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SUBJECT: Informs NRC of licensee intentions to defer testing of four valves in GL 89-10 program.

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TITLE: Response to Generic Ltr 89-10, "Safety-Related MOV Testing & Surveill

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March 16, 1994

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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Generic Letter 89-10

Reference: 1) Safety-Related Motor-Operated Valve Testing and Surveillance (Generic Letter 89-10) dated June 28, 1989.

2) Inspection Report to Mr. C. A. Schrock from U. S. Nuclear Regulatory Commission dated December 7, 1994.

3) Letter from Mr. C. R. Steinhardt to U. S. Nuclear Regulatory Commission dated December 22, 1989.

4) Generic Letter 89-10, Supplement 4, "Consideration of Valve Mispositioning in Boiling Water Reactors," dated February 12, 1992.

In accordance with the reporting requirements of reference 1, this letter is advising you of Wisconsin Public Service Corporation's (WPSC) intentions to defer the testing of four valves in the Generic Letter 89-10 Program.

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Generic Letter (GL) 89-10 (reference 1) required licensees to expand the scope of their motor-operated valve (MOV) testing programs. The GL requested that the scope be expanded to include all safety-related MOVs as well as position-changeable MOVs in safety-related systems that are not blocked from inadvertent operation. The letter also stated that valve testing should be performed at design-basis pressure and flow when practical, to ensure operability under those conditions.

WPSC responded to the Generic Letter by conservatively including all safety-related motor-operated valves in the original 89-10 MOV program. That is, all MOV's that were designated as performing a safety-related function or serving as a safety-related boundary were included in the original scope. During subsequent reviews of the program, WPSC removed valves from the 89-10 program that are: 1) classified as safety related for system pressure boundary integrity but do not perform a safety-related function, or 2) locked in their safety position. These actions were reviewed and found to be acceptable during the Phase II MOV Inspection, which was conducted in November, 1993 (reference 2).

According to the recommendations of GL 89-10, the valve testing is to be completed within five years or three refueling outages after the issuance of GL 89-10, thus June, 1994 for the Kewaunee Nuclear Power Plant (KNPP). Reference 3 stated that WPSC would make every reasonable effort to comply with the three refueling outages schedule outlined in the GL unless the testing would pose undue risk to plant personnel or unnecessarily challenge other plant components.

Due to KNPP Technical Specification restrictions on the Residual Heat Removal (RHR) System, the dynamic testing of two valves, RHR-11 and Safety Injection (SI)-302A, cannot be conducted until the next complete core unload is performed. The next core unload at the KNPP is scheduled for the Spring 1995 refueling outage.

The two valves require RHR pump operation to establish the dynamic conditions to perform testing. Testing requires isolating the RHR trains from interconnecting systems to remove any impact on testing by other systems and to permit establishing the maximum achievable pressures and flows. The existing RHR system configuration allows isolation of the RHR B train with the A train available for RCS cooling. Due to the common header which connects the RHR system to the RCS, via RHR-11, the same system configuration cannot be obtained when testing the A train valves. Train A testing would result in both RHR trains being isolated from the RCS and interruption of all RCS cooling which consequently removes the RHR system as an RCS heat sink. (See attachment for a composite of the emergency core cooling system.)

Technical Specifications require two of the four heat sinks to be operable whenever the average reactor coolant temperature is ≤ 350°F but > 200°F. The four heat sinks include Steam Generator A and B and the Residual Heat Removal Train A and B. Two residual heat removal trains shall be operable whenever the average reactor coolant temperature is ≤ 200°F and irradiated fuel is in the reactor, except when in the refueling mode with the minimum water level above the top of the reactor vessel flange ≥ 23 feet, one train may be inoperable for maintenance.

Therefore, since isolating Train A of the RHR system removes the RHR system as an RCS heat sink, the valve testing can be performed:

1) when the Steam Generators are available as an alternate heat sink when the reactor coolant temperature is ≤ 350°F but > 200°F, or

2) when the core is unloaded.

Given the plant conditions necessary to conduct viable tests of the valves, it is more desirable to perform dynamic testing of the valves with the core unloaded. Testing with the Steam Generators available has two negative impacts: 1) the time required to conduct the combination of diagnostic testing (static and dynamic) places a delay in either entering or exiting refueling; and 2) the RCS temperature is difficult to control when cycling RHR-11 due to the intermittent flow through the A train of RHR causing erratic temperature indication in the control room.

The following is a brief description of the operation of the valves and the dynamic test conditions and system configurations necessary to test the subject valves:

RHR-11 is normally closed during power operation with its breaker locked open and power removed. The valve is closed to isolate the RHR system from the RCS to prevent RHR system overpressurization. The valve is aligned in the safe configuration (normally closed) to prevent an intersystem LOCA. Opening of the valve is required to provide flow to the RCS from the RHR system for residual heat removal during plant shutdown. An interlock prevents opening this valve when RCS pressure is above 450 psig.

