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December 21, 1990

Generic Letter 90-06

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

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Response to Generic Letter 90-06
Resolution of Generic Issue 70, "Power-Operated Relief Valve and Block Valve Reliability," and Generic Issue 94, "Additional Low-Temperature Overpressure Protection For Light-Water Reactors"

Attached is our response to Generic Letter 90-06, Resolution of Generic Issue 70, "Power-Operated Relief Valve and Block Valve Reliability," and Generic Issue 94, "Additional Low-Temperature Overpressure Protection For Light-Water Reactors", for the Prairie Island Nuclear Generating Plant.

Please contact us if you have any questions related to our response.

Thomas M Parker
Manager
Nuclear Support Services

c: Regional Administrator - Region III, NRC
Senior Resident Inspector, NRC
NRR Project Manager, NRC
J E Silberg

Attachments:

1. Affidavit

2. Response to Generic Letter 90-06

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UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT DOCKET NO. 50-282
50-306

RESPONSE TO NRC GENERIC LETTER 90-06

Northern States Power Company, a Minnesota corporation, with this letter is submitting information requested by NRC Generic Letter 90-06.

This letter contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By _____
Thomas M Parker
Manager, Nuclear Support Services

On this 21st day of December 1990 before me a notary public in and for said County, personally appeared Thomas M Parker, Manager, Nuclear Support Services, 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.

Marcia K. LaCore

MARCIA K. LaCORE
NOTARY PUBLIC—MINNESOTA
HENNEPIN COUNTY
My Commission Expires Sept 24, 1993

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

Response to Generic Letter 90-06

The following information is provided in response to Generic Letter 90-06:

ENCLOSURE A

Based on the analysis and findings for Generic Issue 70, the NRC Staff concluded that several actions should be taken to improve the reliability of the Pressurizer Power Operated Relief Valves (PORVs) and their block valves. Enclosure A to Generic Letter 90-06 provides the NRC Staff positions resulting from the resolution of Generic Issue 70, "PORV and Block Valve Reliability". The actions requested in Enclosure A and our response to those requests are described below.

Requested Action 1

Include PORVs and block valves within the scope of an operational quality assurance program that is in compliance with 10 CFR Part 50, Appendix B. This Program should include the following elements:

a. The addition of PORVs and block valves to the plant operational Quality Assurance List.

b. Implementation of a maintenance/refurbishment program for PORVs and block valves that is based on the manufacturer's recommendations or guidelines and is implemented by trained plant maintenance personnel.

c. When replacement parts and spares, as well as complete components, are required for existing non-safety-grade PORVs and block valves (and associated control systems), it is the intent of this generic letter that these items may be procured in accordance with the original construction codes and standards.

Response

a. The pressurizer PORVs, block valves and associated control systems are currently included in Prairie Island Quality Assurance Program and Q-List with the following exceptions:

1. The automatic pressurizer PORV high pressure (2335 psig) control system is not considered a safety related function at Prairie Island. This control system does not perform any of the three safety related functions described in Section 2 of Enclosure A to Generic Letter 90-06. The purpose of the control system is to reduce challenges to the pressurizer code safety valves, which is not designated as a safety related function by Generic Letter 90-06. For these reasons, the automatic pressurizer PORV high pressure control system will remain non-safety related at Prairie Island.

2. A backup air supply for the pressurizer PORVs was installed as part of the low temperature overpressure protection system modifications performed in response to the resolution of Unresolved Safety Item A-26. Per guidance provided by the NRC Staff during the implementation of these modifications, the accumulators and associated valving were designed and installed as non-safety related, but seismic design class I. The Prairie Island pressurizer PORV backup air supply will be maintained as a non-safety related seismic class 1 system.

b. The current maintenance program for the pressurizer PORVs and block valves exceeds the manufacturer's recommendations. Maintenance personnel have been trained on the maintenance of the valves and actuators and on the motor operated valve test equipment and procedures.

c. Since the pressurizer PORVs and block valves are already considered safety-related, the spare and replacement parts for them will continue to be ordered as safety related and in accordance with the original construction codes and standards. This is also true for the other safety-related instrumentation and components associated with the PORVs and the low temperature overpressure protection system. Replacement parts and spares for non-safety-related instrumentation and components associated with the PORVs and the low temperature overpressure protection system will continue to be procured as non-safety-related and in accordance with the original construction codes and standards.

