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ACCESSION NBR: 8702260120 DOC. DATE: 87/02/17 NOTARIZED: NO DOCKET #
FACIL: 50-220 Nine Mile Point Nuclear Station, Unit 1, Niagara Powe 05000220
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SUBJECT: Submits validation for listed method of performing 10CFR50, App J Type C local leak rate tests of feedwater check valves, in response to unresolved item noted in Insp Rept 50-220/86-17.

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TITLE: OR Submittal: Append J Containment Leak Rate Testing

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NIAGARA MOHAWK

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February 17, 1987
(NMP1L 0134)

U.S. Nuclear Regulatory Commission
Document Control Desk

Washington, D.C. 20555

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Dear Dr. Murley:

In response to Nuclear Regulatory Commission Inspection Report, unresolved item 50-220/86-17-02, Niagara Mohawk submits validation for the below described method for performing 10CFR50 Appendix J Type C local leak rate tests of the Feedwater Check Valves at Nine Mile Point Unit 1.

10CFR Part 50, Appendix J, Section III.C.1 requires the following conditions for performing type C tests:

A. Tests shall be performed by local pressurization.

B. Pressure shall be applied in the same direction as that when the valve would be required to perform its safety function.

C. Valves shall be closed by normal operation and without any preliminary exercising or adjustments.

Our experience with the feedwater check valves indicates that due to the valve's size, orientation and design, the discs do not fully seat upon cessation of flow because the gravitational force in dropping the discs into the seats is not evenly distributed. In accident conditions, however, back pressure (reverse flow) is applied evenly across the discs to achieve uniform seating. Consequently, we propose a test method that seats the valves prior to local pressurization. We believe that the proposed test method meets the intent of Appendix J and the Final Safety Analysis Report to ensure that the check valves are closed immediately after a major accident, thus assuring containment integrity.

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The feedwater check valves and motor operated inboard isolation valves are located in a horizontal pipe run at elevation 263' 6-1/2". The piping runs from the valves, through the containment penetrations and up to the reactor feedwater nozzles at elevation 295' 11". We propose to perform a local leak rate test on the feedwater check valves in the following manner. Once the feedwater system is isolated, the inboard isolation valves are opened to allow the head of water in the feedwater lines to reverse flow and seat the check valves. The inboard isolation valves are then closed, and the volume between the two valves is pressurized to 100 psig. The purpose of this pressurization is to assure that the disc remains seated while the water is quickly drained. Once the water is drained, the pressure is reduced to 35.5 psig and the leak rate test is performed.

This test method simulates operation of these check valves under design basis accident conditions. In a double-ended break of a reactor recirculation line coincident with loss of offsite power, feedwater flow continues for a few seconds due to coastdown of the turbine driven feed pump, but feedwater system pressure rapidly decreases due to loss of pumping power. Primary system pressure remains above 100 psi for at least 10 seconds following line rupture. This pressure and reverse flow would act to seat the check valves (Final Safety Analysis Report Appendix E-II.2.2.3, Rupture of Recirculation Line). Other postulated loss of coolant accidents with less than design basis size breaks would result in longer blowdown rates and potentially higher differential pressures available to seat the check valves.

Plant response to a feedwater line break inside containment would be similar to a feedwater controller malfunction (FSAR XV.B.3.13). The feedwater pumps would trip on overspeed. Primary system and containment pressure might not be sufficient to fully seat the check valves. However, the core will not be uncovered since the inboard isolation valves could still be closed and the Core Spray System would be operable. Although the proposed test procedure does not simulate valve closure for this scenario, we believe that our test method would still be viable since the consequences of recirculation line break are more severe.

We believe that this test method meets the intent of 10CFR50 Appendix J:

A. The test is performed by local pressurization.

B. Test pressure is applied in the accident direction.

C. Valve closure and seating simulates operation under accident conditions, and is accomplished without any preliminary exercising or adjustments.

This test method is comparable to procedures approved for use at similar facilities (Ref. letter from D. B. Vassalo, U.S. Nuclear Regulatory Commission, to D. L. Farrar, Commonwealth Edison Company, regarding Quad Cities Nuclear Power Station, Unit 1 and 2, dated June 12, 1984).

Sincerely,

NIAGARA MOHAWK POWER CORPORATION

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