

August 21, 2000

Mr. J. A. Scalice
Chief Nuclear Officer
and Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: RELIEF FROM ASME CODE REQUIREMENTS FOR THE SCHEDULING OF
CHECK VALVE INSERVICE TESTING REQUIREMENTS AT WATTS BAR
NUCLEAR PLANT, PV-10, REVISION 1 AND PV-17 (TAC NO. MA9088)

Dear Mr. Scalice:

By letter dated May 25, 2000, the Tennessee Valley Authority (TVA) submitted a request for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, inservice testing (IST) requirements for certain valves at Watts Bar Nuclear Plant Unit 1 under Title 10, *Code of Federal Regulations* (10 CFR), Section 50.55a(a)(3). The request addressed Item PV-10, Revision 1, and PV-17, wherein TVA requests relief from the schedular aspects of the ASME OM Standard, Part 10, Paragraph 4.3.2.4(c), IST Requirement. Based on communications with the Nuclear Regulatory Commission staff, TVA superseded the May 25, 2000 submittal with one dated July 6, 2000. In the July 6, 2000, submittal, TVA proposed to alter the stated schedule on which the valves are to be disassembled and inspected from "every refueling outage" to "once per fuel cycle" to allow "online" disassembly and inspection of these valves. TVA also referenced a more appropriate section, 10 CFR 50.55a(a)(3)(i), for the relief request.

The staff has reviewed the information provided in TVA's May 25 and July 6, 2000, letters. The staff's evaluation and conclusions are contained in the Enclosure. Based on the information provided in Relief Request PV-10, Revision 1, and PV-17, the staff concludes that the licensee's proposed alternatives will provide an acceptable level of safety and quality. Accordingly, the NRC staff authorizes the use of such alternatives pursuant to 10 CFR 50.55a(a)(3)(i).

Sincerely,

/RA/

Richard P. Correia, Chief, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-390

Enclosure: Safety Evaluation

cc w/enclosure: See next page

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and Executive Vice President
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
OF RELIEF REQUESTS FROM ASME SECTION XI REQUIREMENTS
SCHEDULING OF CHECK VALVE INSERVICE TESTING
FOR
TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT
DOCKET NUMBER 50-390

1.0 INTRODUCTION

Title 10 of the Code of Federal Regulations (10 CFR), Section 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 (B&PV) Code applicable Edition and Addenda, except where relief has been requested and granted or proposed alternatives have been authorized by the U.S. Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(f)(6)(i), or (a)(3)(i), or (a)(3)(ii). In order to obtain authorization or relief, the licensee 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.

Pursuant to 10 CFR 50.55a, the Commission may grant relief from or authorize proposed alternatives to the ASME Code requirements upon making the necessary findings. The NRC staff's findings with respect to Tennessee Valley Authority's (TVA's or licensee's) proposed alternatives submitted on July 6, 2000, are contained in this safety evaluation. The submittal dated July 6, 2000 supersedes the earlier submittal dated May 25, 2000 and was submitted in response to discussions with the NRC staff regarding the need for clarifications and the reference of a more appropriate section of 10 CFR 50.55a.

The ASME Code of record for Watts Bar Nuclear Plant, Unit 1 (WBN) is the 1989 Edition. The first IST 10-year interval commenced with commercial operation of the plant on May 27, 1996.

2.0 LICENSEE'S RELIEF REQUEST (RR) SUBMITTAL, PV-10, REVISION 1, ESSENTIAL RAW COOLING WATER VALVES FOR DIESEL GENERATOR COOLING

As an alternative to full-flow IST of check valves, the Code (OM Standard, Part 10, Paragraph 4.3.2.4(c)) allows disassembly "every refueling outage" to verify operability of check valves. As an alternative to the Code requirement for inspecting every valve, the NRC approved RR PV-10, Revision 0, in NUREG-0847, Supplement No. 14, "Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2" (SSER-14), dated December 1994.

