

September 20, 2000

Mr. J. A. Scalice
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and Executive Vice President
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6A Lookout Place
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SUBJECT: RELIEF FROM ASME CODE REQUIREMENTS FOR CHECK VALVE
INSERVICE TESTING REQUIREMENTS AT SEQUOYAH NUCLEAR PLANT,
UNITS 1 AND 2 (TAC NOS. MA9882 AND MA9883)

Dear Mr. Scalice:

By letter dated August 31, 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 Sequoyah Nuclear Plant, Units 1 and 2, under Title 10, *Code of Federal Regulations* (10 CFR), Section 50.55a(a)(3)(ii). The request proposed a revision to Relief No. RV-1, which was previously approved by the U.S. Nuclear Regulatory Commission (NRC) by letter dated March 20, 1996, allowing a sample disassembly and inspection program for various check valves in a number of systems. The August 31, 2000, request proposes relief from the timing requirements of ASME OM Standard, Part 10, Paragraph 4.3.2.4(c), for check valve IST of four valves associated with the containment spray headers. Specifically, TVA proposed to alter the timing (plant condition) stated in OM-10 at 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.

The NRC staff has reviewed the information provided in TVA's August 31, 2000, letter. The staff's evaluation and conclusions are contained in the Enclosure. Based on the information provided in the revision to Relief Request RV-1, the staff concludes that compliance with the Code requirements would result in a hardship without a compensating increase in the level of quality and safety, and that TVA's proposed alternative will provide reasonable assurance of the components' operational readiness. Accordingly, the NRC staff authorizes the use of the proposed alternative pursuant to 10 CFR 50.55a(a)(3)(ii).

Sincerely,

/RA/

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

Docket Nos. 50-327 and 50-328

Enclosure: Safety Evaluation

cc w/enclosure: See next page

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* See previous concurrences

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
OF RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS
CHECK VALVE INSERVICE TESTING
FOR
TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NUMBERS 50-327 AND 50-328

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 alternative, requested in a letter dated August 31, 2000, are contained in this safety evaluation.

2.0 RELIEF REQUEST SUBMITTAL

The ASME Code of record for Sequoyah Nuclear Plant, Units 1 and 2 (SQN) is the 1989 Edition with no addenda. The second IST 10-year interval commenced December 16, 1995. 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 every refueling outage, the NRC approved Relief Request RV-1 in a letter dated March 20, 1996. The approved alternative to full-flow check valve testing was consistent with Staff Position 2 in Attachment 1 to NRC Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs." Approval of Relief Request RV-1 authorized a sample disassembly and inspection IST program

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for various check valves in a number of systems such that every check valve would not need to be inspected every refueling outage.

By letter dated August 31, 2000, TVA requested a revision to Relief Request RV-1, pursuant to 10 CFR 50.55a(a)(3)(ii), for use at SQN. In their request, TVA proposed to alter the stated time (in OM-10) at 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 Containment Spray System (CSS). The CSS consists of four circular spray headers near the top of the reactor containment (see Figure 1, attached). The function of the CSS check valves is to open to allow the passage of flow from either the containment spray pumps or the residual heat removal pumps to the respective containment spray or residual heat removal spray headers. The TVA letter indicated that the revision to Relief Request RV-1 only applied to the four CSS check valves. The check valves covered by this request are CKV-72-547, CKV-72-548, CKV-72-555, and CKV-72-556. The requested relief would be valid for the remainder of the second 10-year IST interval.

3.0 RELIEF REQUEST RV-1, REVISION 1

TVA requests relief from the requirements of the OM Standard, Part 10, Paragraph 4.3.2.4(c) for check valves CKV-72-547, CKV-72-548, CKV-72-555, and CKV-72-556. The IST requirement for valves in the 1989 Edition of the ASME B&PV Code, Section XI, Subsection IWW 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 RV-1 requests only to alter the stated time at which the valves are to be disassembled and inspected from “during refueling outages” to “once per fuel cycle” to allow online disassembly and inspection of these valves (i.e., at times other than refueling outages).

