

SAFETY EVALUATION REPORT BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO A REQUEST FOR RELIEF FROM INSERVICE
TESTING REQUIREMENTS
PUMP RELIEF REQUEST NO. PR-8
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT, UNIT 1
DOCKET NO. 50-220

Pump Relief Request PR-8

The licensee has requested relief from the ASME Code, Section XI, (Code) requirements to vary system resistance to fix reference flow or differential pressure to measure IST quantities on Table IWP-3100-1 for quarterly testing of the Emergency Diesel Generator Cooling Water (EDGCW) pumps 72-62 and 72-63.

Basis for Relief.

The EDGCW system consists of two trains. The two EDGCW trains (4 inch lines) discharge to the same 6 inch header, which then ties into a ten inch service water header. There are no manual valves that could be used to throttle flow.

The EDGCW was thought to be a simple fixed resistance system (i.e., constant system resistance) due to the simple hydraulic circuit configuration. Tests performed in October 1989 indicated a flow reduction (about 8 to 10%) with an increase in differential pressure (about 4 to 6%) compared to the reference values. This occurred in both trains. Confidence in the pressure readings, and repeatability checks performed on the flow readings, pointed to the backpressure of the service water header as the cause for this fluctuation.

A temporary modification (installation of throttle valve) was performed to both systems in November 1989 in order to develop a baseline curve for each pump in addition to satisfying ASME XI IWP-3100 requirements. The throttle valve replaced the pump discharge check valve. At least 4 points were taken on each pump. However, use of the temporary throttle valve causes the respective Emergency Diesel Generator to be inoperable during the course of this test (approximately 12 hours) which is undesirable during plant operation. In addition, this testing method would require several initiations of the diesel generators increasing mechanical wear.

Alternate Testing.

For quarterly tests, a fixed reference value is not obtainable due to the lack of a permanent throttle valve. After the system is determined to be stable, both differential pressure and flow will be measured or determined. The hydraulic acceptance criteria shall use the IWP Table 3100-2 limits applied from the upper bound (highest obtainable test point) to the lower bound

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(determined by analysis that considers diesel heat exchanger heat transfer, fouling factors, EDG power output, and lake temperature). Test points falling within this region shall be evaluated in accordance with IWP-3230. Vibration readings will also be taken and used to evaluate pump degradation.

During cold shutdowns the temporary throttle valve will be installed to fix a particular reference value in order to perform code required testing.

During the next refueling outage, the modification to install a permanent throttle valve will be completed.

Evaluation.

The licensee's proposed alternate testing includes determining both differential pressure and flow quarterly using modified hydraulic acceptance criteria limits from Table IWP 3100-2 and evaluating in accordance with IWP-3230. The modified limits are based upon the data points falling within a band around the reference head curve rather than along a line as required by the Code. Vibration readings will also be taken and used to evaluate pump degradation. During cold shutdowns a temporary throttle valve will be installed in place of the pump discharge check valve to perform testing that meets the Code requirements. If the licensee intends to install the permanent throttle valve in place of the discharge check valve, the basic purpose of the check valve should be considered in the course of the licensee's reevaluation of the system.

The proposed interim testing does not meet Code. This testing may not be adequate to detect degradation but will provide information that will be adequate to verify the hydraulic performance of the pumps that is relied upon by the EDGCW system. Baseline testing performed in November 1989 on each pump showed the pumps to be in good working condition. These pumps are utilized on a standby basis, operating only during testing, so no significant degradation is expected.

The current system design renders compliance with Code impractical. A grace period is necessary until the next refueling outage to enable the licensee to install the required flow control modifications. Imposition of immediate compliance with Code would result in a forced outage which would be burdensome for the licensee due to the cost involved.

We have determined that for the interim an acceptable level of safety will be provided by the licensee's alternative testing. Therefore, based upon the impracticality of meeting the Code requirements, relief is granted to allow implementation of the proposed alternate testing outlined by Relief Request PR-8 until the end of the next refueling outage.

Principal Contributor:

A. Keller

