UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
TENNESSEE VALLEY AUTHORITY	)	Docket No. 50-327
(Sequoyah Nuclear Plant, Unit 1)	)	

EXEMPTIONS

I

The Tennessee Valley Authority (the licensee) is the holder of Facility Operating License No. DPR-77 which authorizes operation of the Sequoyah Nuclear Plant, Unit 1. This license provides that, among other things, Unit 1 is subject to all rules, regulations, and orders of the Nuclear Regulatory Commission (Commission) now or hereafter in effect.

The Sequoyah Nuclear Plant, Unit 1, is one of the two pressurized water reactors located at the licensee's site in Hamilton County, Tennessee.

II

General Design Criterion (GDC) 52 of Appendix A to 10 CFR Part 50 requires that each reactor containment be designed so that periodic integrated leakage rate testing can be conducted to assure containment isolation integrity. Section III.D.1(a) of Appendix J to 10 CFR Part 50 requires (1) that a set of three Type A tests shall be performed at approximately equal intervals during each 10-year service period and (2) the third Type A test in a 10-year service

period shall be conducted when the unit is shutdown for the 10-year unit inservice inspection (ISI). The staff has determined that the approximately equal intervals for Type A tests during each 10-year service period is 40 ± 10 months.

The Type A tests are conducted to measure the primary reactor containment integrated leakage rate. They are also known as the containment integrated leak rate tests. 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 and containment isolation valves to also assure containment integrity during an accident. These requested exemptions 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.

By letter dated May 1, 1989, the licensee requested a temporary exemption from the interval requirements for Type A testing in Appendix J. The licensee proposed that the interval between the second and third Type A tests for Unit 1 be extended on a one-time basis beyond the 50 months allowed to coincide with the Unit 1 Cycle 4 refueling outage. This one-time extension would require

that Unit 1 shut down no later than May 1, 1990 and that the Type A test would be completed before the restart of Unit 1 from its Cycle 4 refueling outage when containment integrity was again required. The licensee contends that an exemption for Unit 1 is warranted on the basis that the containment will have experienced no operational loading for 35 of the 53 months to May 1, 1990 since the last Type A test, no modifications have been made to the containment boundary since the last Type A test, the first and second Type A tests had very low leakage rates, and the likely leakage paths, the containment penetrations, have recently been acceptably leak tested.

Unit 1 entered its Cycle 3 refueling outage on August 22, 1985 and the second test of the first 10-year service period was conducted 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. TVA stated that since August 22, 1985 Unit 1 was in an extended shutdown until its restart in November 1988 and no modifications were made or the containment pressure boundary. In addition, the local leak tests on all penetrations and valves requiring Appendix J, Type B and Type C testing were conducted in 1988 before the restart of Unit 1 in November 1988 and are acceptable. The surfaces on the containment liner and shield building were inspected for abnormal degradation before the restart of Unit 1 and none was found. 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 for the Unit 1 Cycle 4 refueling outage to conduct the third Type A test.

The staff has considered the temporary Appendix J exemption request for the extension of the Type A test interval and concludes it is justified on the

grounds that (1) there should be no significant increase in the Type A test leak rate for the Unit 1 containment when the Type A test interval is extended beyond the 50 months allowed to the Unit 1 Cycle 4 refueling outage which is to begin no later than May 1, 1990 and (2) the results of this Type A test should be below the maximum allowed leak rate.

By letter dated May 5, 1989, the licensee requested a second exemption from the Type A testing requirements in Appendix J. This is a permanent exemption from conducting the third Type A test in a 10-year service period during the unit shutdown for the 10-year inservice inspection (ISI). The licensee contends that since the 10-year ISI has been extended approximately three years, the inspection is not required for the Unit 1 Cycle 4 refueling outage and, therefore, must be uncoupled from the third Type A test in each 10-year service period which is required by Appendix J.

The 10-year ISI is not related to the integrity of the containment pressure boundary and is scheduled for 1994 in accordance with Section XI of the American Society of Mechanical Engineers (ASME) Code and with 10 CFR 50.55a(g)(4). The first 10-year ISI for Unit 1 is, therefore, scheduled for a future refueling outage other than the upcoming Unit 1 Cycle 4 refueling outage which is scheduled for 1990. The extension of the 10-year ISI is necessary in order for the plant to accumulate sufficient operating time to conduct the 10-year ISI because of the extended 35-month outage of Unit 1 from 1985 to 1988. In accordance with the provisions of Section XI, Article I WA-2400(c), of the ASME Code, the licensee extended the Sequoyah Unit 1 10-year

ISI by 34 months to 1994. The ASME Code allows the 10-year ISI to be postponed if the time the plant has operated is significantly less than the 10-year inspection cycle which is true for Sequoyah because of its extended outage.

