



Northern States Power Company

Monticello Nuclear Generating Plant
2807 West County Road 75
Monticello, MN 55362

November 4, 1998

Generic Letter 96-05 RAI

US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

NRC Generic Letter 96-05
Periodic Verification of Design-Basis
Capability of Safety-Related Motor-Operated Valves
Response to Request for Additional Information

- References:
- (1) NRC Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," September 18, 1996
 - (2) NSP Letter, "180 Day Response to NRC Generic Letter 96-05 Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," March 13, 1997
 - (3) NSP Letter, "NRC Generic Letter 96-05 Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," March 23, 1998
 - (4) NRC Letter, "Monticello Nuclear Generating Plant - Request for Additional Information Regarding Generic Letter 96-05 Program (TAC NO. M97070)," September 10, 1998
 - (5) NSP Letter, "Commitments Concerning NRC Inspection Report 50-263/95003 for Closure of NRC Generic Letter 89-10; Safety-Related Motor-Operated Valve Testing and Surveillance," April 26, 1995

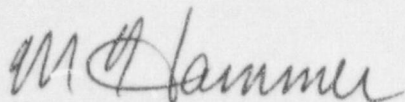
Reference 1 was issued by the NRC to discuss the periodic verification of the design-basis capability of safety-related motor-operated valves (MOV's). With References 2 and 3, NSP provided responses to GL 96-05. By Reference 4, the NRC requested additional information to complete their review of the subject. By this letter, NSP is responding to the NRC's request.

USNRC
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NORTHERN STATES POWER COMPANY

This letter contains no new commitments:

Please contact Sam Chirey, Sr. Licensing Engineer, at (612) 295-1449 if you require further information.



Michael F. Hammer
Plant Manager
Monticello Nuclear Generating Plant

c: Regional Administrator - III, NRC
NRR Project Manager, NRC
Sr. Resident Inspector, NRC
State of Minnesota, Attn: Kris Sanda

Attachments: Affidavit to the US Nuclear Regulatory Commission

A - Monticello Nuclear Generating Plant Response to Request for
Additional Information Regarding Generic Letter 96-05

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION ON
GENERIC LETTER 96-05

Northern States Power Company, a Minnesota corporation, by letter dated November 4, 1998, provides the requested 60 day response to NRC Request for Additional Information Regarding Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves." This letter contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By M. Hammer

Michael F. Hammer

Plant Manager

Monticello Nuclear Generating Plant

On this 4th day of November 1998 before me a notary public in and for said County, personally appeared Michael F. Hammer, Plant Manager, Monticello Nuclear Generating Plant, and being first duly sworn acknowledged that he is authorized to execute this document on behalf of Northern States Power Company, that he knows the contents thereof, and that to the best of his knowledge, information, and belief the statements made in it are true and that it is not interposed for delay.

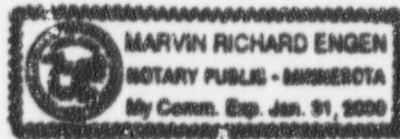
M. R. Engen

Marvin R. Engen

Notary Public - Minnesota

Shurburne County

My Commission Expires January 31, 2000



Attachment A

Monticello Nuclear Generating Plant Response to Request for Additional Information Regarding Generic Letter 96-05

Item 1

In NRC Inspection Report No. 50-263/95003, the NRC staff closed its review of the motor-operated valve (MOV) program implemented at the Monticello Nuclear Generating Plant in response to Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance." In the inspection report, the NRC staff noted certain aspects of the licensee's MOV program that would be addressed over the long term. For example, Northern States Power Company (NSP) indicated that it would (1) confirm the valve friction coefficients for MOVs required to close under blowdown conditions using the Electric Power Research Institute MOV Performance Prediction Methodology, (2) evaluate the marginal capability of MOV MO-4085B, and (3) implement a method to extrapolate test data in the valve opening direction. NSP addressed its long-term plans for considering stem lubricant degradation in its letter dated March 13, 1997, in response to GL 96-05. "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves." NSP should describe the actions taken to address the specific long-term aspects of the MOV program at Monticello that were noted in the NRC inspection report.

Monticello Response

The status of addressing certain long term aspects of the Monticello MOV program as identified in NRC Inspection Report No. 50-263/95003 is as follows.

