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U. S. Nuclear Regulatory Commission
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Ladies and Gentlemen:

DOCKET 50-266 AND 50-301
GENERIC LETTER 96-05,
ADDITIONAL INFORMATION,
PERIODIC VERIFICATION OF DESIGN BASIS CAPABILITY
OF SAFETY RELATED MOTOR OPERATED VALVES,
POINT BEACH NUCLEAR PLANT, UNITS 1 & 2

Generic Letter (GL) 96-05, "Periodic Verification of Design Basis Capability of Safety Related Motor Operated Valves," was issued on September 18, 1996. The Wisconsin Electric (WE) 60-day response to this generic letter was submitted to the Commission via letter dated November 18, 1996, while the required 180-day response was subsequently submitted on March 17, 1997.

During the period of June 14-18, 1999, an inspection of our inservice testing program was conducted. The results of this inspection were documented in Inspection Report 50-266/99012 (DRS); 50-301/99012 (DRS). This inspection included a review to determine whether activities associated with GL 96-05 were sufficient to ensure the continued capability of motor-operated valves (MOVs). While no response to the inspection report was required, we indicated we would provide a status update on our GL 96-05 program. Accordingly, a letter was submitted on October 25, 1999, in response to questions raised during the June inspection. On January 12, 2000, during a telephone conversation between the NRC and WE, additional information was requested to support review of our October 25, 1999, letter on the following items:

- 1) Two documents related to the MOV Program, CMP 2.2.11 and CMP 2.2.6, were referenced in the October 25, 1999, submittal. It appeared that the titles may have been incorrectly associated with the CMP number. Wisconsin Electric needs to review the submittal and correct the reference as appropriate.

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- 2) GL 89-10, Supplement 6, provided guidelines for selecting the number and types of valves for dynamic testing. The approach being followed by WE for periodic verification of MOVs uses a sample size much smaller than that specified in Supplement 6. WE needs to provide justification for the approach used in selecting the number and types of valves for dynamic testing.
- 3) In our October 25, 1999, letter we did not specifically describe the level of our involvement with the Westinghouse Owners Group (WOG), MOV Program. A more detailed description of our involvement is needed.
- 4) It is not clear how we use the EPRI PPM. Additional clarification is needed.

Age-related degradation of motor-operated valves is being managed by assessing valve family performance, based upon a combination of static and dynamic tests, valve internal inspections, and the combined experience of Westinghouse Owner Group (WOG) participants in the WOG MOV Program. A representative valve from each valve family with the least margin to failure will be dynamically tested to identify age-related degradation that could affect function at design conditions. In situations where testing cannot be conducted on a certain family of valves due to nuclear or personnel safety reasons, alternative methods will be used to ascertain the ability of the valves to perform their function.

Torque switches, limit switches and thermal overloads for MOVs are set up based on margins required to ensure each valve performs its design function. These margins take into account industry accepted valve factors, undervoltage actuator capability, diagnostic test equipment uncertainties, and limit switch and torque switch setpoint tolerances.

CMP 2.2.11, "Selection of Motor Operated Valves for Periodic Verification," provides screening criteria for selecting valves for periodic dynamic testing. It additionally provides guidance for expanding the sample size should a valve fail to meet specified acceptance criteria.

Our approach is to anticipate valve failure due to age-related degradation by establishing a screening target thrust band. It is theorized that as age-related degradation occurs, valve factor will increase. The screening target thrust band used will be based on a more conservative valve factor than what is used to actually set up the valves for operation. In other words, instead of using valve factors of 1.1 for globe valves and 0.55 for gate valves, we used 1.5 for globe valves and 0.95 for gate valves to calculate screening target thrust bands. If the screening target thrust band for a valve family is positive and adequate thrust margin still exists, then the family will not be periodically monitored through dynamic testing. On the other hand, if the screening target thrust band is negative or the available thrust margin is not adequate, a representative valve within the affected family will be periodically monitored through dynamic testing. Since no realistic valve degradation margin (such as valve factor) can be established for butterfly valves, one butterfly valve from each respective family will be periodically monitored through dynamic testing.

