

Docket



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

September 29, 1989

Docket No. 50-327

Mr. Oliver D. Kingsley, Jr.
Senior Vice President, Nuclear Power
Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

Dear Mr. Kingsley:

SUBJECT: THIRD CONTAINMENT INTEGRATED LEAK RATE TEST (TAC 73090/73091)
(TS 89-11 AND 89-14) - SEQUOYAH NUCLEAR PLANT, UNIT 1

The Commission has issued the enclosed Amendment No. 127 to Facility Operating License No. DPR-77 for the Sequoyah Nuclear Plant, Unit 1. This amendment is in response to your applications dated May 1 and 5, 1989.

This amendment revises the surveillance requirements (SR) on the containment integrated leak rate test (ILRT), or Appendix J Type A test, in Section 3/4.6.1, Primary Containment, of the Sequoyah, Unit 1 Technical Specifications (TS). The revisions to SR 4.6.1.2.a are the following: (1) add a statement to allow a one-time extension of the 40 ± 10 -month test interval in the SR so that the third ILRT can 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 shutdown for the 10-year unit inservice inspection. The revision to allow the third ILRT to be conducted during the Unit 1 Cycle 4 refueling outage requires 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 your application dated May 1, 1989 (TS 89-11) and the second, was in your application dated May 5, 1989 (TS 89-14).

The previous requirements in the TS on the third ILRT at Unit 1 also exist in Appendix J of 10 CFR Part 50. Your applications dated May 1 and 5, 1989 also requested exemptions to Appendix J. Exemptions, one temporary and one permanent, to Appendix J to allow the above revisions to the TS were granted in the staff's letter dated September 29, 1989.

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Mr. Oliver D. Kingsley, Jr.

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A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

Original signed by

Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Amendment No. 127 to License No. DPR-77
- 2. Safety Evaluation

cc w/enclosures:
See next page

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Mr. Oliver D. Kingsley, Jr.

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

TENNESSEE VALLEY AUTHORITY
DOCKET NO. 50-327
SEQUOYAH NUCLEAR PLANT, UNIT 1
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 127
License No. DPR-77

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The applications for amendment by Tennessee Valley Authority (the licensee) dated May 1 and 5, 1989, comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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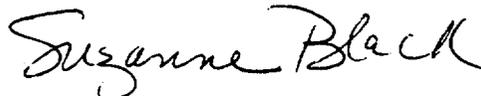
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-77 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 127, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Suzanne Black, Assistant Director
for Projects
TVA Projects Division
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 29, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 127

FACILITY OPERATING LICENSE NO. DPR-77

DOCKET NO. 50-327

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE

3/4 6-3

B3/4 6-1

INSERT

3/4 6-3

B3/4 6-1

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.6.1.2 The containment leakage rates shall be demonstrated at the following test schedule and shall be determined in conformance with the criteria specified in Appendix J of 10 CFR 50 using the methods and provisions of ANSI N45.4-1972; however, the methods of ANSI/ANS 56.8-1987 for mass point data analysis may be used in lieu of the methods specified in ANSI N45.4-1972.

- a. Three Type A tests (Overall Integrated Containment Leakage Rate) shall be conducted at 40 ± 10 month intervals* during shutdown at P_a (12 psig) during each 10-year service period.
- b. If any periodic Type A test fails to meet $0.75 L_a$, the test schedule for subsequent Type A tests shall be reviewed and approved by the Commission. If two consecutive Type A tests fail to meet $0.75 L_a$, a Type A test shall be performed at least every 18 months until two consecutive Type A tests meet $0.75 L_a$ at which time the above test schedule may be resumed.
- c. The accuracy of each Type A test shall be verified by a supplemental test which:
 1. Confirms the accuracy of the Type A test by verifying that the difference between supplemental and Type A test data is within $0.25 L_a$.
 2. Has a duration sufficient to establish accurately the change in leakage rate between the Type A test and the supplemental test.
 3. Requires the quantity of gas injected into the containment or bled from the containment during the supplemental test to be equivalent to at least 25 percent of the total measured leakage at P_a (12 psig).
- d. Type B and C tests shall be conducted with gas at P_a (12 psig) at intervals no greater than 24 months except for tests involving:
 1. Air locks,
 2. Penetrations using continuous leakage monitoring systems, and
 3. Valves pressurized with fluid from a seal system.

*A one-time extension of the test interval is allowed for the third Type A test within the first 10-year service period provided unit shutdown occurs no later than May 1, 1990 and performance of Type A testing occurs prior to unit restart following Unit 1 Cycle 4 refueling.

3/4.6 CONTAINMENT SYSTEMS

BASES

3/4.6.1 PRIMARY CONTAINMENT

3/4.6.1 PRIMARY CONTAINMENT

Primary CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the accident analyses. This restriction, in conjunction with the leakage rate limitation, will limit the site boundary radiation doses to within the limits of 10 CFR 100 during accident conditions.

3/4.6.1.2 CONTAINMENT LEAKAGE

The limitations on containment leakage rates ensure that the total containment leakage volume will not exceed the value assumed in the accident analyses at the peak accident pressure, P_a . As an added conservatism, the measured overall integrated leakage rate is further limited to less than or equal to $0.75 L_a$ during performance of the periodic tests to account for possible degradation of the containment leakage barriers between leakage tests.

The surveillance testing for measuring leakage rates are consistent with the requirements of Appendix "J" of 10 CFR 50 with the following exemption. The third Type A test of each 10-year service period need not be conducted when the plant is shutdown for the 10-year plant inservice inspection. Due to the increased accuracy of the mass point method for containment integrated leakage testing, the mass point method referenced in ANSI/ANS 56.8-1987 can be used in lieu of the methods described in ANSI N45.4-1972.

3/4.6.1.3 CONTAINMENT AIR LOCKS

The limitations on closure and leak rate for the containment air locks are required to meet the restrictions on CONTAINMENT INTEGRITY and containment leak rate. Surveillance testing of the air lock seals provide assurance that the overall air lock leakage will not become excessive due to seal damage during the intervals between air lock leakage tests.

3/4.6.1.4 INTERNAL PRESSURE

The limitations on containment internal pressure ensure that 1) the containment structure is prevented from exceeding its design negative pressure differential with respect to the annulus atmosphere of 0.5 psig and 2) the



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 ± 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 ± 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.

Principal Contributor: P. Hearn

Dated: September 29, 1989