Enclosure

By letter dated July 6, 2000, TVA submitted Revision 1 to RR PV-10, pursuant to 10 CFR 50.55a(a)(3)(i), for use at WBN. In RR PV-10, Revision 1, TVA proposes to alter the stated schedule on which the valves are to be disassembled and inspected from “every refueling outage” to “once per fuel cycle” to allow “online” disassembly and inspection of the four check valves in the essential raw cooling water (ERCW) system. The function of these check valves is to open to allow the passage of cooling water flow to their respective diesel generator, and to close to provide flow boundary isolation when the backup train cooling water is used to cool the diesels. The TVA letter also indicated that the revision only applied to four of the eight check valves covered by PV-10, Revision 0. The check valves covered by this request are 1-CKV-67-508A-A, 1-CKV-67-508B-B, 2-CKV-67-508A-A, and 2-CKV-67-508B-B. The requested relief would be valid for the remainder of the first 10-year IST interval.

There were four other valves that were within the scope of the relief granted by PV-10, Revision 0, in SSER-14 which TVA now deletes from the scope of PV-10 since relief is no longer needed. Valves 1-CKV-67-513A-A, 1-CKV-67-513B-B, 2-CKV-67-513A-A and 2-CKV-67-513B-B are tested quarterly in accordance with the requirements of the ASME/ANSI [American National Standards Inst.] OMa-1988 Standard, Part 10. Therefore, these four valves are not required to be included in the relief request and are deleted from the scope of PV-10. This is acceptable.

2.1 RELIEF REQUEST PV-10, REVISION 1

TVA requests relief from the requirements of the OM Standard, Part 10, Paragraph 4.3.2.4(c) for check valves 1-CKV-67-508A-A, 1-CKV-67-508B-B, 2-CKV-67-508A-A, and 2-CKV-67-508B-B. The IST requirement for valves in the 1989 Edition of the ASME B&PV Code, Section XI, Subsection IWBV defers to the OM Standard, Part 10. Paragraph 4.3.2.4(c) of the OM Standard, Part 10, states that, “As an alternative to the testing in paragraphs (a) or (b), disassembly *every refueling outage* to verify operability of check valves may be used” [emphasis added]. Revision 1 to PV-10 requests only to alter the stated schedule on which the valves are to be disassembled and inspected from during “*every refueling outage*” to “*once per fuel cycle,*” to allow “online” disassembly and inspection of these valves.

2.2 LICENSEE’S BASIS FOR RR, PV-10, REVISION 1

The installed configuration of the ERCW system valves, 1-CKV-67-508A-A, 1-CKV-67-508B-B, 2-CKV-67-508A-A and 2-CKV-67-508B-B, does not allow for testing of the closing function of these valves. Disassembly and inspection of all four valves during refueling outages imposes an unreasonable burden. NRC’s approval of PV-10 Revision 0, authorized the use of a sampling disassembly and inspection program for these valves during each refueling outage, as an alternative to provide relief from the unreasonable burden. In PV-10 Revision 1, the licensee requests to change the time period for performing the IST activities to each fuel cycle, because during refueling outages, skilled valve workers are a limited resource. Therefore, restricting disassembly and inspection activities to refueling outages imposes an adverse impact on the outage schedule, its duration, and resource expenditures. The disassembly and inspection may be integrated with other diesel generator maintenance that is performed on-line, without increasing unavailability time and without increasing the duration of or frequency with which the applicable limiting condition for operation (LCO) is entered. The proposed frequency of IST of the valves once per fuel cycle is similar to the frequency requirements of NRC Generic Letter

89-04, Regulatory Position 2, without adversely impacting the availability of valve skilled craft resources during a refueling outage.

Additionally, the WBN Probabilistic Risk Analysis (PRA) indicates that there is a slight increase in risk if a diesel generator is unavailable during the refueling outage than if unavailable on-line. The disassembly activity is a significant contributor to the total unavailability of the diesels during the refueling outage, therefore, moving the disassembly activity to on-line would have a small benefit of a decreased risk during the outage. Performing the valve disassembly and inspection on-line, in conjunction with a planned diesel maintenance outage, would not increase the duration of the maintenance outage and therefore, would not increase the risk beyond that already incurred.

