

## NOTICE OF VIOLATION

Northern States Power Company  
Monticello Nuclear Generating Plant

Docket No. 50-263  
License No. DPR-22  
EA 89-248

During an inspection conducted on October 13 through November 27, 1989, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1989), the particular violation is set forth below:

10 CFR Part 50, Appendix B, Criterion XI, Test Control, requires, in part, that a test program be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service, is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.

Technical Specification Limiting Condition for Operation (LCO) 3.7.C.1 requires secondary containment integrity to be maintained during all modes of plant operation unless specific exemption criteria are met. In addition, Technical Specification Surveillance Requirement 4.7.C.1.c requires secondary containment capability to maintain at least a 1/4 inch of water vacuum under calm wind conditions with a filter train flow rate of not more than 4,000 scfm. This shall be demonstrated at each refueling outage prior to refueling.

Contrary to the above, from June 1971 until October 1989, the licensee failed to establish an adequate surveillance test to demonstrate that secondary containment was capable of maintaining 1/4 inch of water vacuum under calm wind conditions with a filter flow rate of not more than 4,000 scfm. The surveillance test was inadequate in that interaction with other ventilation systems was not properly considered.

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

Pursuant to the provisions of 10 CFR 2.201, Northern States Power Company (licensee) is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, with a copy to the Regional Administrator, Region III, U.S. Nuclear Regulatory Commission, 799 Roosevelt Road, Glen Ellyn, Illinois 60137 and a copy to the NRC Resident Inspector at the Monticello Nuclear Generating Plant, within 30 days of the date of the letter transmitting this Notice. This reply should be clearly marked as a "Reply to a Notice of Violation" and should include: (1) admission or denial of the alleged violation; (2) the reasons for the violation if admitted; (3) the corrective steps that have been taken and the results achieved; (4) the corrective steps that will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Where good cause is shown, consideration will be given to extending the response time. If an

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adequate reply is not received within the time specified in this Notice, an order may be issued to show cause why the license should not be modified, suspended, or revoked or why such other action as may be proper should not be taken.

FOR THE NUCLEAR REGULATORY COMMISSION

*Charles E. Nowlan*  
for  
A. Bert Davis  
Regional Administrator

Dated at Glen Ellyn, Illinois  
this 6th day of February 1990

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/89029(DRP)

Docket No. 50-263

License No. DPR-22

Licensee: Northern States Power Company  
414 Nicollet Mall  
Minneapolis, MN 55401

Facility Name: Monticello Nuclear Generating Station

Inspection At: Monticello Site, Monticello, Minnesota

Inspection Conducted: October 13 through November 27, 1989

Inspectors: J. E. Hard

P. B. Moore

Approved By: *W. L. Axelson*  
W. L. Axelson, Chief  
Reactor Projects Branch 2

*12/12/89*  
Date

Inspection Summary

Inspection on October 13 through November 27, 1989 (Report No. 50-263/89029(DRP))

Areas Inspected: Special unannounced inspection by the resident inspectors of secondary containment integrity and standby gas treatment system issues.

Results: The inspection revealed that the licensee took immediate corrective action to investigate the secondary containment issue, stopping work in progress which depended on secondary containment integrity. Corrective action was taken promptly. However, the surveillance procedure for the standby gas treatment system (SGTS) was not adequate, so degraded secondary containment integrity may have existed for an extended period of time. One apparent violation was identified for not meeting the secondary containment integrity technical specification because of inadequate surveillance procedures. (Paragraph 2.a.).

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## DETAILS

### 1. Persons Contacted

- \*D. Antony, Plant Manager
- B. D. Day, General Superintendent, Engineering & Rad. Prot.
- M. H. Clarity, Assistant to the Plant Manager
- D. E. Nevinski, General Superintendent, Operations
- W. J. Hill, General Superintendent, Maintenance
- R. L. Scheinost, General Superintendent, Quality, Security & Admin.
- S. J. Hammer, Superintendent, Operations Engineering
- A. E. Ward, Lead Production Engineer
- D. A. Scott, Senior Production Engineer
- S. K. Peterson, Production Engineer

Other plant personnel were also contacted by the inspectors.

\*In attendance at the exit meeting.

