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

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

SUPPORTING AMENDMENT NO. 67 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 59 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 September 16, 1987 the Tennessee Valley Authority (TVA) proposes to amend the Sequoyah Nuclear Plant, Units 1 and 2 Technical Specifications (TS) to add requirements for containment cooling for non-loss of coolant accident (LOCA) events. Specifically, the proposed new TS would impose Limiting Conditions for Operation (LCO) and associated Surveillance Requirements (SR) for the lower containment cooling fans to ensure that long-term containment temperatures following a Main Steam Line Break (MSLB) remain below the environmental qualifications (EQ) limits.

2.0 EVALUATION

The current EQ temperature inside the Sequoyah containments is based on the reactor coolant system (RCS) achieving a cold shutdown condition. The Sequoyah plant cooldown is accomplished post-accident by the recirculation mode of core cooling or use of the residual heat removal (RHR) system once RCS temperature and pressure are below entry conditions. However, TVA notes in its September 16, 1987 submittal, an MSLB inside containment creates flooding conditions at the single RHR sump suction line thereby possibly preventing the use of the RHR for achieving cold shutdown. The RHR suction line from the containment sump has isolation valves in series; therefore, a failure of either isolation valve to open would cause a total loss of RHR recirculation cooling. If this condition occurs, the RCS would have to be maintained in the hot standby mode. This is the present licensing bases for the Sequoyah plants.

The post-accident effects of an MSLB on containment temperature at Sequoyah were evaluated by TVA. Sections 6.2.1 and 15.4.2 of the Final Safety Analysis Report (FSAR) discuss the MSLB for Sequoyah. The analysis includes the upper, lower, ice condenser, and dead-ended regions of the containment. The containment coolers were used for the current FSAR analysis for achieving steady state containment temperature. The results show that, with the use of the containment coolers, the current environmental temperature qualification curve remains bounding for all areas of the lower containment. Since the containment coolers are required to maintain the lower containment compartment temperature below the environmental temperature curve, they have an assumed role in accident mitigation and, therefore, TS for this equipment is required.

TVA has proposed new TS requirements for the containment cooling system which were derived from the Standard Technical Specifications (STS) (NUREG-0452, Revision 4). Specifically, the proposed TS provide LCO, the appropriate Mode, Applicability, Action statements for system inoperability, and SR. Since no credit was taken for containment spray once the coolers are placed in operation, the proposed TS have been modified from the STS to delete references to the containment spray systems. Also, the SR for manual fan actuation was modified to reduce the testing interval to 18 months rather than every 31 days. This deviation from the STS is acceptable to the staff since these fans are used continuously during normal operation, thus providing continuous fan performance data, and any change to this normal operating procedure would require TVA to perform a 10 CFR 50.59 evaluation which must include consideration of any reduction in the margin of safety from non-use of the system or its components. The proposed testing requirements would also be consistent with manual actuation test intervals for Engineered Safety Feature Actuation System instrumentation and Emergency Core Cooling System equipment.

The proposed testing interval to verify cooling water flow rate is at least once every 18 months. This interval is a reduction in frequency from the STS SR interval of once every 31 days. As TVA states in its September 16, 1987 submittal, the purpose of this SR is to demonstrate that a 200 gpm minimum cooling water flow rate is delivered to the containment coolers. Current TS SR 4.7.4.9 for essential raw cooling water (ERCW) system operability requires verification of proper valve alignment to safety-related equipment every 31 days. This verification includes the valves which provide flow to the containment coolers. The flow path for containment cooler cooling water, therefore, is verified every 31 days. Therefore, these SR, when compared to the equivalent portion of the STS for Containment Cooling Systems are being provided for by Sequoyah ERCW TS SR 4.7.4.9, and need not be required in TS SR 4.6.2.2. TVA has committed to revise the appropriate plant Surveillance Instructions to include the necessary lower containment cooler valve alignment and throttle position verification.

The FSAR Chapter 15 analysis shows that the containment coolers would not be required until after ice bed meltout occurs. Ice bed meltout is estimated at 10 hours after event initiation. The SR for automatic actuation testing, therefore, has been proposed to be deleted. Instead, TVA has proposed credit be taken for manual operator action to start the containment coolers, by procedure, between 1 and 4 hours after event initiation. The cooling fans should not be actuated prior to 1 hour after event initiation because of concern for exceeding the fan motor capacity. The 4 hour time limit for fan starting ensures that the coolers will be operating well before a conservative determination of ice bed meltout. Based on these long time periods, and the NRC staff practice for minimum time allowed for operator action of 20 minutes, NRC staff has determined that manual actuation of the containment cooling fans is acceptable and therefore deviation from the STS by deletion of the automatic start SR is appropriate.

NRC staff has evaluated the remaining differences between the STS and the TVA proposed TS and has found them to be administrative in nature. These differences have been proposed so as to accommodate Sequoyah specific differences from the STS such as the use of "trains" as opposed to "groups." Also proposed are the titular, specification, and page number sequence differences. NRC staff concludes these differences from the STS are appropriate for the Sequoyah facilities and are, therefore, found to be acceptable.

TVA has also proposed the addition of TS Bases for the preceding changes. The NRC staff finds the inclusion of these bases to be appropriate.

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

We have 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.

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Dated: February 11, 1988