UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AN INSERVICE TESTING REQUEST FOR RELIEF

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNIT 1

DOCKET NUMBER 50-390

1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a, requires that inservice testing (IST) of certain American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda, except where relief has been requested and granted or proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a (f)(6)(i), (a)(3)(i), or (a)(3)(ii). In order to obtain authorization or relief, the applicant must demonstrate that: (1) conformance is impractical for its facility; (2) the proposed alternative provides an acceptable level of quality and safety; or (3) compliance would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.0 BACKGROUND

By letter dated September 26, 1995, Tennessee Valley Authority (the applicant) submitted a one-time request for relief from certain ASME Code inservice testing (IST) requirements pertaining to baseline tests of several relief valves in several systems. The plant IST program requires that the testing meet the requirements of Part 10 (herein referred to as OM-10) of ANSI/ASME Operations and Maintenance (OM) Standard, OM-1987 Edition through the OMA-1988 Addenda which references the requirements of OM Part 1-1987 Edition (herein referred to as OM-1). Specifically, this request seeks a one-time relief from performing baseline tests on certain system relief valves in a manner that includes a 10-minute hold time between two consecutive set pressure tests of the valves and from documenting temperature stability on set pressure tests of the relief valve preservice tests as required by OM-1. The following is a list of the plant relief valves for which the applicant is seeking this one-time relief:

SYSTEM/COMPONENT ID	DESCRIPTION
0-RFV-31-2210	MCR Surge Tank A-A
0-RFV-31-2252	MCR Surge Tank B-B
0-RFV-31-2326	Elec. Board Rm. Surge Tank
1-RFV-62-505-S	Charging Pump Suction Hdr.
1-RFV-62-636-S	CVCS Seal Water Return Hdr.

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SYSTEM/COMPONENT ID	DESCRIPTION
1-RFV-62-662-S	CVCS Letdown Hdr.
1-RFV-62-675-S	CVCS Letdown
1-RFV-62-688-S	Volume Control Tank
1-RFV-62-955	Holdup Tank A
1-RFV-62-1221	Cent. Charging Pump 1A-A
1-RFV-62-1222	Cent. Charging Pump 1B-B
1-RFV-63-511-S	SI Pump 1A-A
1-RFV-63-534-A	SI Pump 1A-A Hot Leg Injection Line Discharge
1-RFV-63-535-S	SI Pump Cold Leg Injection Line Discharge
1-RFV-63-536-B	SI Pump 1B-B Hot Leg Injection Line Discharge
1-RFV-63-577-S	SIS Boron Injection Tank Outlet
1-RFV-63-602-S	SIS Cold Leg Accum. 1
1-RFV-63-603-S	SIS Cold Leg Accum. 2
1-RFV-63-604-S	SIS Cold Leg Accum. 3
1-RFV-63-605-S	SIS Cold Leg Accum. 4
1-RFV-63-626-A	RHR to Cold Leg 2 and 3 Injection Line
1-RFV-63-627-B	RHR to Cold Leg 1 and 4 Injection Line
1-RFV-63-637-S	RHR to Cold Leg 1 and 3 Injection Line
1-RFV-63-835	RHR HX 1B-B Outlet to SI Pump Suction
1-RFV-70-538-S	CCS Surge Tank
1-RFV-70-703	Excess Letdown HX CCS Outlet
1-RFV-70-835	CCS RCP 1, 2, 3, and 4 Thermal Barrier HX Supply
1-RFV-72-508-A	CS Pump 1A-A Suction
1-RFV-72-509-B	CS Pump 1B-B Suction
1-RFV-74-505-S	RHR Pump Suction Hdr.

For the above described valves, the applicant is requesting one-time relief from the following testing requirements:

(1) OM-10, paragraph 3.1, "Preservice Testing", which requires that preservice tests be conducted under conditions as near as practicable to those expected during subsequent inservice testing.

(2) OM-1, paragraph 8.1.3.7, "Time Between Valve Openings", which requires that a minimum of 10 minutes elapse between successive openings.

(3) OM-1, paragraph 8.1.3.4, "Temperature Stability", which requires that the test method be such that the temperature of the valve body is known and stabilized before commencing set pressure testing, with no change in measured temperature of more than 10 degrees F in 30 minutes.

