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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE TESTING PROGRAM RELIEF REQUEST CS-RR-6

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION UNIT NO. 1

DOCKET NUMBER 50-220

1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a, requires that inservice testing (IST) of certain American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI, of the ASME Code and applicable addenda, except where relief has been requested and granted or proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a(f)(6)(i), (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.

By letter dated February 10, 1995, Niagara Mohawk Power Corporation (NMPC or the licensee) submitted to the NRC Relief Request CS-RR-6 regarding the quarterly testing requirement of the 1983 Edition through Summer 1983 Addenda of Section XI, of the ASME Code for the core spray system relief valves in Nine Mile Point Nuclear Station Unit No. 1 (NMP-1). NMPC has determined that compliance with the ASME Code requirement would be impractical to perform at NMP-1 and would result in hardship if the requirement is imposed. The bases for the request and alternative testing proposed by NMPC were provided in their letter dated February 10, 1995. This information is evaluated herein to determine if the necessary findings can be made to grant relief from the requirement pursuant to the regulations cited above.

2.0 RELIEF REQUEST CS-RR-6

NMPC requests relief from the quarterly valve exercise requirement of paragraph IWV-3412 of the 1983 Edition through Summer 1983 Addenda of Section XI of the ASME Code.

Enclosure

2.1 Supporting Information

2.1.1 Code Requirement

IWV-3411, Test Frequency, states that Category A and B valves shall be exercised at least once every 3 months, except as provided by IWV-3412(a). IWV-3412(a) states that valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation, the valve shall be part-stroke exercised during plant operation and full-stroke exercised during cold shutdowns. Valves that cannot be exercised during plant operation shall be specifically identified by the owner and shall be full-stroke exercised during cold shutdowns. Full-stroke exercising during cold shutdowns for all valves not full-stroke exercised during plant operation shall be on a frequency determined by the intervals between shutdowns as follows:

For intervals of 3 months or longer - exercise during each shutdown

For intervals of less than 3 months - full-stroke exercise is not required unless 3 months have passed since last shutdown exercise.

2.1.2 Licensee's Basis For Request

NMPC states that "Relief is necessary since it is not practical to exercise these valves on a quarterly basis for the following reasons:

1. Operating the pumps in the minimum flow condition for an extended period of time is detrimental to the pumps.

   The vendor has endorsed operating the pumps in the minimum flow mode of operation for only limited periods of time (i.e., 15 minutes); operation at such low flows beyond such limited periods of time unnecessarily increases the rate of degradation.

2. These valves are containment isolation valves whose failure to close during a cycling test may result in loss of containment integrity (Section 3.1.1.(2) of NUREG-1482)."

2.1.3 Licensee's Proposed Alternate Testing

NMPC states:

1. In order to verify that the valves will open at their set pressure, Relief Valve testing per PTC 25.3-1976 shall be performed in accordance with ASME XI, IWV3510.

2. The pumps are tested quarterly with flow through an alternate test line; this testing will prove that the relief valves remain closed based upon the pumps reference values remaining consistent. That

is, if the valve were to open during testing, the pump flow would increase significantly (and pressure would drop).

3. The valves are to be installed as part of a plant modification. The post-modification testing shall ensure that the valves, when fully open, pass adequate flow. The test shall also ensure the valves close after testing.

4. The valves will be leak rate tested in accordance with 10 CFR Part 50, Appendix J, each refueling outage.

3.0 EVALUATION

The valves (81-241, 81-242, 81-243 and 81-244) for which NMPC has requested relief from the quarterly testing requirements of Section XI of the ASME Code are relief valves located in the core spray system minimum flow lines and serve as containment isolation valves as well as relief valves. The valves relieve to the torus during minimum flow recirculation modes for the core spray and core spray topping pumps. They also provide containment isolation for the line from the discharge of the pumps to the torus. NMPC states that the quarterly test required by the ASME Code would entail running the core spray and core spray topping pumps for an extended period of time, beyond that recommended by the manufacturer. Operating the pumps beyond the time recommended increases the rate of degradation of the pumps. As alternatives to the quarterly testing, NMPC has proposed to verify that the valves will open at their set pressure by testing them in accordance with IWV-3412 of Section XI, which states that safety and relief valve set points shall be tested in accordance with ASME PTC 25.3-1976. To prove that the valves remain closed, NMPC has proposed to utilize the quarterly pump flow test to indicate that the valves do not leak. In addition, NMPC states that the valves will be leak rate tested in accordance with 10 CFR Part 50, Appendix J, requirements each refueling outage.

The NRC staff has reviewed the information provided by NMPC and agrees that the quarterly testing requirement would result in difficulties in light of the possible increase in the rate of degradation of the pumps necessary to perform the tests and the absence of a compensating increase in the level of quality and safety attained by imposing the requirement as compared to that provided by NMPC's proposed alternative. In addition, the NRC staff provided guidance to licensees to exclude from exercising (cycling) tests during plant operation of valves whose failure to close during a test would result in a loss of containment integrity. In considering the possibility of pump degradation and loss of containment integrity by imposing the quarterly testing requirement, the NRC staff finds the NMPC's proposed alternative adequate to assess the valves' operational readiness to perform their function.

4.0 CONCLUSION

Based on the determination that the ASME Code requirement to test the valves quarterly is impractical to perform, that to impose the requirement on NMPC would result in difficulties and not provide a compensating increase in the level of quality and safety, and considering the NMPC's proposed alternative test, relief may be granted as requested pursuant to 10 CFR 50.55a(a)(3)(ii).

Principal Contributor: G. Johnson

Date: June 26, 1995