



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 127 TO FACILITY OPERATING LICENSE NO. DPR-77

TENNESSEE VALLEY AUTHORITY  
SEQUOYAH NUCLEAR PLANT, UNIT 1  
DOCKET NO. 50-327

1.0 INTRODUCTION

By letters dated May 1 and 5, 1989, the Tennessee Valley Authority (TVA) proposed changes to the Sequoyah, Unit 1 Technical Specifications (TS). These changes would revise Surveillance Requirement (SR) 4.6.1.2.a on the containment integrated leak rate tests (ILRT), or Appendix J Type A tests. These changes would (1) add a statement to allow a one-time extension for the  $40 \pm 10$ -month test interval in the SR to allow the third ILRT to be conducted during the Unit 1 Cycle 4 refueling outage and (2) delete the requirement that the third ILRT of each 10-year period must be conducted during the 10-year unit inservice inspection. The revision to allow the third ILRT to be conducted during the Unit 1 Cycle 4 refueling outage would require that this outage must begin no later than May 1, 1990 and the third ILRT must be conducted before the restart of Unit 1 from that outage.

The first revision was in the application dated May 1, 1989 and the second, was in the application dated May 5, 1989. These are TVA's TS Change Requests 89-11 and 89-14, respectively.

2.0 EVALUATION

2.1 Application Dated May 1, 1989

By letter dated May 1, 1989, TVA requested a change to the TS to extend, on a one-time basis, the Appendix J Type A test interval. The proposed Type A test interval extension is from 50 months to approximately 53 months. This is the licensee's TS Change Request 89-11.

The current TS's specify a Type A test interval of  $40 \pm 10$  months, with 50 months being the maximum interval between Type A tests. The proposed TS would permit, on a one-time basis, the extension of the Type A test interval for a maximum of approximately 53 months. The licensee completed the last Type A leakage test for Sequoyah Unit 1 on December 15, 1985 during the extended shutdown period from August 22, 1985 until November 10, 1988.



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The Type A tests are the tests to measure the primary reactor containment integrated leakage rate under accident conditions. They are also known as the containment integrated leak rate test. The primary function of the Type A test is to ensure that leakage through the steel containment vessel of Unit 1 does not exceed the maximum allowable leak rate. These tests are required by Appendix J to assure that the containment leakage following a large break loss-of-coolant accident is less than the maximum allowable leak rate assumed in the accident analysis. For Unit 1, the maximum allowable leak rate is 0.25 percent of the containment volume per day.

In addition to the Type A tests, Appendix J requires Type B and Type C tests of leakage through containment penetrations to also assure containment isolation integrity during an accident. Those proposed changes to the TS do not affect the requirements on (1) the Type B and Type C tests in Appendix J or (2) the maximum allowed containment leakage rate in Appendix J and the Unit 1 Technical Specifications.

The containment is required to be operable when the unit is at reactor system conditions above cold shutdown and refueling. The containment is not required for cold shutdown or refueling.

The purpose of the Appendix J Test Program for Unit 1 (i.e., Type A, B and C test) is to ensure that leakage through the primary reactor containment and systems, and components penetrating primary containment, do not exceed allowable leakage rate values. The Type B and C tests ensure that the leakage from penetrations and containment isolation barriers do not exceed allowable leakage rate values. These components of containment are the most probable leakage paths since they depend on active components and flexible sealing methods to maintain containment integrity. The licensee conducted a complete leak rate test on all Type B and C penetrations and containment isolation barriers before the November 1988 restart. This leak rate test ensures that all Type B and C penetrations do not exceed allowable leakage rate values.

The licensee reported that while the plant was shutdown from 1985 to 1988, there has been no additional loadings on the containment vessel. The licensee also audited work orders performed during the shutdown interval to demonstrate that proper controls were in effect to prevent accidental damage to the containment vessel. In order to further demonstrate that the containment was not accidentally damaged during plant modifications, the licensee conducted a visual inspection of the containment vessel, prior to restarting the plant on November 10, 1988. The visual inspection was conducted in accordance with Surveillance Instruction (SI) 254, "Containment Vessel and Shield Building Integrity Verification" and found that no damage to the containment vessel had occurred due to the plant modifications during the extended shutdown period.

Unit 1 conducted the second test for the first 10-year service period on December 15, 1985. The second test was significantly less than the maximum allowable leak rate of 0.25 percent per day for Unit 1.