MO-2-53A and MO-2-53B (Section 3.2 of 50-263/95-003, page 3)

Concerning MO-2-53A and MO-2-53B, actions were to be taken to reduce the design-basis condition for these motor operated valves, reduce the packing load for MO-2-53B, obtain a more accurate measure of stem friction coefficient (as feasible), and perform static testing of MO-2-53B once per cycle until thrust margin can be improved above 25%.

MO-2-53A and MO-2-53B (Recirculation Pump Discharge Valves) receive an automatic close signal for the valve ('A' or 'B') in the unbroken recirculation loop as selected by the Low-Pressure Coolant Injection (LPCI) loop selection logic. This function supports the performance of the Emergency Core Coolant System (ECCS) in mitigating the consequences of a Loss of Coolant Accident (LOCA). A plant specific evaluation was

performed to determine the maximum differential pressure against which the recirculation discharge valves must close. This evaluation showed that a maximum differential pressure of 80 psid is the design-basis condition versus the 200 psid used for previous performance analysis for these valves. The revised design-basis value of 80 psid has been incorporated into the performance analyses performed for these valves per the Monticello Motor Operated Valve Program.

The actuator for MO-2-53B was refurbished during the Monticello 1996 refueling outage and alignment of the packing glands was performed for the triple gland valve stem packing stuffing box. This action reduced the average closed packing load for MO-2-53B from approximately 10,000 lbs. to approximately 3,300 lbs. Measurement of a more accurate value of stem coefficient of friction was not feasible during this work activity.

The thrust margins for MO-2-53A and MO-2-53B were improved above 25%, after accounting for all necessary uncertainties, with the change in the design basis maximum differential pressure to 80 psid. Static testing on a once per cycle frequency is not being performed since demonstrating this thrust margin improvement. Periodic static testing is performed for these motor operated valves at the frequency specified by the MOV Joint Owner's Group (JOG) periodic verification program based on MOV margin and risk.

Actions concerning this issue have been completed.

MO-4085A and MO-4085B (Section 3.2 of 50-263/95-003, page 3)

Concerning MO-4085A and MO-4085B, actions were to be taken to reevaluate the design-basis function of these valves for potential removal from the program.

MO-4085A and MO-4085B (RHR Intertie Isolation Valves) are required to be closed per plant Technical Specifications while the mode switch is in RUN. An evaluation was performed which demonstrated that for plant conditions when the mode switch is not in RUN, if these valves were to be open, they are not required to close to mitigate the consequences of the design-basis Loss of Coolant Accident (LOCA). MO-4085A and MO-4085B have been excluded from the Monticello Motor Operated Valve Program based on the valves being normally in the required safety position and repositioning of the valves is not required during or after a design basis event.

Actions concerning this issue have been completed.

Confirmation of Disc Coefficients using EPRI PPM (Section 3.2 of 50-263/95-003, page 3)

Concerning motor operated valves required to close under blowdown conditions, actions were to be taken to confirm the disc coefficients derived from in-plant testing using the Electric Power Research Institute's (EPRI's) MOV Performance Prediction Methodology (PPM).

The Monticello MOV program contains eight (8) motor operated valves which are required to be capable of closing under blowdown conditions. The following is the status of completing the PPM for these eight valves:

The EPRI MOV PPM has been completed for two valves with the PPM demonstrating capability to perform required valve function under blowdown conditions.

For one of these eight valves, the valve has been confirmed to be capable of being modeled by the PPM and the EPRI MOV PPM calculation is in preparation.

For five valves, the screening criteria contained in EPRI TR-103244-R1, "EPRI MOV Performance Prediction Program Implementation Guide," Section 5.0, indicates that these valves would be unpredictable as modeled by the PPM. EPRI TR-103244-R1, "EPRI MOV Performance Prediction Program Implementation Guide," Section 7.0, states, "...a prediction of unpredictability for valves in blowdown service does not indicate that substantial valve damage and high required stem thrusts will occur, but that they might occur." To address this issue for these five valves, an evaluation is being performed to identify the necessary inspections, maintenance and/or modifications to these valves to establish a configuration which is predictable as modeled by the PPM. It is Monticello's intention to implement the necessary action during future refueling outages.

Action to address this issue remains in progress.

Lack of Load Sensitive Behavior (LSB) Margin in Open Direction (Section 3.2.1.1 of 50-263/95-003, page 4)

Concerning load sensitive behavior, actions were to be taken to gather additional data to support an assumed stem friction coefficient of 0.18 in the open direction.

