in place of uranium filled fuel rods.

Since TVA used the descriptive wording suggested by the staff for the proposed change to the SQN TS, and has available an NRC-approved methodology to evaluate the use of filler rods, the staff finds the proposed change acceptable.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change 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 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 (59 FR 12367). 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.

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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Dated: April 18, 1994