3.1 LICENSEE’S BASIS FOR RELIEF

Exercising valves CKV-72-547, CKV-72-548, CKV-72-555, and CKV-72-556 with water will result in deluging the containment area with borated water, introducing an unnecessarily hazardous problem with a high potential for physical damage to auxiliary equipment and unreasonably prolonged cleanup efforts. Part-stroke exercising with air during operation introduces the potential of inadvertently causing a unit trip, safety system actuation, phase B containment isolation, and containment spray actuation by exceeding the high-high containment pressure set point due to the pressure rise caused by the volume of air blown into containment during testing of the check valves. Exercising in conjunction with cold shutdowns is impractical due to the length of time required to construct the scaffolding necessary to obtain access to the valves and to drain and refill the piping from the test point to the check valves. Disassembly of all four valves each refueling outage is an excessive burden.

The CSS check valves are located in the reactor containment dome. Obtaining access to perform the disassembly and inspection activities on these valves requires the construction of extensive scaffolding on top of the polar crane bridge. The presence of the scaffolding on the bridge restricts operation of the crane in support of other refueling-related activities. TVA has determined that the OM Standard, Part 10, Paragraph 4.3.2.4(c), IST requirement to disassemble and inspect all four CSS header check valves during each refueling outage imposes an excessive burden. The requirement to perform the IST disassembly and inspection

activities during each refueling outage window impacts the scheduling of refueling outage activities and has the potential of extending the outage duration.

3.2 PROPOSED ALTERNATIVE

TVA proposes to group the valves into groups not larger than four with all valves in each group being identical in: design, material, manufacture, environment (including physical orientation and radiological conditions), and function. TVA would disassemble and inspect one valve from each group in accordance with the provisions of GL 89-04, Staff Position 2 once per fuel cycle (instead of during every refueling outage). This allows the option to perform this inspection online at a refueling cycle interval and not necessarily during a refueling outage. If any single valve is found unacceptable, all valves in the associated group will then be disassembled and inspected.

4.0 EVALUATION

The licensee proposes an alternative to the requirement of the OM Standard, Part 10, Paragraph 4.3.2.4(c), pursuant to 10 CFR 50.55a(a)(3)(ii), which requires the licensee to demonstrate that compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The licensee's proposed alternative is consistent with staff's Position 2, outlined in NRC GL 89-04, except for the time of performance of the sample disassembly and inspection activity. In Position 2 of GL 89-04, the staff states, "Where the licensee determines that it is burdensome to disassemble and inspect all applicable valves each refueling outage, a sample disassembly and inspection plan for groups of identical valves in similar applications may be employed." Check valves CKV-72-547, CKV-72-548, CKV-72-555, and CKV-72-556 are located in the containment dome area. Access to the valves for disassembly and inspection activities at the elevation in that area, requires the construction of extensive scaffolding on top of the polar crane bridge. The scaffolding and associated activities on the polar crane bridge, seriously restrict the use of the crane in support of other ongoing refueling related activities. This restriction adversely impacts the scheduling of the refueling outage activities, because the use of the polar crane becomes a significant critical path issue, with a most-likely outcome of extending the outage duration. The staff finds that performing IST of the CSS check valves during refueling outages results in a hardship without a compensating increase in the level of quality and safety because there is no technical reason the inspections must be performed during refueling outage conditions. The CSS would only be used during a loss-of-coolant or steamline break accident. Therefore, from the standpoint of inspecting these valves, there are no plant-condition or system differences that would affect the safety or validity of these inspections that exist only during refueling outages. Stipulation of performing certain IST inspections only during refueling outages reflects only when those inspections have been historically performed and is not required for the protection of public health and safety.

The staff finds that TVA's proposed IST alternative to disassemble and inspect the group of identified check valves on a sampling basis once per fuel cycle, as described in Relief Request RV-1, Revision 1, provides an adequate method to assure operational readiness of the valves for the reasons discussed in the previous paragraph.

5.0 CONCLUSION:

Based on the NRC staff's review of the information provided in Relief Request RV-1, Revision 1, the staff concludes that compliance with the Code requirements would result in a hardship without a compensating increase in the level of quality and safety, and that the licensee's proposed alternative will provide reasonable assurance of operational readiness of the valves. Therefore, the proposed alternative, to disassemble and inspect the identified group of four valves on a sampling basis once per fuel cycle, is authorized pursuant to 10 CFR 50.55a(a)(3)(ii).

Attachment: CSS Flow Diagram

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