3.0 BASIS FOR RELIEF

The applicant states that during a recent review of the required preservice baseline testing at Watts Bar, Unit 1, it was found that the testing of these valves did not incorporate the above provisions of the ASME OM testing requirements. Specifically, the applicant's testing procedure contains set pressure and documentation steps which set the valves using a minimum of three successive openings with ambient temperature water as a test medium. The ambient temperature and the time between successive openings was neither measured nor recorded. Only the successive set pressure measurements were

recorded. However, the applicant states that the nature of the bench test process is such that a temperature gradient between the valve, the ambient test environment, and the water test medium would not be sufficient to affect the operational set pressure of the relief valves. Therefore, the applicant considers the bench test process to have met the intent of the OM Code.

The applicant stated that in order to perform the necessary preservice baseline tests in accordance with the current surveillance instruction, which meets the above ASME OM requirements, it would be necessary to isolate and drain the systems containing these valves and remove the relief valves from the systems for bench testing. The applicant argues that this would result in an undue hardship in terms of the cost of performing the testing and the impact to the plant startup schedule.

The applicant proposes no alternative testing to the above OM Code testing requirements other than the bench testing which has already been performed and states that the valves will be tested in subsequent inservice tests under test conditions as required by the OM Code and within the Code-required frequency of tests.

4.0 EVALUATION

The staff agrees that, for the preservice baseline tests of the above relief valves, the temperature gradient between the valves, the environment, and the water test medium was such that there would be negligible effect on set pressure measurements due to not meeting the hold time and thermal stabilization requirements of the OM Code. The failure to take a temperature measurement and wait at least 30 minutes to ensure thermal stability would not affect the valve set pressures for these valves with this service condition. Therefore, the intent of the OM Code requirements regarding thermal equilibrium has been met since the valves remain in thermal equilibrium independent of the hold time, and compliance would result in hardship without a compensating increase in the level of quality and safety. Further, the staff noted that the 1994 Addenda and the 1995 Edition of the OM Code added a clarification for valves in compressible fluid services other than steam or in liquid service, which stated that verification of thermal equilibrium is not required for valves which are tested at ambient temperature using a test medium at ambient temperature. The addition to the OM Code Appendix I was made because valves in ambient temperature service would be at thermal equilibrium without any specified hold time.

5.0 CONCLUSION

Based on the above evaluation, the staff has determined that in accordance with 10 CFR 50.55a(a)(3)(ii), it is appropriate to authorize the applicant's alternative testing and request for a one-time relief from the above discussed ASME Code preservice baseline testing requirements since compliance with these requirements would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. For subsequent inservice testing of these components, the applicant has committed to meet all of the applicable ASME code requirements.

Principal Contributor: Charles G. Hammer, Mechanical Engineering Branch

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cc:
Mr. O. J. Zeringue, Sr. Vice President
Nuclear Operations
Tennessee Valley Authority
3B Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Dr. Mark O. Medford, Vice President
Engineering & Technical Services
Tennessee Valley Authority
3B Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. D. E. Nunn, Vice President
New Plant Completion
Tennessee Valley Authority
3B Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. J. A. Scalice, Site Vice President
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, TN 37381

General Counsel
Tennessee Valley Authority
ET 11H
400 West Summit Hill Drive
Knoxville, TN 37902

Mr. P. P. Carier, Manager
Corporate Licensing
Tennessee Valley Authority
4G Blue Ridge
1101 Market Street
Chattanooga, TN 37402-2801

Mr. B. S. Schofield
Site Licensing Manager
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, TN 37381

TVA Representative
Tennessee Valley Authority
11921 Rockville Pike
Suite 402
Rockville, MD 20852

Regional Administrator
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW., Suite 2900
Atlanta, GA 30323

Senior Resident Inspector
Watts Bar Nuclear Plant
U.S. Nuclear Regulatory Commission
1260 Nuclear Plant Road
Spring City, TN 37381

The Honorable Robert Aikman
County Executive
Rhea County Courthouse
Dayton, TN 37321

The Honorable Garland Lanksford
County Executive
Meigs County Courthouse
Decatur, TN 37322

Mr. Michael H. Mobley, Director
Division of Radiological Health
3rd Floor, L and C Annex
401 Church Street
Nashville, TN 37243-1532

Ms. Danielle Droitsch
Energy Project
The Foundation for
Global Sustainability
P.O. Box 1101
Knoxville, TN 37901

Ms. Ann Harris
305 Pickel Road
Ten Mile, TN 37880

Ms. Beth Zilbert, Energy Campaigner
Greenpeace
20 13th Street, NE.
Atlanta, GA 30309

Mr. James P. Riccio
Public Citizen
4340 Georgetown Square, #612
Atlanta, GA 30338