August 30, 2000

Mr. John H. Mueller
Chief Nuclear Officer
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station
Operations Building, Second Floor
P. O. Box 63
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NO. 2 - RELIEF REGARDING STROKE TESTING OF REACTOR COOLANT RECIRCULATION SYSTEM VALVES (TAC NO. MA9846)

Dear Mr. Mueller:

By a letter dated August 30, 2000, Niagara Mohawk Power Corporation (NMPC) submitted a proposed alternative testing request concerning the reactor coolant recirculation system flow control hydraulic isolation valves for the second 10-year interval inservice testing (IST) program for pumps and valves. The second 10-year interval for this unit began on April 5, 1998, and is scheduled to end on April 4, 2008. The staff has reviewed the proposed alternative testing method for these valves against the requirements of OMa-1988, Part 10 (OM-10), which is referenced in the 1989 edition of American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code), Section XI, Subsection IWV. These are valves on the reactor coolant recirculation system, and are identified as:

2RCS*SOV65A, 66A, 67A, 68A – outboard; “A” Flow Control Hydraulic Isolation
2RCS*SOV65B, 66B, 67B, 68B – outboard; “B” Flow Control Hydraulic Isolation
2RCS*SOV79A, 80A, 81A, 82A – inboard; “A” Flow Control Hydraulic Isolation
2RCS*SOV79B, 80B, 81B, 82B – inboard; “B” Flow Control Hydraulic Isolation

The staff reviewed the proposed alternative to the power-operated valve stroke testing, stroke time acceptance criteria, and corrective action requirements of OM-10, Paragraphs 4.2.1.4, 4.2.1.8, and 4.2.1.9, respectively, for the above valves. The proposed alternative is to rely on the unit’s previous testing to demonstrate operational readiness of the valves until the next scheduled shutdown when the valves can be stroke-timed individually. Because the valves were not being tested individually, they do not meet ASME Code test requirements. However, by having timed the slowest valve in the group, NMPC was assuring that all four valves in each group did not degrade such that the stroke-time exceeded the reference value of the group by 50 percent. Thus, the proposed alternative testing provides reasonable assurance of the valves’ operational readiness.

The proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) on the basis that compliance with specified ASME Code requirements when the plant is operating results in hardship without a compensating increase in the level of quality and safety. In a telephone conference today, we provided verbal authorization for use of this alternative. The authorization of this alternative is effective from today until the first opportunity when these valves can be tested individually.

Details of the staff's findings are set forth in the enclosed safety evaluation. Please contact the project manager, Mr. Peter Tam, by telephone at (301) 415-1451 or by electronic mail at pst@nrc.gov) if you have any questions.

Sincerely,

/***RA by E. Adensam for***/

Marsha Gamberoni, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-410

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SECOND 10-YEAR INTERVAL INSERVICE TESTING

RELIEF REGARDING STROKE TESTING OF VALVES

NINE MILE POINT, UNIT NO. 2

NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-410

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 Code* (the 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 paragraphs (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. The regulations at 10 CFR 50.55a authorize the Commission to approve alternatives and to grant relief from ASME code requirements upon making the necessary findings. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to the Code requirements which are acceptable. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants."

In its letter of August 30, 2000, Niagara Mohawk Power Corporation, the licensee for Nine Mile Point, Unit No. 2 (NMP2), submitted a proposed alternative testing request concerning the reactor coolant recirculation system flow control hydraulic isolation valves for their second 10-year interval IST program for pumps and valves. The second 10-year interval for NMP2 began on April 5, 1998, and is scheduled to end on April 4, 2008. The staff has reviewed the proposed alternative testing method for valves against the requirements of OMa-1988, Part 10 (OM-10), which is referenced in the 1989 edition of ASME Code, Section XI, Subsection IWV. The staff's evaluation follows.

2.0 RELIEF REQUEST

The licensee has proposed that the current testing, which tests four valves in a group simultaneously and verifies that the slowest valve does not exceed either the acceptance criteria or the limiting stroke time, demonstrates that the valves are able to perform their safety function. During the next planned outage, which is scheduled to start on September 9, 2000,

ENCLOSURE

stroke-time testing of these valves will be performed individually in accordance with the Code. The licensee has requested relief from the power-operated valve stroke testing, stroke-time acceptance criteria, and corrective action requirements of OM-10, Paragraphs 4.2.1.4, 4.2.1.8, and 4.2.1.9, respectively, for the flow control hydraulic isolation valves in the reactor coolant recirculation system listed below.