Requested Action 2

Include PORVs, valves in PORV control air systems, and block valves within the scope of a program covered by Subsection IWV, "Inservice Testing of Valves in Nuclear Plants," of Section XI of the ASME Boiler and Pressure Vessel Code. Stroke testing of PORVs should only be performed during Mode 3 (HOT STANDBY) or Mode 4 (HOT SHUTDOWN) and in all cases prior to establishing conditions where the PORVs are used for low-temperature overpressure protection. Stroke testing of the PORVs should not be performed during power operation. Additionally, the PORV block valves should be included in the licensees' expanded MOV test program discussed in NRC Generic Letter 89-10, "Safety-Related Motor Operated Valve Testing and Surveillance," dated June 28, 1989.

Response

The pressurizer PORVs are currently included in the Prairie Island Section XI program. The block valves and PORV air accumulator check valves will be incorporated into the program.

Stroke testing of the pressurizer PORVs is not and will not be performed during power operation. Specifics of the pressurizer PORV stroke testing are discussed below, as part of the discussion of the Technical Specification Surveillance testing requirements (Section 3.a of response to Requested Action 3, page 4).

The pressurizer PORV block valves are included the Prairie Island motor operated valve test program that was established in response to Generic Letter 89-10.

Requested Action 3

For operating PWR plants, modify the limiting conditions of operation of PORVs and block valves in the technical specifications for Modes 1, 2, and 3 to incorporate the position adopted by the staff in recent licensing actions. Attachments A-1 through A-3 are provided for guidance. The staff recognizes that some recently licensed PWR plants already have technical specifications in accordance with the staff position. Such plants are already in compliance with this position and need merely state that in their response. These recent technical specifications require that plants that run with the block valves closed (e.g., due to leaking PORVs) maintain electrical power to the block valves so they can be readily opened from the control room upon demand. Additionally, plant operation in Modes 1, 2, and 3 with PORVs and block valves inoperable for reasons other than seat leakage is not permitted for periods of more than 72 hours.

Response

1. Prairie Island Technical Specification Pressurizer PORV Limiting Conditions for Operation and corresponding action statements (Section 3.1.A.2.c(1)) will be revised to conform with the guidance provided in Attachment A-1 of Enclosure A.

2. The bases for Prairie Island Technical Specification Section 3.1.A.2.c(1) will be revised to conform with the bases provided in Attachment A-3 of Enclosure A as they apply to the Prairie Island Technical Specification format and with the following exception:

   Because automatic control of the pressurizer PORVs at the high pressure setpoint is not considered a safety related function at Prairie Island, Item D of the bases provided in Attachment A-1 will not be incorporated into the Prairie Island Technical Specifications.

3. The surveillance testing requirements in the current Prairie Island Technical Specifications were compared against the guidance provided in Attachment A-2 of Enclosure A. Attachment A-2 was utilized because the surveillance testing guidance in Attachment A-1 appeared to be incomplete. The NRC technical contact noted in Generic Letter 90-06 was contacted to verify the acceptability of utilizing Attachment A-2. The results of this comparison are provided below:

   a. Proposed surveillance requirement 4.4.4.1.a requires that each pressurizer PORV be demonstrated operable every 18 months by operating the PORV through one complete cycle of full travel during Modes 3 or 4.

Item 37 of Prairie Island Technical Specification Table TS.4.1-1 requires an low temperature overpressure protection instrument channel functional test each refueling. Item 7 of Prairie Island Technical Specification Table TS.4.1-2a requires a PORV equipment functional test every 18 months. The unit shutdown procedures call for the low temperature overpressure protection instrument channel functional testing to be performed prior to establishing conditions where the PORVs are used for low temperature overpressure protection.

These requirements result in stroking each PORV prior to use for low temperature overpressure protection (Reactor Coolant Average Temperature > 310°F) and timing each PORV when stroked again during cold shutdown. The PORV stroke is timed during cold shutdown to verify stroke time is consistent with the low temperature overpressure protection system safety evaluation.