2.3 PROPOSED ALTERNATIVE, PV-10, REVISION 1

In RR PV-10 Revision 1, the licensee's proposed alternative for the ERCW check valves, is to continue to use group sampling disassembly and inspection during each fuel cycle, in lieu of during each refueling outage. The alternative is consistent with the currently approved RR PV-10 Revision 0, except for the time period for performing the IST activities. Performing the IST activity once per fuel cycle, in lieu of during each refueling outage, would require an on-line sample disassembly and inspection of a different one of the group's four valves during each fuel cycle. Performance of the activity will occur at the outage interval, but not necessarily during the refueling outage.

3.0 RELIEF REQUEST PV-17, CONTAINMENT SPRAY SYSTEM CHECK VALVES

In RR PV-17, TVA proposes to continue to disassemble and inspect two valves in the containment spray (CS) system during each fuel cycle, in lieu of during the refueling outage. The function of one CS valve is to open to pass water either from the refueling water storage tank (RWST) or the containment sump to the containment spray pump, and to close to provide flow boundary isolation when the supply is from the containment sump. The function of the other CS valve is to pass water from the containment spray pump to the containment spray header ring.

Specifically, TVA requests relief from the requirements of the OM Standard, Part 10, Paragraph 4.3.2.4(c) for the two containment spray system check valves 1-CKV-72-507-B, and 1-CKV-72-525-B. The licensee's code of record is the 1989 Edition of ASME B&PV Code, Section XI, Subsection IWW, which defers to the requirements of the ASME/ANSI OMa-1988 Standard, Part 10, paragraph 4.3.2.4(c), requires the disassembly of check valves during every refueling outage to verify the valves' operability. PV-17 requests only to alter the stated schedule on which the valves are to be disassembled and inspected from during "every *refueling outage*" to "*once per fuel cycle*," to allow "online" disassembly and inspection of these valves.

3.1 LICENSEE'S BASIS FOR RR, PV-17

The two containment spray system valves identified in RR PV-17 cannot be full stroke exercised open because there is not a sufficiently large flow path available outside containment that allows full-stroke exercising of the Train B valves. Exercising the valves by passing flow through the containment spray header ring cannot be used because water from the RWST

would soak the containment, potentially damage equipment and spread contamination. The disassembly and inspection of the valves is allowed by ASME/ANSI OMa-1988 Standard, Part 10, paragraph 4.3.2.4(c), during refueling outages.

Except for the PRA risk aspects discussed for the diesel generators, the licensee's basis for relief of the containment spray valves, contained in PV-17 with regard to performing the disassembly and inspection activities in conjunction with other containment spray maintenance activities on-line, in lieu of during refueling outages, is similar to the basis described above for the valves in RR PV-10 Revision 1

3.2 PROPOSED ALTERNATIVE, PV-17

In RR PV-17, the licensee's proposed alternative for the two identified Train B containment spray check valves is to disassemble and inspect each valve consistent with the requirements of the ASME/ANSI OMa-1988 Standard, Part 10, paragraph 4.3.2.4(c), except for the time period of performance. In the proposed alternative the licensee intends to perform the disassembly and inspection IST activity on each check valve during each fuel cycle in lieu of during each refueling outage.

4.0 EVALUATION FOR PV-10, REVISION 1 AND PV-17

In RRs PV-10 Revision 1 and PV-17, pursuant to 10 CFR 50.55a(a)(3)(i), the licensee proposes to implement alternatives that change the time period for IST performance required in the currently approved RR PV-10 Revision 0, and the ASME/ANSI OM Standard, Part 10, paragraph 4.3.2.4(c), respectively. In 10 CFR 50.55a(a)(3)(i), the regulations require the licensee to demonstrate that the proposed alternative provides an acceptable level of quality and safety.

