



Northern States Power Company

Prairie Island Nuclear Generating Plant

1717 Wakonade Dr. East  
Weich, Minnesota 55089

October 14, 1996

10 CFR Part 2

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

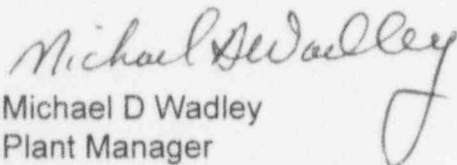
PRAIRIE ISLAND NUCLEAR GENERATING PLANT  
Docket Nos. 50-282 License Nos. DPR-42  
50-306 DPR-60

Reply to Notice of Violation (Inspection Report 96007),  
Regarding Inoperable Containment Hydrogen Monitors

Your letter of September 13, 1996, which transmitted Inspection Report No. 96007, required a response to a Notice of Violation. Our response to the violation is contained in the attachment to this letter.

In this letter we have made new Nuclear Regulatory Commission commitments, indicated as the statements in italics.

Please contact Jack Leveille (612-388-1121, Ext. 4662) if you have any questions related to this letter.



Michael D Wadley  
Plant Manager  
Prairie Island Nuclear Generating Plant

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

Attachment: RESPONSE TO NOTICE OF VIOLATION

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## RESPONSE TO NOTICE OF VIOLATION

### VIOLATION

Technical Specification 3.15.A required that 2 channels of containment hydrogen monitors shall be operable in Modes 1 and 2.

Technical Specification 3.15.B required that with two hydrogen monitor channels inoperable, the licensee must restore one channel to operable status within 72 hours or be in at least Mode 3 within the next 6 hours.

Contrary to the above, from March 3 through May 15, 1996, while in Modes 1 or 2, both Unit 1 hydrogen monitor channels (train A sensors 1XE-719 and 1XE-720; train B sensor 1XE-722) were inoperable because calibration equipment was degraded and action was not taken to restore at least one channel to operable status within 72 hours or to be in at least Mode 3 within the next 6 hours.

This is a Severity Level IV violation (Supplement I).

### RESPONSE TO VIOLATION

#### Reason for the Violation:

The hydrogen monitors were not restored to operable status within 72 hours nor was the unit placed in at least Mode 3 within the next 6 hours because the plant staff was unaware that the monitors were inoperable. They had been unknowingly rendered inoperable during the winter 1996 refueling outage as detailed in the Unit 1 Licensee Event Report 96-09.

The investigation concluded that the inoperability was caused by adjusting the regulated pressure prior to filling the calibration gas bottles. This caused the regulated pressure to decrease. It was not understood that refilling the hydrogen bottles after regulator adjustment had the effect of lowering the regulated pressure. The problem was aggravated by overfilling the gas bottles. Because of the order in which these activities were performed, the regulated pressure decreased to a point where pressure in three out of the four sensors was insufficient to perform necessary calibration without making a containment entry to perform corrective maintenance.

The investigation also concluded that a contributing cause of the event was a failure to follow procedures in several areas concerning the control of various processes, including the Work Control, Post-Maintenance Testing, and Tech Manual Revision Control, per the following:

- a) The performed work was beyond the scope of the original Work Order. The original Work Order was investigative in nature. After finding nothing that could explain the high gas flow rates, the engineer sought to reduce gas flow by adjusting the pressure regulator. A new work order or a work order change should have been initiated and gone through the normal critical work order review process. That was not done. A new work order should have documented the new scope, specified the adjustment and justification for change and clearly identified required post-maintenance testing. The Work Order Change Process was bypassed and therefore required independent reviews of critical work, which may have led to identification of the effects of pressure regulator changes, were also bypassed.
- b) The engineer also failed to observe required configuration control processes and thereby failed to properly evaluate and document the change to the pressure regulator. The engineer did not identify changing the setting as a configuration change. The vendor's technical representative was contacted prior to making any adjustments to obtain the vendor's concurrence. The regulator is a sub-component of the calibration assembly located on the sensor skid; its configuration, operation and setpoint are described in and controlled by the tech manual. The Tech Manual Revision Process should have been used to control the change in equipment configuration. A change must specify its technical basis and requires independent review. The purpose of the review is to assure that the change is not a design change, and to assure that the revision is technically accurate. In failing to follow the change process, no documentation or justification for safe implementation of the change was provided.
- c) The amount of post-maintenance testing was not adequate to identify the problem with supply pressure variance. The regulator adjustment was a change in scope from the intent of the original work order. The change therefore should have been re-reviewed by all of the original reviewers or a new work order issued. The second review process would have allowed more opportunity to specify post-maintenance testing that could have caught the change in regulated output. An end-to-end test such as the quarterly calibration surveillance following maintenance and subsequent gas fill would have caught the error before returning the Unit on-line.
- d) The engineer should have questioned the practice of overfilling the calibration gas cylinders. There was no tolerance specified in the tech manual nor in any plant procedure. This practice had been on-going to ensure adequate gas volume but was not warranted since a calibration manifold design change implemented in 1989 alleviated a historical calibration gas depletion problem.

In summary, the appropriate change management processes were available and in place to ensure adequate review of sub-system changes and to provide adequate assurance that equipment returned to service is operable following maintenance activities. However, there was a failure to follow those processes which contributed to equipment being returned to service in an inoperable state in violation of the plant's operating license. The root cause of hydrogen monitor inoperability was the failure to understand the supply pressure effect on the regulated output.

#### Corrective Steps Taken and Results Achieved

1. All Unit One pressure regulators settings were brought into nominal tolerance as specified in the technical manual and recalibrated to verify operability.
2. An analysis of the cylinder overfill has been documented as a Non-Conformance.
3. During an investigative inquiry into the reason for the occurrence, the responsible engineer determined that the sequence of steps led to this occurrence.
4. The lead system technicians were immediately made aware of the event and the event discussed at a morning pre-work group meeting. The original Internal Investigative Report was distributed to I&C engineers and technicians.

#### Corrective Steps That Will Be Taken To Avoid Further Violations:

1. *Revise all applicable procedures (to be completed prior to the Unit 2 Refueling Outage, 1/25/97) to specify a fill pressure tolerance to preclude overfilling calibration gas bottles and provide assurances that regulator settings, if required, will occur after a fill has been completed. A reference to Unit 1 LER 96-09 and inlet pressure variation effects will also be added.*
2. *Revise the monitor Technical Manual (to be completed prior to the Unit 2 Refueling Outage, 1/25/97). Key information was unknown to plant engineering staff before this event occurred. A tech manual change has been initiated describing the inlet pressure variation effect and specifies a nominal setpoint.*
3. *Provide I&C Engineering and Technician Training on the single stage regulator event (to be completed prior to the Unit 2 Refueling Outage, 1/25/97). The most significant errors occurred in the change management area. Other I&C engineers and technicians need to be aware of the technical and procedural problems inherent*



in the cause of this event.

4. *Consider upgrade of the calibration assemblies to a new Whittaker design that uses significantly less gas than is used presently. The new manifold still uses pressure regulators, but flow is restricted through an orifice. A manifold change would need to be evaluated for technical appropriateness and safety before being installed. If the manifold meets all of the technical requirements, the unit specific manifold would need to be installed during a refueling outage. This will be evaluated with the intention of installing new manifolds, if appropriate, in conjunction with the next respective refueling outages for each unit.*

The Date When Full Compliance Will be Achieved:

Full compliance has been achieved.