Based on this comparison, the existing Prairie Island Technical Specifications have been found to conform with the guidance provided by proposed surveillance requirement 4.4.4.1.a from Attachment A-2 and therefore, no changes to the Prairie Island Technical Specifications are necessary.

b. Proposed surveillance requirement 4.4.4.1.b requires that each PORV be demonstrated operable every 18 months by operating solenoid air control valves and check valves on associated air accumulators in PORV control systems through one complete cycle of full travel for plants with air-operated PORVs.

The PORV air supply solenoid valves are demonstrated operable during PORV stroke testing. PORV functional testing is included in the Prairie Island Technical Specifications as discussed above. Therefore, it is not necessary to include testing of the air supply solenoid valves as a separate item in the Technical Specifications.

The check valves on the air supply to the PORV air accumulators are exercised open each time the PORV is stroked. The check valves are exercised closed and tested for seat leakage each refueling at Prairie Island. The Prairie Island Section XI program will be updated to include exercising the check valves closed each refueling.

Because the Section XI program at Prairie Island is implemented through Technical Specification Section 4.2, there is no need to specifically incorporate testing of the check valves on the air supply to the PORV air accumulators into the Prairie Island Technical Specifications.

Based on this comparison, the existing Prairie Island Technical Specifications comply with the intent of the guidance provided by proposed surveillance requirement 4.4.4.1.b from Attachment A-2 and therefore, no changes to the Prairie Island Technical Specifications are necessary.

c. Proposed surveillance requirement 4.4.4.1.c requires that each PORV be demonstrated operable every 18 months by performing a channel calibration of the actuation instrumentation.

PORV control channel instrumentation for the high pressure setpoint (2335 psig) is calibrated each refueling. However, as discussed above, we consider this a non-safety related function, thus not appropriate for incorporation into the Prairie Island Technical Specifications. Therefore, proposed surveillance requirement 4.4.4.1.c will not be incorporated into the Prairie Island Technical Specifications.

d. Proposed surveillance requirement 4.4.4.2 requires that each block valve be demonstrated operable at least once per 92 days by operating the valve through one complete cycle of full travel unless the block valve is closed in order to meet the requirements of action statements invoked for other than seat leakage.

Item 6 of Prairie Island Technical Specification Table TS.4.1-2A requires the PORV block valves to be stroked quarterly. Technical Specification Table TS.4.1-2A will be revised to exclude testing if the block valve is closed as a result of action statements invoked for PORV inoperability for reasons other than seat leakage. The revised specification will conform to the guidance provided by proposed surveillance requirement 4.4.4.2.

e. Proposed surveillance requirement 4.4.4.3 specifies surveillance requirements designed to assure to operability of the PORV emergency power supply. Prairie Island pressurizer PORV controls and block valve power supplies are only fed from emergency power sources. Therefore, the surveillance requirements in proposed surveillance requirement 4.4.4.3 is not applicable to Prairie Island and no Technical Specification changes are required.

ENCLOSURE B

Based on the technical studies for Generic Issue 94, the NRC Staff concluded that actions should be taken to improve the availability of the low temperature overpressure protection (LTOP) system. Section 3 of Enclosure B to Generic Letter 90-06 provides the NRC Staff guidance on the actions that should be taken in response to Generic Issue 94, "Additional Low-Temperature Overpressure Protection for Light-Water Reactors". The actions requested in Enclosure B and our response to those requests are described below.

Requested Action

Section 3 of Enclosure B states that "...added assurance of LTOP availability is to be provided by revising the current Technical Specification for Overpressure Protection to reduce the AOT for a single channel from 7 days to 24 hours when the plant is operating in MODES 5 or 6". Attachment B-1 was provided for guidance.

Response

1. Prairie Island Technical Specification Pressurizer PORV Limiting Conditions for Operation and corresponding action statements (Section 3.1.A.2.c(2)) will be revised to conform with the guidance provided in Attachment B-1 of Enclosure B with the exception of action statements"d" and "e" from the proposed specification 3.4.9.3.

