

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

March 3, 1982



Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Ms. Adensam:

In the Matter of
Tennessee Valley Authority

) Docket Nos. 50-327
50-328

In response to NRC question Q5.9 for the Sequoyah Nuclear Plant (SNP) Final Safety Analysis Report (FSAR), TVA previously provided a program for performing ASME Section XI tests. Enclosed is our revised Pump and Valve Inservice Testing Program for SNP. The revised program will be incorporated into the SNP FSAR in accordance with the NRC FSAR update effort for SNP.

If you have any questions concerning this matter, please get in touch with J. E. Wills at FTS 858-2683.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Sworn to and subscribed before me
this 3rd day of March 1982

Bryant M. Lowery
Notary Public
My Commission Expires 4/4/82

Enclosure

cc: U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

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ENCLOSURE

INSERVICE TESTING PROGRAM FOR
PUMPS AND VALVES
SEQUOYAH NUCLEAR POWER PLANT

1.0 Introduction

Under the provisions of 10CFR50.55a, inservice testing of safety related pumps and valves will be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda. As specified in 10CFR50.55 a (b), the effective edition of Section XI with regard to this program is the 1974 Edition through the Summer 1975 Addenda (Unit 1) and the 1977 Edition through the Summer 1978 Addenda (Unit 2). This program identifies the pump and valve inservice testing that will be performed at the Sequoyah Nuclear Power Plant to comply with the requirements of 10CFR50.55a. Where this text refers to specific paragraphs in Section XI, the paragraphs in the 1977 Edition through Summer 1978 Addenda is referenced. Refer to the equivalent paragraph in the 1974 Edition through Summer 1975 Addenda when required.

2.0 Pump Inservice Testing Program

The pump test program shall be conducted in accordance with Subsection IWP of Section XI of the ASME Boiler and Pressure Vessel Code (applicable Edition and Addenda) except for relief requested under the provisions of 10CFR50.55a(g) (5) (iii). Appendix A details the inservice testing program for all safety related pumps at Sequoyah Nuclear Plant. Table A in Appendix A lists each pump required to be tested in accordance with IWP-1100 of Section XI of the Code. Each parameter to be measured as well as specific notes concerning non-conformance are also listed.

2.1 Pump Testing Frequency

Present regulatory policy requires that all safety-related pumps installed in water-cooled nuclear power plants be tested in accordance with the ASME Code, Section XI, Subsection IWP. The purpose of these tests is to collect data to be used in assessing the operational readiness of pumps during their service life.

There are two reasons for conducting periodic pump testing. The first is to record data for assessing operational readiness and the second is to lubricate those bearings of the prime mover and pump which may lose their oil lubrication film due to lack of operation. In order to properly lubricate their bearings, these pumps should be "rolled" or "jogged" for a very short time, in order to supply lubricant to wear surfaces.

Starting and running the pump for the purposes of recording data permits an assessment of operational readiness but also subjects the pump to wear. In determining the most effective and efficient pump test frequency, the benefits of running the pump to record this data must be weighed against the costs in degraded pump integrity and reliability. Pump reliability can be adequately demonstrated (and degradation reduced) by conducting the Section XI pump test quarterly, as is consistent with the operational readiness test for valves as presently endorsed by the ASME Code.

2.1 Pump Testing Frequency (continued)

In addition, while the latest NRC-accepted version of the ASME Code calls for monthly testing of safety-related pumps, all subsequent Editions and Addenda, including the next Addenda to be approved by the NRC, call for quarterly pump testing.

Thus, Sequoyah will fully test each pump quarterly per Section XI.

3.0 Valve Inservice Testing Program

The valve test program shall be conducted in accordance with Subsection IWV of Section XI of the ASME Boiler and Pressure Vessel (applicable Edition and Addenda) except for relief requested under the provisions of 10CFR50.55a (g) (5) (iii). The valve test program is included as Appendix C. The codes and symbols used to abbreviate the tables in Appendix C are explained in Appendix B. The Calculated Maximum Allowable Stroke Times and the Maximum Allowable Stroke Times shall not be <1.0 second due to the eye and hand coordination involved in manually operating a stop watch. Valves identified in Appendix C, Remarks, by the word "cycled" are only cycled and not timed since a response time is of no concern and is not specified by the owner.