If a family of valves is screened to require periodic verification, but no valves within the family can be tested due to personnel or nuclear safety considerations, alternate methods will be established to verify the ability of the valves to perform their function and to monitor for age-

related degradation. The alternative approaches include comparison to valves within the WOG MOV Program or use of the EPRI Performance Prediction Methodology (PPM).

As the WOG MOV Program evolves, our program requirements will be adjusted to meet the requirements of this joint industry MOV program.

During the phone discussion between NRC and WE representatives, there was some discussion regarding the use of CMP 2.2.6, "Analysis of Motor Operated Valve Testing Data Taken During Differential Pressure Test of Gate and Globe Valves," and CMP 2.2.11, "Selection of Motor Operated Valves for Periodic Verification." After reviewing our October 25, 1999, letter, we have confirmed the documents referenced were appropriate for the application used.

GL 89-10, Supplement 6, specified an approach for selecting the initial sample of MOVs for dynamic testing. Supplement 6 required thirty percent of the valves within a valve family to be tested. In addition, if there were two or less valves in a valve family, both valves would be tested. WE followed this approach for the initial baseline testing of MOVs to satisfy the requirements of GL 89-10.

CMP 2.2.11, "Selection of Motor Operated Valves for Periodic Verification," was used to select valves that would be dynamically tested to satisfy the requirement for periodic verification. The approach used was to select a representative valve from each valve family that had low available thrust margin. Valves selected will be tested in a periodic verification testing program to ensure the valves maintain their capability to meet design conditions. This approach reduces the number of valves tested for periodic verification from those originally selected and tested in accordance with GL 89-10.

When baseline dynamic valve tests were conducted using guidance contained in GL 89-10, there was little industry data available on valve factors so utilities had no strong technical basis for selecting valve factors to calculate required thrust. Therefore, there was a higher level of uncertainty in the industry related to the capability of MOVs to meet their design function.

Baseline dynamic testing was performed via GL 89-10 guidance from 1989 to 1995. Our differential pressure testing conducted at that time demonstrated that valves within a valve family performed consistently. The data regarding valve factor and valve disc performance obtained from the first full flow dynamic test of one valve of a family was applied to all the valves in a family. Once more accurate valve factors were established and more appropriate target bands set up, there were no dynamic test failures at Point Beach. Baseline testing demonstrated that MOVs were in good material condition and could meet their design function. In addition, the baseline testing demonstrated a strong correlation between similar valves within a family regarding performance under design conditions.

The WOG MOV Program has been established as an industry initiative to implement the requirements of GL 96-05. In the WOG Program, two to four valves are selected at each participating utility for dynamic testing. The valves selected for testing are based on seat, disc, and guide material composition as well as disc and guide design. Valve samples have been assigned to participating utilities to be tested at a frequency specified in the WOG MOV Program. WE is participating in the WOG MOV Program. In addition, we are in the process of testing nine valves as selected in accordance with criteria listed in CMP 2.2.11. This testing will

be completed by July 15, 2000, as committed to in our October 25, 1999, letter. The approach we are currently pursuing, in terms of the scope of testing, exceeds the current requirements of the WOG MOV Program for individual participants.

Under the WOG MOV Program, safety significant valves will be selected for testing such that all materials and designs are adequately evaluated for age-related degradation. As a participant, we will be testing a sample of valves as assigned by the WOG. As age-related degradation is identified by participating utilities, the failures will be evaluated and appropriate action taken.

A portion of the EPRI PPM is being applied to our MOV testing program involving globe valves. The EPRI PPM requires adjustments in the determination of required stem thrust calculations due to valve seat area configuration. In addition, the EPRI globe valve/valve factors were reviewed and are in agreement with the Commission's findings as stated in "Electric Power Research Institute (EPRI) Topical Report TR-103237, ERPI MOV Performance Prediction Program," Revision 1, Section 3C, "Conditions and Limitations," in that, "the EPRI test database is not sufficient to justify a modification to the Limitorque guidelines for sizing and setting globe valves to lower the typical valve factor of 1.1 assumed in the guidelines." Therefore, a valve factor of 1.1 for both guide based and seat based globe valves is used in our calculations.

Please contact us if you have further questions or require additional information.

Sincerely,



A. J. Cayia
Manager,
Regulatory Services & Licensing

FAF/tat

cc: NRC Resident Inspector
NRC Regional Administrator
NRC Project Manager
PSCW