



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20565-0001

ENCLOSURE 3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 183 TO FACILITY OPERATING LICENSE NO. DPR-77
AND AMENDMENT NO. 175 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 February 8, 1994, the Tennessee Valley Authority (licensee or TVA) requested an amendment to change the technical specifications (TS) for the Sequoyah Nuclear Plant (SQN) Units 1 and 2. The proposed change would revise the switchover pressure setpoint of the motor driven auxiliary feedwater (AFW) pump to address vortexing in the condensate storage tank (CST). TS Table 3.3-4, "Engineered Safety Feature Actuation System Instrument Trip Setpoints," presently requires the trip setpoint be ≥ 2.0 pounds per square inch gauge (psig) with an allowable value of ≥ 1.0 psig. As proposed, the new values would be ≥ 3.21 and ≥ 2.44 for the setpoint and allowable value, respectively.

2.0 EVALUATION

The AFW system for each of the SQN units consists of two motor driven pumps and one turbine driven pump. The normal water supply to the suction of the pumps is the nonseismic Category I CST. In the event of the loss of the CST inventory, the pump suction will automatically shift to the seismic Category I essential raw cooling water (ERCW) system on low pressure detected at the pump suction header. This is referred to as the low-pressure "switchover" of the AFW pump suction.

New calculations performed by TVA have determined that with the present setpoint, vortexing could occur in the CST, resulting in air entrainment in the AFW pump suction piping prior to switchover to the ERCW. The previous calculations did not consider the effects of vortexing in the CST. To ensure switchover of the motor-driven pump suction headers prior to air entrainment, TVA has proposed raising the actuation setpoint from 2 psig to 3.21 psig, and the allowable value from 1 psig to 2.44 psig.

The staff agrees with the proposed new setpoint and allowable values because they are more conservative than those listed in Table 3.3-4 of the present TS. The revised setpoints provide added assurance that air entrainment will not occur upon reaching a low level in the CST prior to automatic switchover. The

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revised setpoints should also remain low enough to not significantly affect the likelihood of inadvertent switchover, i.e., inadvertent switchover during normal operation should not occur.

TVA did not propose a similar change to the low suction pressure setpoint for the turbine driven pump switchover because of the plant modifications that would be required to relocate and replace the associated instrumentation. The staff concurs with the licensee's conclusion that a similar setpoint change for the turbine driven AFW pump, while it would be an enhancement, is not required to meet any design basis events. The only postulated event which results in an automatic switchover of the AFW pumps' suction is a seismically induced failure of the CST. Given this scenario, even without the turbine driven AFW pump, the redundant seismic Category I motor driven AFW pumps satisfy the single failure criterion.

3.0 SUMMARY

Based on its review of the proposed changes to the trip setpoint and allowable value for the AFW low suction pressure switchover listed in TS Table 3.3-4, the staff concludes that they are conservative in nature because they tend to prevent air entrainment in the motor driven AFW pumps' suction, while at the same time, they do not significantly increase the probability of an inadvertent switchover. The proposed changes are also necessary to assure proper operation of the AFW system given the postulated switchover scenario. The staff, therefore, concludes that the proposed changes are acceptable.

4.0 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.

5.0 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 12368). 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 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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