



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

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

SUPPORTING AMENDMENT NO. 82 TO FACILITY OPERATING LICENSE NO. DPR-77

AND AMENDMENT NO. 73 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 June 13, 1988, Tennessee Valley Authority (TVA) proposed changes to the Technical Specifications (TS) for Sequoyah, Units 1 and 2. TVA proposed adding five motor-operated butterfly valves (MOVs) to Table 3.6-2, "Containment Isolation Valves." Also, TVA proposed adding a note to Table 3.3-5, "Engineered Safety Features Response Times", Item 7.b, to reflect the response time of these motor-operated valves when actuated by a Phase B containment isolation signal. The five MOVs are being proposed to replace five check valves as containment isolation valves.

2.0 EVALUATION

TVA stated in its application that the five check valves 67-562A, -562B, -562C, -562D, and 70-692 have repeatedly failed containment leak rate testing in the "as-found" condition. The check valves 67-562A, -562B, -562C, and -562D are the inboard containment isolation valves for the essential raw cooling water (ERCW) supply headers to the lower containment. The lower compartment coolers, the reactor coolant pump (RCP) motor coolers, and the control rod drive ventilation coolers are supplied by these headers. Check valve 70-692 is the inboard containment isolation valve for the component cooling system (CCS) supply header to the RCP oil coolers.

The repeated failures of these check valves have been attributed by TVA to the physical location of the valves in system low points. This location exposes the check valves to a buildup of fine corrosion products and other material, which could prevent adequate seating of the check valves. TVA has proposed to replace these check valves with MOVs to ensure better leaktight isolation of the containment at these locations.

TVA stated that the MOVs will provide more reliable seating capability than the check valves because the MOVs' disks are pushed on to the valve seats by a mechanical force. TVA stated that bypass lines with pressure-relieving piston check valves will be installed around the new inboard MOVs. This is intended to relieve pressure between the inboard and outboard MOVs while the penetration is isolated.

TVA, in its application, discussed the quality of the MOVs. It stated that the isolation configuration conforms to the requirements of 10 CFR 50, Appendix A,

General Design Criteria 54 and 56. The motor operators for the new valves are environmentally qualified for harsh environmental conditions. The valve operator motors receive electrical power from their respective class 1E 480-V systems. Calculations have been performed by TVA to demonstrate that the addition of these valve operators to the onsite power system does not have a detrimental impact on diesel generator loading.

Because the new MOVs perform an active safety-related function, the intent of Regulatory Guide (RG) 1.106, "Thermal Overload Protection for Electric Motors on Motor-Operated Valves," is met through bypassing the thermal overload heater elements permanently. MOV degradation is detected by the inclusion of the new MOVs in periodic maintenance programs, including MOV analysis and test system (MOVATS) programs. This approach to meeting the intent of RG 1.106 was found to be acceptable by the staff in a letter to TVA dated October 22, 1987.

The new inboard MOVs receive both automatic and remote-manual signals. The valves will automatically isolate on a Phase B containment isolation signal. This is consistent with the other ERCW and CCS containment isolation MOVs already installed in these lines. Remote-manual control is available in the main control room. Hand switches and valve position indicating lights are located on the ERCW panel for the ERCW MOVs and on the CCS panel for the CCS MOV. Backup control and transfer switches are located at the 480-V reactor MOV boards.

The ERCW valves have a maximum allowable stroke time of 70 seconds, which is 10 seconds longer than the maximum allowable stroke times for the other ERCW containment isolation valves listed in Table 3.6-2. Similarly, the CCS valve has a maximum stroke time of 65 seconds, which is 5 seconds longer than the other CCS valves receiving the Phase B isolation signal. TVA proposed the note for item 7.b of Table 3.3-5 to acknowledge these additional seconds of valve closure time for these MOVs. The note clarifies that the response time for these MOVs is slightly longer than other isolation valves.

For both the ERCW and CCS valves, TVA stated that 5 seconds is added to the maximum valve closure time for signal generation to obtain the response time when diesel generator starting and sequence loading delays are not included. An additional 10 seconds is added to this value to obtain the response time when diesel generator delays are included.

TVA has determined and the staff agrees that the few additional seconds of valve closure time does not significantly increase the probability of releasing radioactive material from containment during a postulated loss-of-coolant accident (LOCA). Radioactivity could only be released to the environment if all of the following conditions occurred:

1. A LOCA has progressed to the point of fuel damage, with fission products released to the containment atmosphere.

2. A second passive failure involving the breaking and draining of the cooling water piping has occurred. The draining of the piping would require the degradation of the water supply because these valves are located on supply headers to containment. This scenario is beyond design basis.
3. The outboard containment isolation MOV fails to isolate.
4. Radioactive material must migrate into and through the ERCW and CCS which are filled water systems.

The ERCW and CCS are closed, water filled systems. They do not communicate directly to the containment atmosphere, reactor coolant system or the environment.

The footnote, in Table 3.6-2 associated with the single asterick in the maximum isolation time, concerning the applicability of Specification 3.0.4 is proposed to be applied to the ERCW valves. This is consistent with the other containment isolation valves on these lines and other ERCW lines that penetrate containment and consistent with the Westinghouse Standard Technical Specifications. The proposed application of the footnote to the ERCW valves is consistent also with the Action required if these valves are inoperable. This is acceptable to the staff.

The installation of the new valves is currently scheduled before restart for Unit 1 and during the next refueling outage for Unit 2. The addition of the footnote to the Table 3.6-2 (indicating that the new valves are not required until their associated modifications are completed) prevents an unplanned outage if the license amendment is approved before the valves are added during an outage of sufficient duration.

The purpose of the proposed TS change is to replace five check valves used as containment isolation valves by the motor-operated butterfly valves to provide more reliable isolation capabilities. Also, a note will be added to Table 3.3-5, "Engineered Safety Features Response Times," Item 7.b, to reflect that the response times of these valves, when actuated by a Phase B containment isolation signal, are slightly longer than other containment isolation valves. The staff has reviewed the submittal and, based on the above, concludes that the changes are acceptable.

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

Principal Contributor: B. K. Singh, J. N. Donohew

Dated: September 9, 1988