Monticello has obtained limited additional dynamic test data for the open stroke direction with adequate torque and thrust information to provide further data concerning stem to stem nut coefficient of friction in the open direction. Thus, as a conservative

measure to address this issue, a margin has been applied to GL 89-10 valves with open safety related scenarios. The margin is provided to account for potential load sensitive behavior in the open direction and is consistent with that applied to address load sensitive behavior in the closed direction as discussed in section 3.2.1 of NRC Inspection Report 50-263/95003.

Actions concerning this issue have been completed.

Lack of Extrapolation for Open Stroke (Section 3.2.1.3 of 50-263/95-003, page 5)

Concerning MOVs with an open direction design basis function for which actuator torque is not measured during dynamic testing, action was to be taken to provide appropriate extrapolation of measured thrust to ensure an adequate assessment of open design basis capability.

The MOV program engineering standard document and the MOV program data base software have been revised to provide an extrapolation of thrust measured under dynamic conditions to design basis conditions (when necessary). This feature provides a tool for evaluating positive margin between actuator available thrust and actuator required thrust under design basis conditions to assure valve operability.

Actions concerning this issue have been completed.

Stem Lube Degradation (Section 3.2.4 of 50-263/95-003, page 6)

Concerning test data obtained to support justification for the lubrication degradation assumption of 3%, actions were to be taken to test four additional valves to enhance the accuracy of the data collected and would include testing of MO-2035 (if possible) and performance of several valve strokes both prior to and after the stem lubrication.

Monticello has acquired data for three of the four additional valve tests to be performed to enhance the accuracy of the data collected to support the stem lubrication degradation assumption. The additional data collected to date confirms that the assumption of 3% to account for stem lubrication degradation is valid. It was not feasible to include MO-2035 in this data set due to failure of the stem-mounted strain gauge. Monticello intends to complete data collection in support of resolution of this issue during the next scheduled refueling outage as originally committed to in Reference 5.

Item 2

In a letter dated March 23, 1998, NSP updated its commitment to implement the Joint Owners Group (JOG) Program on MOV Periodic Verification in response to GL 96-05. The JOG program specifies that the methodology and discrimination criteria for ranking MOVs according to their safety significance are the responsibility of each participating licensee. In a previous letter dated March 13, 1997, NSP had generally described the risk ranking of MOVs at Monticello for application of the JOG interim MOV static diagnostic testing program. Please indicate whether or not NSP is applying the Boiling Water Reactor Owner's Group (BWROG) methodology for ranking MOVs based on their safety significance as described in BWROG Topical Report NEDC-32264 and the NRC safety evaluation dated February 27, 1996. If not, please describe the methodology used for risk ranking MOVs at Monticello in more detail.

Monticello Response

Monticello has applied the Boiling Water Reactor Owners' Group (BWROG) methodology for ranking MOVs based on their safety significance as described in BWROG Topical Report NEDC-32264 and the NRC safety evaluation dated February 27, 1996.

Item 3

The JOG program focuses on the potential age-related increase in the thrust or torque required to operate valves under their design-basis conditions. In the NRC safety evaluation dated October 30, 1997, on the JOG program, the NRC staff specified that licensees are responsible for addressing the thrust or torque delivered by the MOV motor actuator and its potential degradation. NSP should describe the plan at Monticello for ensuring adequate MOV motor actuator output capability, including consideration of the recent guidance in Limitorque Technical Update 98-01 and its Supplement 1.

Monticello Response

Concerning Limitorque Technical Update 98-01 and its Supplement 1, regarding output torque capability of ac-powered motor actuators, Monticello has revised the methodology used in the Monticello Motor Operated Valve Program for predicting the

torque capability of ac-powered Limitorque actuators. Using this methodology, which was developed by the Commonwealth Edison Company, NSP has confirmed that these MOVs remain capable of performing their design basis functions.

Concerning addressing the potential degradation of MOV actuator delivered thrust or torque, Monticello will continue to: 1) perform periodic static diagnostic testing of MOVs to confirm MOV capability and proper control switch settings consistent with previous commitments; 2) perform appropriate preventative maintenance activities such as periodic stem lubrication, actuator gear case grease inspection, and actuator refurbishment to provide reasonable confidence of proper actuator performance; and 3) apply appropriate margins to account for actuator degradations such as stem lubrication degradation, spring pack relaxation, and rate of loading.

Monticello is involved in various industry organizations to keep apprised of the latest available information concerning MOV performance. Monticello will continue to incorporate necessary enhancements to the Motor Operated Valve program based upon our evaluation of the most current information.