3.1 Category A Valves

Valves for which seat leakage is important may generally be classified as pressure isolation valves (PSIV), containment isolation valves (CIV), or both pressure and containment isolation valves. Containment isolation valves falling within the scope of ASME Section XI are tested in accordance with the Section XI requirements of IWV-3410, Category A with the exception of the seat leakage tests (IWV-3420). The seat leakage testing of these valves meets the intent of Section XI, but the actual test procedures shall be in accordance with the 10CFR50, Appendix J, Type C, CIV test program. For valves performing a containment isolation function individual valve leak rates are not in themselves significant. The only pertinent leak rate criteria for CIV's is that the total leak rate for all penetrations and valves be less than $0.60 L_a$. The Sequoyah plant was designed to perform the Appendix J, Type C tests, not the individual Category A leak test (i.e., some penetration test connections test more than one valve at a time). Accordingly, all CIV seat leak testing shall be performed in accordance with the requirements of 10CFR50, Appendix J, Type C, in lieu of the Category A requirements of Section XI.

3.2 Thermal Relief Valves

Many safety related systems, particularly those with heat exchangers, have been provided with relief valves. Some of these relief valves are thermal relief valves (TRV) of small capacity intended to relieve pressure due to thermal expansion of fluid in a "bottled-up" condition. Experience has shown that failure of these valves will not result in failure of a system to fulfill

3.2 Thermal Relief Valves (continued)

its safety related function. Thus, the thermal relief valve is not safety related and such valves have not been included in the program.

3.3 Thermal Relief Check Valves

Several penetrations have been fitted with small check valves designed to relieve pressure due to thermal expansion of fluid in the penetration. These valves will be leak tested in the closed position per Appendix J (10CFR50); however, these valves do not have a safety related function to open. The reasoning is similar to that for the thermal relief valves, in that the only occasion that would require the opening function of these valves is when both CIV's are absolutely tight with zero leakage. On that occasion, the thermally-induced pressure increase will be stabilized since only a minute amount of leakage past any barrier would stabilize the penetration pressure. Sequoyah views these valves as safety related only in the closed position to provide containment isolation function. These valves are identified in Appendix C with TRCV written in Remarks.

3.4 Corrective Action

Relief is requested from the corrective action requirements of Paragraph IWV-3417 and -3523 of Section XI. The requirement for corrective action of components in safety systems is adequately covered in the Limiting Conditions for Operation contained in the present Sequoyah Technical Specifications.

3.5 Systems Out of Service

Relief is requested from the requirements for testing valves in systems which are out of service before returning those systems to operable status, per IWV-3416 of Section XI. These testing requirements are adequately covered in the Sequoyah Technical Specifications and Plant Procedures.

3.6 Emergency Diesel Systems

The inservice operability testing of pumps and valves associated with the Emergency Diesels, including the Diesel Oil Transfer System, are excluded from the enclosed test programs. These components are an integral part of the Emergency Diesel System and are functionally tested quarterly. Thus, the functional operability testing of the pumps and valves is performed at a frequency equal to that required by Section XI for either pumps or valves. Additionally, the failure of a pump or valve to perform its intended function will be identified by the failure of the associated Emergency Diesel to meet its functional requirements.

3.7 Fail-Safe Actuators

All those valves which have a fail-safe actuator are exercised normally using that actuator. Thus, the fail-safe actuator is regularly tested when the valve is tested.

3.8 Valve Timing and Remote Indication

During each full-stroke test of a power-operated valve, the full-stroke time shall be measured, in accordance with Section XI, Article IWV-3413. In addition, each valve with a remote operator shall be exercised using that operator and position indicator for verification of valve position during refueling, but not less than once every two years in accordance with Section XI Article IWV-3300.

3.9 Passive Valve

These valves, which have no Section XI testing requirements, are valves in safety related systems which are not required to change position in order to accomplish their required safety function. Sequoyah has included as B-Passive all manually operated valves which are required by procedure to be maintained in their safety related position. Any valves which are locked-open or locked-closed in their safety related position are also considered Category B-Passive. Due to the lack of testing requirements, these valves have been excluded from Appendix C. Therefore, relief is requested from the testing Category E valves per the 1974 Edition through Summer 1975 Addenda on Sequoyah Unit 1.

3.10 Cold Shutdown Testing

Sequoyah will commence testing as soon as the cold shutdown condition is achieved, but no later than 48 hours after cold shutdown, and will continue until all tests are complete or the plant is ready to return to power. Any testing not completed at one cold shutdown will be performed during any subsequent cold shutdowns that may occur before refueling to meet the Code specified testing frequency. For planned cold shutdowns, where Sequoyah will complete all the valves identified in the IST program for testing in the cold shutdown mode, exception to the above 48 hours start time may be taken (refueling, etc.). Therefore, a unit shall not be required to remain in cold shutdown to complete cold shutdown testing provided the testing commenced no later than 48 hours after achieving the cold shutdown condition.