Therefore, the leak rate for the Unit 1 containment should remain within the maximum allowed leak rate in the not more than three months of additional plant operation before the shutdown of Unit 1 to conduct the third test.

Since the containment vessel has been certified intact by visual inspection, the likely leakage paths, the Type B and C penetrations, have been leak tested and the second Type A tests had an acceptably low leakage rate, we conclude that the Type A test interval can be extended approximately three additional months until the Unit 1 Cycle 4 refueling outage with no significant increase in containment leakage. This extension results in the Type A test being conducted during the Unit 1 Cycle 4 refueling outage. This outage is required by the proposed change to the TS to begin no later than May 1, 1990; therefore, Unit 1 would operate requiring containment integrity for no more than 3 additional months beyond the current Type A test interval allowed by the TS. Also, the proposed change would require the Type A tests to be conducted before the Unit 1 restart from the Unit 1 Cycle 4 refueling outage; therefore, Unit 1 would not be able to operate beyond May 1, 1990 without completing the Type A test for the containment.

Based on the above, the staff concludes that the proposed change in TVA's application dated May 1, 1989 is acceptable.

## 2.2 Application Dated May 5, 1989

By letter dated May 5, 1989, TVA requested a change to the TS to uncouple the third Integrated Leakage Rate Test (Type A Test) from the 10 year Inservice Inspection Program. This is the licensee's TS Change Request 89-14.

Appendix J requires that a set of three Type A tests be performed during each 10-year service period with the third test being conducted when the plant is shut down for the 10-year plant inservice inspections. The proposed TS change would eliminate the requirement of conducting the unit 10-year inservice inspections during the shutdown for the third Type A test of a 10-year service period.

The purpose for requiring the third Type A test during shutdown for the 10-year plant inservice inspection is to assure that the three Type A tests are not bunched together during the first 90 months of the 10-year operation cycle. Requiring the third Type A test during the 10-year plant inservice inspection assures that the three Type A tests are evenly spaced over the 10-year interval.

Unit 1 was shutdown from August 1985 to November 1988. The extension of the 10-year plant inservice inspection is required because the extended 35-month shutdown outage for Unit 1 in 1985 to 1988 necessitates this extension in order for the plant to accumulate sufficient operating time to conduct the 10-year plant inservice inspection. In accordance with the provisions of the American Society of Mechanical Engineers (ASME) Section XI, Article I WA-2400(c), TVA extended the Unit 1, 10-year plant inservice inspection by 34 months. ASME Section XI, Article IWA-2400(c) allows the 10-year plant inservice inspection to be postponed if the time the plant has operated is significantly less than the 10-year inspection cycle.



Additionally, not extending the inservice inspection would impose undue hardship and cost to the licensee with little or no compensating increase in the level of quality or safety. This inspection is also not related to containment integrity of Appendix J. Since the 10-year plant inservice inspection will be conducted at Sequoyah in the thirteenth year after initial plant startup, the third Type A test will be uncoupled from the plant inservice inspection in order for the three Type A tests over the 10-year period to be evenly spaced. By uncoupling the third Type A test from the 10-year plant inservice inspection, the third Type A test will continue to be conducted at the end of the 10-year service period, in accordance with the requirements of Appendix J.

Based on the above, the staff concludes that the proposed changes in TVA's application dated May 5, 1989 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 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 needs to be prepared in connection with the issuance of these amendments.

### 4.0 CONCLUSION

The Commission made a proposed determination that each of the amendment applications dated May 1 and May 5, 1989 involves no significant hazards consideration. This determination was published in the Federal Register (54 FR 23326 and 54 FR 23327, respectively,) on May 31, 1989 and consulted with the State of Tennessee. No public comments were received and the State of Tennessee did not have any comments.

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

5.0 REFERENCES

1. Letter from C. H. Fox, Jr. (TVA) to NRC, Subject: "Sequoyah Nuclear Plant, Unit 1 - 10 CFR 50, Appendix J, Exemption Request and Technical Specification Change 89-11," dated May 1, 1989.
2. Letter from M. J. Ray (TVA) to NRC, Subject: "Sequoyah Nuclear Plant, Unit 1 - 10 CFR 50, Appendix J, Exemption Request and Technical Specification Change 89-14," dated May 5, 1989.

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Dated: September 29, 1989