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

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

SUPPORTING AMENDMENT NO. 66 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 58 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 letter dated July 2, 1987 the Tennessee Valley Authority (TVA) requested amendments to the Sequoyah Nuclear Plant, Units 1 and 2 Appendix A Technical Specifications (TS). The proposed amendments would modify TS Section 3/4.7.11, Fire Suppression Systems, to reflect charges in the flow and pressure requirements of the High Pressure Fire Protection System (HPFPS) pumps.

In order to meet Appendix R requirements the licensee has significantly increased the coverage of areas in Sequoyah Units 1 and 2 by the plant's HPFPS. The increased coverage resulted in a higher design point for the HPFPS pumps in terms of flow and system head. The proposed change would raise the flow and pressure requirements of the design point to assure a sufficient water supply for the modified HPFPS during the design fire condition.

2.0 EVALUATION

Water for fire protection is provided from the river by four pumps located in the intake pumping station. Each pump is rated at 1500 gallons per minute (gpm) at a system head of 415 feet. For design purposes only two pumps are assumed to be operable during a fire. The fire protection system is also interconnected with the raw service water system (RSWS) which provides system pressure from supply tanks on the roof of the auxiliary building. When the fire pumps actuate, the storage tanks are automatically isolated from the HPFPS. There are, however, RSWS interconnections with the HPFPS that will still require a supply during a fire demand. Water for the RSWS demands is normally supplied by three RSWS 500 gpm pumps which fill the supply tanks on the auxiliary building roof. Because the supply tanks are isolated when the fire pumps are started, the RSWS demands must be supplied by the fire pumps. The licensee determined the RSWS demand on the fire pumps to be 1635 gpm.

The RSWS demand consists of such items as the Makeup Water Treatment Plant (44 gpm), Office Building Chillers (660 gpm), Hot Machine Shop (120 gpm), Service Building Air Conditioners (141 gpm), Hypochlorite Building (75 gpm), and Yard Sprinkling and miscellaneous uses (200 gpm). The licensee also uses 250 gpm for backwashing the strainers. In the existing TS a flow of 500 gpm was assumed for backwashing two strainers at a time. This assumption was reconsidered by the licensee and it was determined to be extremely unlikely because the alignment for valves necessary for backwashing the strainers is operator controlled; also the strainer backwash time is short (about 5 minutes). Hence, the flow demand on the fire pumps for strainer backwashing was reduced from 500 gpm to 250 gpm.

The fire demand flow was determined from a series of trial and error calculations to determine the flow to the hydraulically most remote area in accordance with National Fire Protection Association (NFPA) standards 13 and 15. The most critical fire demand was determined to be the opening of deluge valves 0-26-1521 and 0-26-2066 in the Reactor Auxiliary Building. The required fire demand from these valves is 1170 gpm with a required head at the pump of 338 feet. Also included for fire fighting was a hose demand of 250 gpm.

The total flow to be supplied by two fire pumps in the Intake Structure is then 3306 gpm or 1653 gpm per pump. The demand point calculated by the licensee (1653 gpm, 338 ft) corresponds to a curve parallel to the manufacturer's pump curve and 10% below it (regarding head developed) at the rated capacity of 1500 gpm and 376 feet.

The staff agrees with the procedures used to determine the fire demands and the additional Raw Service Water demands on the fire pumps. Therefore, the TS as modified will ensure an adequate water supply for fire fighting. Also, the margin between the manufacturer's curve and the TS design point will allow margin for maintenance or replacement of the pump before the TS value is violated.

3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change to a requirement 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 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 the amendments.

4.0 CONCLUSION

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 these amendments will not be inimical to the common defense and security nor to the health and safety of the public.

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Dated: January 25, 1988