2RCS*SOV65A, 66A, 67A, 68A – outboard; “A” Flow Control Hydraulic Isolation
2RCS*SOV65B, 66B, 67B, 68B – outboard; “B” Flow Control Hydraulic Isolation
2RCS*SOV79A, 80A, 81A, 82A – inboard; “A” Flow Control Hydraulic Isolation
2RCS*SOV79B, 80B, 81B, 82B – inboard; “B” Flow Control Hydraulic Isolation

3.0 LICENSEE’S BASIS FOR REQUESTING RELIEF

The licensee states:

> Pursuant to 10CFR50.55a(a)(3), authorization is requested to implement an alternative to the requirement in OM-10, paragraph 4.2.1.4, that the stroke time of all power-operated valves shall be measured. The subject valves are operated in groups of 4 valves, each group being controlled by a single switch.
>
> When a single switch is operated in the Control Room, four of these valves close together. These valve groups are stroke-timed closed in accordance with the frequency prescribed in the IST program (cold shutdown) and are verified to close automatically in response to a containment isolation signal in accordance with NMP2 Technical Specification 4.6.3.2.
>
> The stroke-time reference values for these four groups are less than 5 seconds, and the limiting stroke-time limit is $\leq$20 seconds. Nuclear safety will not be compromised through valve group testing because acceptance of the group stroke time closure testing results are dependent on the performance of the slowest valve in the group. Prior to any valve closure time degrading and exceeding the limiting value of 20 seconds, the acceptance criterion of OM-10 paragraph 4.2.1.8 would have been exceeded, and corrective action initiated. A closure time below the 50 percent reference value as defined in OM-10 paragraph 4.2.1.8(d) is not measured using this methodology. No minimum design stroke times are specified for these valves and a failure mechanism does not exist to increase the speed of a spring-loaded valve. Spring relaxation over the life of the component would tend to slow the closing time. Therefore, continued operational readiness of these valves is assured. Since the subject valves have continued to be tested at the appropriate frequency, plant shutdown prior to the next planned outage for individual valve stroke time testing would cause a hardship without a compensating increase in the level of safety.

4.0 ALTERNATIVE TESTING

The licensee proposes alternative testing as follows:

> Establish group reference values and group acceptance criteria, based on the requirements of OM-10, paragraph 4.2.1.8.
>
> Stroke-time the valve group, recording the stroke time for the slowest valve (that is, the last one to close).
>
> Compare the slowest valve stroke-time to the group acceptance criterion to determine the acceptability of the entire group of four valves.
>
> In the event that the slowest valve in a group exceeds the acceptance criterion, the entire group of four valves will be determined to have exceeded the stroke-time acceptance criterion.
>
> Take corrective actions as necessary for valve group stroke times that are not within the established acceptance criterion per OM-10, paragraph 4.2.1.9.

5.0 EVALUATION

The Code requires that power-operated valves be tested individually and the test results be compared to the specified reference values on a quarterly basis or during cold shutdowns or refueling outages depending on the practicality of testing these valves when the plant is operating or in a shutdown condition. Further, the Code requires corrective actions be applied to valves which do not meet the acceptance criteria or limiting stroke time. The flow control hydraulic isolation valves in the reactor coolant recirculation system at NMP2, are containment isolation valves. The valves can only be tested during plant shutdowns. These valves are grouped in sets of four valves with one switch actuating all four valves in a set.

On August 29, 2000, the licensee determined that its testing method for these valves did not meet certain Code requirements. Specifically, the licensee's testing method consisted of timing the slowest valve in a set of four valves and comparing this stroke time with the acceptance criteria for the group. The licensee determined that it was not in compliance with the Code requirement to test each valve individually. The licensee further determined that the noncompliance with the Code resulted in a missed surveillance for which the NMP2 Technical Specifications require that the licensee either test the components within 24 hours or enter the appropriate action statement. The action statement would require a plant shutdown. A plant shutdown to test these valves would result in a hardship without a compensating increase in the level of quality or safety; the testing that the licensee was performing previously provides reasonable assurance that the valve performance was not degrading and the valves are able to perform their safety function.

The licensee has proposed as an alternative to the Code testing requirements when the plant is operating to rely on its previous testing to demonstrate operational readiness of the valves until the next scheduled shutdown when the valves can be stroke-timed individually. The reference stroke time for the four valve groups is less than 5 seconds and the limiting stroke time is

≤20 seconds. Because the valves were not being tested individually, they do not meet the Code test requirements. However, by timing the slowest valve in the group, the licensee was assuring that all four valves in each group did not degrade such that the stroke-time exceeded the reference value of the group by 50 percent. The proposed testing provides reasonable assurance of the valves' operational readiness because the slowest valve in each group of four was timed and compared to the acceptance criteria.

The licensee discussed this situation with the staff in a conference call on August 30, 2000. In the conference call, the licensee affirmed that the valves would be stroke-timed individually at the next opportunity, which would be during a planned shutdown scheduled for September 9, 2000. Stroke-time acceptance criteria and corrective action requirements would also be performed in accordance with the Code requirements.

6.0 CONCLUSION

The proposed alternative to the power-operated valve stroke testing, stroke-time acceptance criteria, and corrective action requirements of OM-10, Paragraphs 4.2.1.4, 4.2.1.8, and 4.2.1.9, respectively, for the flow control hydraulic isolation valves in the reactor coolant recirculation system listed in Section 2.0 of this safety evaluation is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) based on the determination that compliance with the specified requirements results in a hardship in that a plant shutdown would be required, without a compensating increase in the level of quality and safety. The authorization of this alternative is effective from the date of this safety evaluation until the first opportunity when these valves can be tested individually.

Principal Contributor: J. Colaccino

Date: August 30, 2000