Following an accident, the RCS can continue to be cooled using a combination of secondary steam relief and high head or low head SI recirculation if the RHR-11 flow path is not available for long-term cooling. RHR-11 also provides an alternate flow path if the normal discharge path of both trains of recirculation

become unavailable. Using the flow path of the RHR system provided by this valve is not required for accident mitigation.

Testing conditions
RHR-11 requires testing in both the open and closed directions with a differential pressure. To accomplish this, it is necessary to isolate the RHR system from the RCS, thus eliminating its primary heat sink. Although there may only be a momentary isolation for the dynamic test itself, valve maintenance results in RCS cooling being interrupted for a longer duration.

SI-302A is normally in the open position aligned for low head safety injection during normal plant operation. This valve is closed when RCS pressure is decreased to less than 1000 psig. Since the RHR system is not in operation, no differential pressure exists when closing the valve. The valve is opened during plant start-up when RCS pressure is increased above 1000 psig. No differential pressure will exist during valve opening due to the two downstream check valves preventing pressurization from the RCS and the RHR system not being in operation.

Following a valid SI signal, low head safety injection (RHR) provides flow to the reactor vessel (injection phase) through the normally open SI-302A (and the opposite train SI-302B). The continued operation of this flow path is a function of break size. If RCS pressure is below the shutoff head of the RHR pumps, then this flow path is functional. If, however, RCS pressure is above RHR pressure, then no flow would exist and RHR pump operation would be terminated. Two check valves in each low pressure injection line are provided to protect against a LOCA outside containment in the low pressure piping of the RHR system. These check valves are required by Technical Specifications to be leak tested to ensure operability.

Testing Conditions
SI-302A is required to open and close in order to diagnose and isolate a break in the low head injection piping. Therefore, testing requires the establishment of dynamic conditions which have a differential pressure for the opening test, and full flow for the closing test. Establishing these conditions requires closure of RHR-11, thereby removing the RHR system as an RCS heat sink.

Due to the redundancy and safety functions of valves and the diversity of the system configurations previously listed, WPSC's Probabilistic Risk Assessment shows that these valves have a low contribution to the total core damage frequency making them low priority valves to test. Given the condition necessary to conduct viable dynamic tests of the valves, it is in the interest of safety that the dynamic tests be conducted at a time when the core is unloaded. Deferring the tests until a core unload eliminates the need to interrupt RCS cooling during test performance and assures strict controls on test conditions for repeatability of any future tests.

According to the current plans for future refueling outages, the next scheduled core unload will not be performed until 1995; therefore, the dynamic testing for RHR-11 and SI-302A will be deferred until 1995. Although the valves cannot be dynamically tested until 1995, the valves will be statically tested during the 1994 refueling outage. Information obtained during the static tests will allow for greater predictability for the dynamic tests under design basis conditions.

WPSC is also deferring testing on two additional valves, SW-10A/B, that are currently in the scope of the GL 89-10 program for the sole reason that they have the potential to be mispositioned. In Supplement 4 of GL 89-10 (reference 4) the NRC removed valves from the scope of the 89-10 program at BWR plants that were being tested to address inadvertent operation. In February, 1994, the NRC announced to the Motor Operated Valve Users Group that the draft of Supplement 7 to GL 89-10 is expected to be issued in March, 1994, to address mispositioning at PWR plants.

Because these are the only two butterfly valves in the MOV Plan, special test equipment must be purchased to test these valves. Engineering analyses has provided a very high level of confidence in both the operability and predictability of these valves. In addition to the engineering calculations, the manufacturer's recommended torque requirements are based on a model developed from actual flow loop testing. Therefore, WPSC is deferring the testing of these valves until Supplement 7 is issued. If Supplement 7 requires these valves to remain within the scope of the 89-10 program, WPSC will test these valves before completion of the 1995 refueling outage.

In summary, WPSC is deferring the dynamic testing of two valves (RHR-11 and SI-302A) until a complete core unload can be performed. Deferring the tests until core unload conditions eliminates the need to interrupt RCS cooling during test performance and assures strict controls on test conditions for repeatability of any future tests. In addition to those valves, WPSC is also deferring action on two valves (SW-10A/B) that are in the GL 89-10 program solely for mispositioning; a final position on testing these valves will be developed following issuance of

Supplement 7 of the GL by the NRC. WPSC will continue with the implementation of these actions unless further notification is received from the NRC. If you desire any additional information, please contact a member of my staff.

Sincerely,

C. R. Steinhardt
Senior Vice President - Nuclear Power

RLF/san

Attach.

cc - US NRC Region III
US NRC Senior Resident Inspector

Subscribed and Sworn to
Before Me This 16th Day
of March 1994

Jeanne M. Ferris
Notary Public, State of Wisconsin

My Commission Expires:
June 18, 1995

Attachment

To

Letter from C. R. Steinhardt (WPSC) to Document Control Desk (NRC)

Dated

March 16, 1994

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