



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

NOV 17 2005

10 CFR 50.55a

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - ONE TIME REQUEST FOR
RELIEF FROM AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME),
SECTION XI CODE REQUIREMENTS - TESTS FOLLOWING REPAIR,
MODIFICATION, OR REPLACEMENT (IWE-5221)

Pursuant to 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from the IWE-5221, "Leakage Test," requirements in Section XI of the ASME Boiler and Pressure Vessel Code. TVA's IWE Program is based on the 1992 Edition with the 1992 Addenda of the ASME Code. TVA's enclosed request for relief proposes alternative test methods (pneumatic leakage test) for repair activities associated with the WBN steel containment vessel following the Unit 1 Cycle 7, steam generator replacement outage.

TVA is submitting this request to use an alternative test method for containment leak testing associated with the WBN steel containment vessel following the Unit 1 Cycle 7 steam generator replacement. This relief request is similar to the relief request approved for TVA's SQN by NRC's letter dated May 9, 2003 (ML031320320) concerning SQN's restoration from the steam generator replacement for Unit 1 and for North Anna Power Station by NRC's letter dated January 14, 2003 (ML030150004) concerning the reactor pressure vessel head replacement.

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To support the ongoing steam generator replacement project and the scheduled refueling outage of Watts Bar Unit 1 in September 2006, TVA requests approval of the proposed alternative prior to July 2006. However, the need for this relief request approval is dependent upon NRC's approval of TVA's one-time License Amendment Request, WBN-TS-05-07, to extend the containment integrated leak rate test (CILRT) for five years which is being submitted separately. If NRC does not approve the extension of the CILRT, that test will be required to be performed during the Cycle 7 Refueling Outage when the steam generators are replaced and this request for relief will not be needed.

There are no regulatory commitments associated with this submittal. If you have any questions concerning this matter, please call me at (423) 365-1824.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. L. Pace', with a stylized flourish at the end.

P. L. Pace
Manager, Site Licensing
and Industry Affairs

Enclosure

cc: See page 3

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Enclosure

cc (Enclosure):

NRC Resident Inspector
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

Mr. D. V. Pickett, Project Manager
U.S. Nuclear Regulatory Commission
MS 08G9a
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852-2738

U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, Georgia 30303

ENCLOSURE

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT (WBN) UNIT 1
FIRST 10-YEAR INTERVAL
ONE TIME REQUEST FOR RELIEF

SUMMARY:

TVA is requesting relief from American Society of Mechanical Engineers (ASME) Section XI, Subsection IWE, "Leakage Test," with respect to pressure testing of the steel containment vessel (SCV). WBN is replacing the steam generators during Cycle 7 Refueling Outage which necessitate cutting two holes in the steel containment vessel dome in order to replace the steam generators. WBN plans to perform a local leak rate test (Type B test), as a system leakage pressure test performed at the design basis accident calculated internal pressure, P_a , in lieu of the integrated leak rate test (Type A test).

The need for this relief request approval is dependent upon NRC's approval of TVA's one time License Amendment Request, WBN-TS-05-07, to extend the containment integrated leak rate test (CILRT) for five years. If NRC does not approve the extension of the CILRT, that test will be required to be performed during the Cycle 7 Refueling Outage when the steam generators are replaced and this request for relief will not be needed.

This relief request is similar to the relief request approved for TVA's SQN by NRC's letter dated May 9, 2003 concerning SQN's restoration from the steam generator replacement for Unit 1 and for North Anna Power Station by NRC's letter dated January 14, 2003 concerning the reactor pressure vessel head replacement.

To support the ongoing steam generator replacement project and the scheduled refueling outage of Watts Bar Unit 1 in September 2006, TVA requests approval of the proposed alternative prior to July 2006. TVA requests authorization to use this alternative in accordance with 10 CFR 50.55a(a)(3)(i).

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System/Components
For Which Relief

Is Requested: WBN Unit 1 Primary Containment Isolation
System - Steel Containment Vessel.

Code

Requirement: ASME Section XI 1992 Edition with the 1992
Addenda, Subsection IWE, Code Class MC.

Code Requirement
For Which Relief

Is Requested: An alternative to the requirement of
Paragraph IEW-5221 is requested. Paragraph
IWE-5221 states in part:

"Except as noted in IWE-5222, repairs/
replacement activities performed on pressure
retaining boundary of Class MC or Class CC
components shall be subjected to a pneumatic
leakage test in accordance with the
provisions of Title 10 Part 50 of the Code of
Federal Regulations, Appendix J, Paragraph
IV.A." Paragraph IV.A states in part, "Any
major modification, replacement of a
component which is part of the primary
reactor containment boundary, or resealing a
seal-welded door, performed after the
preoperational leakage rate test shall be
followed by either a Type A, Type B, or
Type C test as applicable for the area
affected by the modification."

