



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO INSERVICE TESTING PROGRAM RELIEF REQUEST GVRR-01

NINE MILE POINT NUCLEAR STATION, UNIT NO. 2

DOCKET NO. 50-410

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* (the ASME Code) and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to Sections (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In proposing alternatives or 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 is impractical for its facility. Section 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making the necessary findings. Guidance related to the development and implementation of inservice testing (IST) programs is given in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," issued April 3, 1989, and its Supplement 1, issued April 4, 1995. Also see NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," and NUREG/CR-6396, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements."

The 1989 Edition of the ASME Code is the latest edition incorporated by reference in Paragraph (b) of Section 50.55a. Subsection IWV of the 1989 Edition, which gives the requirements for IST of valves, references Part 10 of the American National Standards Institute/ASME *Operations and Maintenance Standards* (OM-10) as the rules for IST of valves. OM-10 replaces specific requirements in previous editions of Section XI, Subsection IWV, of the ASME Code. Subsection IWP of the 1989 Edition, which gives the requirements for IST of pumps, references Part 6 of the American National Standards Institute/ASME *Operations and Maintenance Standards* (OM-6) as the rules for IST of pumps. OM-6 replaces specific requirements in previous editions of Section XI, Subsection IWP, of the ASME Code.

In a letter dated June 16, 1998, Niagara Mohawk Power Corporation, (NMPC and the licensee) submitted the second ten-year interval IST Program for Pumps and Valves for Nine Mile Point Nuclear Station, Unit 2 (NMP2). The submittal included one general valve relief request (GVRR) and no pump relief request. The second ten-year IST interval for NMP2 began on April 5, 1998.

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Enclosure



The scope of the NMP2 IST program should include pumps and valves that are ASME Code Class 1, 2, or 3 or are required to perform a specific function in shutting down the reactor to the cold shutdown condition, maintaining the cold shutdown condition, or necessary to mitigate the consequences of an accident, in accordance with ASME Code requirements.

2.0 GENERAL VALVE RELIEF REQUEST-01

In its submittal dated June 16, 1998, for GVRR-01, NMPC requests relief from the requirements of Section 4.3.2.2 of OM-10 which states that each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full-open or partially-open position required to fulfill its function. The IST Category C, ASME Code Class 2, system pressure pump discharge check valves prevent diversion of emergency core cooling system (ECCS) flow by preventing reserve flow from the ECCS discharge path into the associated pressure pumps discharge piping for the following systems: High Pressure Core Spray System (CSH), Low Pressure Core Spray System (CSL), and the Residual Heat Removal System (RHS). The applicable valves for these systems are 2CSH*P2 to CSH Header 2CSH*V17, *V55; 2CSL *P2 to CSL Header 2CSL*V14, *V21; 2RHS *V47, *V48; 2RHS*P2 to valves 2RHS*V60, *V61, and *V17, *V18.

2.1 Licensee's Basis For Request

NMPC provided the following basis for the relief request:

These check valves close on the initiation of the associated ECCS system to prevent the diversion of ECCS pump discharge flow via the pressure pump piping. In each case above, two check valves are in series without any means provided for individual reverse flow verification. NMPC contacted General Electric who designed the system to determine the need for both check valves. GE said that only one check valve was needed and that the second was placed there for added reliability. NMPC considered removing the internals from one valve; however, NMPC determined that a more conservative approach would be to test the valves as a unit. The test results of each set shall be applied to each valve of the set individually.

Consistent with NUREG-1482, Section 4.1.1, *Closure Verification for Series Check Valves without Intermediate Test Connections*, relief is sought on the following basis:

- a) None of these check valve is in the reactor coolant pressure boundary (RCPB).
- b) The configuration does not require two check valves. The system designer confirmed that only one was needed, and that the second was added for reliability.
- c) These check valve pairs have no seat leakage requirement, either individually or as a pair. Checking reverse flow is sufficient demonstration of their ability to provide their required safety function.



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- d) These keep-fill valves are "redundant valves in redundant systems in which only one valve of a series is actually necessary to perform the system's intended function." (NUREG-1482, paragraph 4.1.1, *Basis for Recommendation*)
- e) No additional testing need be performed unless there is indication that the closure capability of a pair of valves is questionable.
- f) If the performance of a pair of check valves becomes questionable, both valves shall be declared inoperable, and corrective action consistent with OM-10 shall be taken before the valves are returned to service.

2.2 Proposed Alternate Testing

NMPC plans to apply the quarterly reverse flow testing requirement of each valve to the valve pairs. If the reverse flow test of the pair of valves should fail, then NMPC's corrective action will be applied to both valves prior to returning the system to operability, in accordance with NUREG-1482.

NMPC proposes the following:

[NMPC will] test each pair of series check valves quarterly as a unit for reverse flow closure.

2.3 Evaluation

These check valves are located in series without intermediate test locations to test the valves individually. They are pump discharge check valves that are not equipped with position indication or external operators. Their function is to close to prevent diversion of ECCS flow by preventing reserve flow from the ECCS discharge path into the discharge piping of the associated pressure pumps.

NMPC is unable to individually verify closure of these valves. Requiring installation of instrumentation to verify valve position would involve system redesign and modifications. These modifications would be burdensome to NMPC. However, the closure capability of this valve pair in series could be verified by reverse flow leak testing. Testing the pair for reverse flow while closed would give reasonable assurance of operational readiness and supply a reasonable alternative to the ASME Code test method since both valves will be declared inoperable and repaired or replaced if excessive leakage is noted. This alternative is consistent with the guidance provided in Section 4.1.1 of NUREG-1482.

3.0 CONCLUSION

The proposed alternative described in GVRR-01 is authorized pursuant to 10 CFR 50.55a(a)(3)(ii), because of operational readiness. Imposition of the ASME Code requirements would result in hardship without a compensating increase in the level of quality and safety giving that the alternative provides reasonable assurance of operational readiness. This NRC staff approval applies to the second ten-year IST interval for the NMP2 valves named in Section 2.0 above.

Principal Reviewer: T. Cerovski

Date: February 17, 1999