The staff has considered the Appendix J exemption request for uncoupling the third Type A test of each 10-year service period from the 10-year unit ISI and concludes it is justified on the grounds that the third Type A test within each 10-year service period and the 10-year ISI must be scheduled separately for Unit 1. The licensee is still required to conduct the 10-year ISI in accordance with Section XI of the ASME Code.

III

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, the exemptions are (1) authorized by law, (2) will not present an undue risk to public health and safety, and are (3) consistent with the common defense and security. The Commission further determines that special circumstances, as provided in 10 CFR 50.12(a)(2)(ii), are present justifying the exemption -- namely, that application of the regulation in these particular circumstances is not necessary to achieve the underlying purpose of the rule in that the Unit 1 containment will continue to provide a reliable and acceptable means of containment isolation integrity within the leakage requirements of Appendix J and the Unit 1 Technical Specifications. Also, compliance with the rule would result in the expenditure of resources which are not consistent with the licensee's long-term plan for Unit 1 and which could be better utilized elsewhere for safety improvements to the plant.

Unit 1 entered its Cycle 3 refueling outage on August 22, 1985, and successfully completed its second periodic Type A test on December 15, 1985.

Unit 1 remained in shutdown for approximately three years before returning to power operation on November 10, 1988. This unusually long outage has resulted in a hardship for the licensee to comply with the Type A test interval requirement in Appendix J. Compliance with Appendix J requires the licensee to either schedule a forced Unit 1 outage for the sole purpose of performing a Type A test or conduct a Type A test during the ice condenser flow passage inspection outage projected to start on October 1, 1989. A forced outage would require 22 days to conduct the Type A test and the estimated cost to the licensee is $2.5 million in replacement power costs. Inclusion of a Type A test during the ice condenser flow passage inspection (eight-day duration) would add an additional 22 days to the outage and the replacement power costs would be the same.

When Appendix J was adopted, the end of the 10-year service period and the 10-year inservice inspection outage were contemplated to be concurrent milestones; however, these milestones are unrelated within the meaning of containment integrity and Appendix J would require that the Unit 1 10-year ISI would have to be rescheduled to coincide with the Unit 1 Cycle 4 refueling outage. This option would result in significant excess costs to the licensee because of the increased outage time. The 10-year inservice inspection for Unit 1 is currently scheduled for 1994 in accordance with Section XI of the ASME Code and 10 CFR 50.55a(g)(4) and early performance of the 10-year ISI with the associated hardships and cost was not intended by the rule when it was originally adopted. Performing the 10-year ISI early would also provide little or no compensating increase in the level of quality or safety at Unit 1.

Accordingly, the Commission hereby grants two exemptions from the requirements of Section III.D.1(a) of Appendix J to 10 CFR Part 50 to the

licensee for operation of the Sequoyah Nuclear Plant, Unit 1, as described above. The exemption to uncouple the third Type A test of each 10-year service period from the 10-year inservice inspection is granted permanently. The exemption to allow the licensee to conduct the third Type A test for Unit 1 during the Unit 1 Cycle 4 refueling outage is temporary and is granted only for this third Type A test provided:

(1) The Unit 1 Cycle 4 refueling outage begins no later than May 1, 1990, and

(2) The Type A test for Unit 1 is conducted prior to the restart of Unit 1 from its Cycle 4 refueling outage.

Pursuant to 10 CFR 51.32, the Commission has determined that the issuance of these exemptions will have no significant impact on the environment. This was noticed in the Federal Register (54 FR 39829, September 28, 1989).

For further details with respect to this action, see the requests for exemptions dated May 1 and 5, 1989, which are available for public inspection at the Commission's Public Document Room, Gelman Building, 2120 L Street, N.W., Washington, D.C., and at the Chattanooga-Hamilton County Bicentennial Library, 1001 Broad Street, Chattanooga, Tennessee 37402.

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 29th day of September 1989.

FOR THE NUCLEAR REGULATORY COMMISSION

B. B. Liaw, Director
TVA Projects Division
Office of Nuclear Reactor Regulation