Basis for
Relief:

To facilitate the WBN Unit 1 steam generator
replacement, WBN's free-standing SCV will be
breached. Two holes will be cut in the SCV
in order to replace the steam generators.
This work must be performed in order to
remove the steam generators from containment
and install the new steam generators. The
purpose of this relief request is to allow a
local leak rate test be performed on the new
pressure boundary welds of the SCV as an
alternative to a Type A test, which is
specified in the Code.

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The sections of the SCV that are to be removed will be re-welded in place by qualified personnel in accordance with TVA's Code of Record requirements. The Code of Record for the SCV is ASME Section III, 1971, Winter 1971 Addenda. Consistent with the Code of Record requirements, examinations will be performed on the steel vessel repair welds. As a minimum, a magnetic particle test of the back gouge of the root pass area will be performed and 100 percent radiography will be performed on the pressure boundary containment SCV final repair welds. In addition, ASME Section XI requires both a General Visual examination and a Visual Test (VT)-3 examination of the SCV pressure boundary welds. These examinations meet the pre-service examination requirements. The SCV repair welds will be tested by a local leakage rate test by pressurizing the containment vessel to the required test pressure of at least P_a (15.0 pounds per square inch gauge [psig]) and performing a bubble test of the repair welds after a hold time of at least 10 minutes. A VT-2 visual examination will be performed with the test pressure held above 15.0 psig. Pressurizing containment to P_a will structurally test the SCV repair weld. Zero detectable leakage is the acceptance criteria. Zero leakage will be determined by the absence of bubble formation with the leak detection medium in accordance with test procedures. Any leakage identified will be corrected and the test will be performed again. The SCV will be pressurized through an existing penetration using an external air compressor. It will take approximately 1-2 hours to perform the test and visual examination. Once the test is completed, the SCV will be depressurized in a controlled manner which takes approximately 2-4 hours. Personnel qualified and certified to the VT-2 procedures in accordance with the requirements of Recommended Practice No. SNT-TC-1A 2001 or ANSI/ASNT CP-189, "Qualification and Certification of Nondestructive Testing

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Personnel," will conduct the examinations. The combination of the 100 percent radiography, which will show that the repair welds meet the construction code radiography acceptance criteria and the local leak rate test of the repair welds while the SCV and repair welds are at accident pressure, is adequate to prove the integrity of the steel containment vessel.

Alternative
Examinations:

WBN proposes to perform an "as-left" local leak rate test on the SCV repair welds in lieu of the Type A test specified by ASME Section XI, Paragraph IWE-5221 for this type of repair activity.

Justification for
the Granting of
Relief:

ASME Section XI, Paragraph IWE-5221 requires that an appropriate 10 CFR 50, Appendix J test be performed following a repair or modification of the pressure retaining boundary. Specifically, the Code requires a Type A, Type B, or Type C test, as appropriate, for the repaired or modified pressure boundary component.

Appendix J, Option B provides guidelines for meeting the safety objectives of the Appendix J requirements. Section 9.2.4 of NEI 94-01, "Guidelines for Implementing Performance-Based 10 CFR 50, Appendix J," states that "repairs and modifications that affect the containment leakage rate require leak rate testing (Type A testing or local leak rate testing) prior to returning the containment to operation."

The local leak rate test will directly quantify the leakage at the repair area, while a Type A test measures total containment leakage. This test is being performed to reestablish the leak-tight integrity of the SCV due to the repair welds. Also, WBN's acceptance criterion for leakage of the repair welds will be zero leakage.

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This acceptance criterion is a more stringent criterion than that of a Type A test. Therefore, if there is any leakage of the SCV at the repair welds, it would be identified by the local leak rate test, and corrected.

Performance of a containment integrated leak rate test (10 CFR 50 Appendix J, Type A test) provides no additional assurance of containment integrity following the repair of the containment vessel. However, the integrated leak rate test requires additional scheduled time, manpower, dose, and test instrumentation to be installed throughout containment. The integrated leak rate test takes longer to perform and virtually stops all other work from taking place inside of containment for several days. The integrated leak rate test does not provide any additional assurance of the quality of the repair welds of the containment vessel.

A local leak rate test provides the most accurate and direct method of assuring the leak tight integrity of the repair welds. The local leak rate test is considered a superior test for determining leakage at the repaired area as compared to a Type A test. Additionally, the containment pressure test, performed at P_a , will reestablish the structural integrity of the SCV. Therefore, the required pressure test at P_a and the local leak rate test of the SCV repair welds satisfy or exceed the intent of a Type A test to establish containment integrity after a repair activity.

WBN has determined that a local leak rate test is the most appropriate test to perform on the SCV to meet the testing requirements of the Code. A Type A test is a less sensitive test for this type of SCV restoration activity. In accordance with the requirements of 10 CFR 50.55a (a)(3)(i), WBN considers that the local leak rate test, will provide for an acceptable level of quality

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and safety that is equivalent to the Code
required test.

Implementation
Schedule:

This is a one-time request to apply this
alternative for the ASME Code
repair/replacement activity associated with
the WBN steel containment vessel affected by
the replacements of the WBN Unit 1 steam
generators.