



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO THE INSERVICE TESTING PROGRAM RELIEF REQUEST RV-27
WASHINGTON PUBLIC POWER SUPPLY SYSTEM
WASHINGTON NUCLEAR PROJECT NO. 2

DOCKET NO. 50-397

1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a(g), requires that inservice testing (IST) of certain 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. This is required except where specific written relief has been requested by the licensee and granted by the Commission pursuant to Subsections (a)(3)(i), (a)(3)(ii), or (g)(6)(i) of 10 CFR 50.55a. In requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance with certain requirements of the applicable Code edition and addenda is impractical for the licensed facility. These regulations authorize the Commission to grant relief from ASME Code requirements upon making the necessary findings.

Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," was issued April 3, 1989. Included in GL-89-04, Attachment 1, were certain positions that have been determined to be acceptable alternatives to Code requirements. Provided that the licensee complies with the provisions stated in GL 89-04, the staff has determined that relief may be granted to follow the alternative testing delineated in Positions 1, 2, 6, 7, 9, and 10 (reference paragraph entitled "IST Program Approval" in GL 89-04).

2.0 EVALUATION OF RELIEF REQUEST RV-27

Relief Request RV-27 applies to the following check valves:

RCIC-V-65	RCIC discharge to the reactor vessel head
RCIC-V-66*	RCIC discharge to the reactor vessel head
LPCS-V-6*	LPCS discharge to the reactor vessel
HPCI-V-5*	HPCS discharge to the reactor vessel
RHR-V-41A/B/C*	RHR loop A/B/C discharge to the reactor vessel
RHR-V-50A/B*	RHR loop A/B/C discharge to the recirculating pump discharge

(*function as reactor coolant system pressure isolation valves)

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Currently, these valves are tested during cold shutdown only when the containment drywell is deinerted, as granted by the staff's response of May 7, 1991, regarding the licensee's Relief Request RV-9. These valves are equipped with air mechanisms to facilitate testing. Because these mechanisms have proven unreliable, the licensee has determined that they should be disabled. Once these mechanisms are removed, the capability to test these valves at the current frequency will no longer exist. The testing could then only be performed during refueling outages.

2.1 Licensee's Basis for Relief

The licensee states:

1. These valves (except RCIC-V-65) function as reactor coolant system pressure isolation valves. This requires the check valve disc to properly seat and achieve a relatively leak-tight seal. Technical Specifications require seat leakage testing of these valves each refueling outage (not to exceed 18 months). Seat leakage must be less than 1 gpm at a differential pressure of 950 psig. Seat leakage, as a method of showing valve closure testing, is labor and dose intensive and, as such, impractical to perform during each cold shutdown and should be performed during refueling outages only.
2. In two instances a valve was found to be not fully closed due to binding in the position indication linkage. These valves were designed with an open/closed position indication system (for testing), but have proven unreliable and are scheduled for removal of the position indication system to increase the reliability of these valves - (INPO) SOER 86-03 issue. (Position indication mechanisms have been removed from RHR-V-41A and B.) The position indication mechanism does not indicate closure of the disc, but closed indication merely reflects that the disc is not full open.
3. Other than the above two instances, these check valves have exhibited excellent leak-tight integrity during the last 8 years since commercial operation.
4. Due to a lack of reliable position indications, the other positive means of verifying these valves fully open is by passing the required accident condition flow through these valves. This is an acceptable full-stroke per Position 1 of Attachment 1 of GL 89-04.
5. With flow rates on the order of 7500 gpm (ECCS), vessel level rises at a rate of 38 inches per minute. Operating ranges for RPV level provides a narrow band in which to work, making any such injection a challenge to plant Technical Specification limits and can result in flooding of main steam lines. Full flow testing of these valves should be performed only during refueling cavity flood-up.
6. Because of the differences in water chemistry, frequent injections of suppression pool water into the RPV is undesirable and will lead to

additional crud accumulations in the crevices of piping nozzles, etc., and thus result in higher dose rates in the containment.

7. Six of the nine valves have been inspected internally and have exhibited no signs of wear which could affect the ability of the valves to stroke full open or closed. These check valves do not exhibit any signs of backseat tapping or hinge pin wear, nor have they shown any indication that internal fastener retention methods are inadequate.
8. During normal plant operation, these valves are normally closed and do not open.

2.2 Proposed Alternative Testing

The licensee proposes the following:

1. Closure ability of these valves (except RCIC-V-65 which does not have a closed safety function) shall be demonstrated by leakage test as required by Technical Specifications.
2. Opening ability of these valves shall be demonstrated by passing the maximum required accident condition flow through these valves.

Implementing Schedule

All these valves were verified full open and closed during the R-6 refueling outage (1991) and shall be tested again during the R-7 refueling outage (1992). This relief request supersedes the testing requirements specified in Relief Request RV-9.

Quality/Safety Impact

These valves are normally closed and while in the closed position function as (1) containment isolation valves, and (2) high-low pressure interface valves between the reactor coolant and portions of the emergency core cooling system. These valves must open to facilitate operation of part of the emergency core cooling system. The valves will normally only be operated in the event of an emergency during normal power operations. Lengthening the interval between tests as recommended will not preclude the timely evaluation of valve operability and thus provides adequate assurance of material quality and public safety.

2.3 Evaluation

The testing currently performed for meeting the exercising requirements of these valves does not meet the Code test frequency. Relief Request RV-9 was granted in the staff's SE of May 7, 1991. This allowed the licensee to exercise the valves only during cold shutdowns when the containment was deinerted. An extension of this test interval to perform the proposed testing during refueling outages does not significantly increase the period between tests. Additionally, the proposed testing may provide a more positive indication of the valves' ability to stroke open and close, as there is some

question whether using the test mechanisms adequately verifies valve closure. Performing a full flow test is an acceptable alternative to the requirements of IWV-3520 for check valve exercising (GL 89-04, Attachment 1, Position 1). Verifying closure through leakage testing provides a positive indication that the valves are capable of closing.

Removing the test mechanisms to improve reliability of the valves is a valid approach. The mechanisms are known to bind and possibly prevent valve closure. This could compromise the ability of the valves to close during accident conditions. The mechanisms serve no other purpose. It is not the intent of the testing requirements to create an unacceptable failure mode of a component. Therefore, relief should be granted to allow the licensee to extend the testing interval to refueling outages.

3.0 CONCLUSION

Based on our review, we have determined that the testing for which the relief has been requested is impractical to perform and that the alternative method with which to test selected check valves is acceptable. The alternative testing method is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. In making this determination, we have given due consideration to the burden that would result if the code requirement was imposed on your facility.

Relief is granted to extend the testing interval of the subject check valves from each cold shutdown when the containment drywell is deinerted (per Relief Request RV-9) to each refueling outage. The licensee's proposal to test the valves in accordance with the guidelines of GL 89-04, Attachment 1, Position 1, is an acceptable alternative to the exercising procedures specified in ASME Section XI, IWV-3520, "Tests for Check Valves."

Relief request RV-27 is granted pursuant to 10 CFR 50.55a(a)(3)(i) since the proposed alternative provides an acceptable level of quality and safety by allowing for improvements in the reliability of the valves and utilizing a test method acceptable per the guidance provided in Generic Letter 89-04.

Principal Contributor: Patricia Campbell

Date: May 19, 1992



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