   Attachment B-1 of Enclosure B specifies that for plants with existing Technical Specifications for PORVs used for low temperature overpressure protection, the only required change is that indicated to restrict the applicability of action statement "a" to MODE 4 and for incorporating action statement "b". All other changes are stated to be voluntary. Because the Prairie Island Technical Specifications already contain low temperature overpressure protection specifications, action statements "d" and "e" will not be incorporated into the Prairie Island Technical Specifications.

2. The bases for Prairie Island Technical Specification Section 3.1.A.2.c(2) will be revised to conform with the bases provided in Attachment A-2 of Enclosure B as they apply to the Prairie Island Technical Specification format.

3. The surveillance testing requirements in the current Prairie Island Technical Specifications were compared against the guidance provided in Attachment B-1 of Enclosure B. The results of this comparison are provided below:

a. Proposed surveillance requirement 4.4.9.3.a requires that each PORV be demonstrated operable by performance of an analog channel operational test, but excluding valve operation, at least once per 31 days.

Prairie Island performs the low temperature overpressure protection channel functional test just prior to placing the system in service, and calibrates the low temperature overpressure protection channels during the refueling outage, as described above. The reactor coolant system is normally vented during cold shutdown, unless a mode change is imminent. Therefore, the low temperature overpressure protection system is only in service for approximately 5 days during Prairie Island refueling outages.

The incorporation of the proposed surveillance functional test in the Prairie Island Technical Specifications would result in the development of additional administrative controls to implement the surveillance requirement. The implementation of such controls cannot be justified for a functional test that would only be required if the reactor coolant system could not be vented, and the low temperature overpressure protection system had to remain in service for an extended period of time.

If the low temperature overpressure protection system were in service for greater than 31 days, a periodic (monthly) low temperature overpressure protection system functional retest during shutdown would involve additicnal system out of service time. Based on past operation of the low temperature overpressure protection system at Prairie Island, the proposed 31 day surveillance would not significantly improve low temperature overpressure protection system reliability. The added assurance of PORV reliability does not justify the additional system out of service time.

For these reasons, and because the incorporation of this requested testing is stated to be voluntary by Enclosure B, proposed surveillance 4.4.9.3.a will not be incorporated into the Prairie Island Technical Specifications.

b. Proposed surveillance requirement 4.4.9.3.b requires that each PORV be demonstrated operable by performance of a channel calibration at least once per 18 months.

Item 37 of Prairie Island Technical Specification Table TS.4.1-1 requires a low temperature overpressure protection system instrument channel calibration each refueling. This is consistent with proposed surveillance requirement 4.4.9.3.b from Attachment B-1. No changes to the Prairie Island Technical Specifications are required.

c. Proposed surveillance requirement 4.4.9.3.c requires that each POkV be demonstrated operable by verifying the PORV isolation valve is open at least once per 72 hours.

The Prairie Island low temperature overpressure protection system includes alarming functions to alert operators of PORV block valve mispositioning. Because of this alarm feature and because the incorporation of this requested testing is stated to be voluntary by Enclosure B, proposed surveillance 4.4.9.3.c will not be incorporated into the Prairie Island Technical Specifications.

Requested Action

Section 3 of Enclosure B states that if it is determined that the low temperature overpressure protection design bases was developed based on restricted safety injection pump operability and/or differential temperature restrictions for reactor coolant pump restart and that these restrictions have not been implemented as part of USI A-26, then these restrictions should be implemented now.

Response

Prairie Island currently has Technical Specification limitations on safety injection pump operability and reactor coolant pump restart restrictions implemented in response to Unresolved Safety Issue A-26. No additional Technical Specification requirements are necessary to assure to the design bases of the low temperature overpressure protection system are met.

Schedule For Implementation

In accordance with requirements of Generic Letter 90-06, the following actions will be completed by the end of the next Unit 1 refueling outage, currently scheduled to begin June 5, 1991:

1. Completion of all the actions described above, that are required to implement the requirements of staff positions 1 and 2 in Section 3.1 of Enclosure A.

2. Submittal of a license amendment request incorporating Technical Specification modifications required by staff position 3 in Section 3.1 of Enclosure A and by Section 3 of Enclosure B.