In RRs PV-10 Revision 1 and PV-17, the licensee proposes, as alternatives, to perform the approved sampling disassembly and inspection and disassembly and inspection IST activities, respectively, during the fuel cycle in lieu of during the refueling outage. In the RRs, the licensee indicates that these alternatives provide an acceptable level of quality and safety.

In RRs PV-10 Revision 1 and PV-17, the licensee indicates that during refueling outages, skilled valve workers are a limited resource. Therefore, restricting disassembly and inspection activities to refueling outages imposes an adverse impact on the outage schedule, its duration, and resource expenditures. The licensee's proposed alternatives for performing the valve IST activities only involves one ERCW valve and two containment spray valves during each fuel cycle. Therefore, the proposed disassembly and inspection IST activities may be integrated with other associated maintenance that is performed on-line, without increasing unavailability time and without increasing the duration of or frequency with which the applicable LCO is entered. Additionally, the WBN PRA indicates that there is a slight increase in risk with the diesel generator unavailable during the refueling outage than if unavailable on-line. Since disassembly is a significant contributor to the total unavailability of the diesels during the refueling outage, moving the activity to on-line would have a small benefit based on the decreased risk during the on-line outage.

The staff's evaluation is based on the licensee's proposed alternatives and the following considerations that: (1) during the refueling outage the proposed activities impose an adverse impact on the outage schedule, its duration, and resource expenditures; (2) skilled valve workers are a limited resource during refueling outages; (3) there are no technical barriers to performing these IST activities during either the refueling outage or the fuel cycle; (4) only three valves are involved in the alternatives used during each fuel cycle; (5) the activities may be integrated with other associated maintenance performed on-line, without increasing unavailability time and without increasing the duration of or frequency with which the applicable LCO is entered, and (6) the WBN PRA indicates a slight increase in risk from diesel generator unavailability during refueling outages when compared to risk from diesel generator unavailability while on-line. Based on its evaluation of the proposed alternatives and considerations, the staff finds that the alternatives proposed in PV-10 Revision 1 and PV-17 provide an acceptable level of quality and safety.

5.0 CONCLUSION:

Based on the NRC staff's review of the information provided in the requests for relief (RR PV-10, Revision 1 and RR PV-17), the staff concludes that TVA's proposed alternative will provide an acceptable level of quality and safety. Therefore, the proposed alternative in PV-10, Revision 1, to disassemble and inspect the identified group of four valves on a sampling basis once per fuel cycle, and the proposed alternative in PV-17, to disassemble and inspect the two valves once per fuel cycle, are authorized pursuant to 10 CFR 50.55a(a)(3)(i).

Principal Contributor: F. T. Grubelich, NRR
R. E. Martin, NRR

Date: August 21, 2000

Mr. J. A. Scalice
Tennessee Valley Authority

cc:

Mr. Karl W. Singer, Senior Vice President
Nuclear Operations
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. Jack A. Bailey, Vice President
Engineering & Technical
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. William R. Lagergren, Site Vice President
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, TN 37381

General Counsel
Tennessee Valley Authority
ET 10H
400 West Summit Hill Drive
Knoxville, TN 37902

Mr. Robert J. Adney, General Manager
Nuclear Assurance
Tennessee Valley Authority
5M Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Mr. Mark J. Burzynski, Manager
Nuclear Licensing
Tennessee Valley Authority
4X Blue Ridge
1101 Market Street
Chattanooga, TN 37402-2801

WATTS BAR NUCLEAR PLANT

Mr. Paul L. Pace, Manager
Licensing and Industry Affairs
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, TN 37381

Mr. Larry S. Bryant, Plant Manager
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, TN 37381

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

Rhea County Executive
375 Church Street
Suite 215
Dayton, TN 37321

County Executive
Meigs County Courthouse
Decatur, TN 37322

Mr. Lawrence E. Nanney, Director
Division of Radiological Health
Dept. of Environment & Conservation
Third Floor, L and C Annex
401 Church Street
Nashville, TN 37243-1532

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