### 2. Followup of Events

#### a. Event Summary

On October 13, 1989, discussions between NRC personnel and the General Superintendent, Engineering and Radiation Protection, were held to review the results of Standby Gas Treatment system (SGTS) testing at the Duane Arnold Energy Center. (Duane Arnold personnel found a breach in their secondary containment which was detected during SGTS testing.) Based on this discussion, Monticello management ordered immediate cessation of control rod scram testing, which was in progress at the time, until these questions on SGTS testing and secondary containment integrity could be answered. A special test of the SGTS with the reactor building plenum exhaust fans secured was conducted on October 14 and was witnessed by the resident inspection staff. (See further discussion of the design features in Paragraph 2.b. below.) This test showed that the SGTS by itself was not capable of maintaining a reactor building vacuum of at least 0.25 inch of water as specified in Technical Specification (TS) 4.7.C.1. The vacuum developed by SGTS during the test was 0.1 inch of water. The licensee made the required notifications to the NRC within four hours as specified in 10 CFR 50.72 and by Licensee Event Report (LER) 263/89029 within 30 days.

Major efforts were undertaken by the licensee to measure the "as-found" condition of the secondary containment from which hypothetical post-accident doses could be computed, and to determine and correct the sources of in-leakage to the reactor building. Leakage from the reactor building into the reactor building exhaust plenum was determined to be about 2600 cfm with the plenum exhaust fans and the SGTS operating. This is the amount of air flow through dampers which bypassed the SGTS under these conditions. Leakage into the reactor building was shown to be principally through six sets of ventilation

dampers which did not close properly and through the reactor building railway airlock door gasket material. Following gasket replacement and repair of the dampers, a retest with only SGTS operating showed that the system would develop a reactor building vacuum of 0.3 inch of water, well within the required 0.25 inch specified in TS.

b. Design Background

Secondary containment at Monticello is provided by the reactor building. The SGTS is provided to exhaust the reactor building atmosphere to the offgas stack via a filter system when it is necessary to do so. This arrangement is designed to limit ground level releases of radioactive materials in the event of accidental releases inside the reactor building. Each of two trains of SGTS is required to maintain the reactor building at 0.25 inch of water vacuum with respect to atmospheric, under calm wind conditions. This ensures that even with significant wind, on the order of 40 mph, exfiltration from the reactor building will be limited.

Normal reactor building ventilation air exhausts to a reactor building plenum which is a large room attached to the reactor building but outside the secondary containment boundary. This plenum contains a variety of fans including three plenum exhaust fans plus other ventilation equipment.

The plenum exhaust fans are only provided with normal power and cannot be operated under loss-of-offsite-power conditions. When normal power is available, two of these fans run continuously, discharging to the reactor building vent, and maintaining the plenum room at a vacuum of 0.5 inch of water relative to atmospheric. Since the SGTS develops less than 0.5 inch of water vacuum in the reactor building (actually measured at 0.3 inch), it follows that openings between reactor building and plenum will result in air flow toward the plenum even with SGTS operating. This flow of reactor building air which is not filtered, as is SGTS flow, and which is discharged out the reactor building vent rather than the offgas stack is referred to as "bypass flow." As noted above, the as-found bypass flow was measured at 2600 cfm.

c. Event Evaluation

Since plant startup, Monticello has tested the SGTS with the reactor building plenum exhaust fans operating. Therefore, the true performance of SGTS and the condition of secondary containment may have been masked during this entire time. On October 14, when SGTS was tested without the plenum exhaust fans operating, inadequate vacuum (0.1 inch) was drawn indicating excessive leakage into the reactor building and proving that this masking has been taking place. The licensee also measured the as-found bypass flow (2600 cfm) on which offsite dose calculations were based. Discussion of the various dose calculations performed by General Electric Co. for the licensee follows.

Dose calculations were performed for the two design basis accidents for which credit for SGTS is assumed in the USAR; the Loss of Coolant Accident (LOCA) and the Refueling Accident (REFA). Further, each accident dose was computed for the source term discussed in the USAR and for the source term from Regulatory Guide 1.3 (R.G. 1.3). An additional breakdown was made so doses could be computed assuming that bypass flow was present and also assuming that SGTS and secondary containment did not exist. This gave a total of eight different cases for which doses were computed.

For these accidents, the calculations showed that using the USAR source term assumptions, doses at the Exclusion Area Boundary, in the Low Population Zone, and in the control room, all would be within regulatory guidelines. However, using R.G. 1.3 source term assumptions, the inhalation doses at all three locations would be excessive for the LOCA as would the Exclusion Area Boundary inhalation dose for the REFA.

Further calculations were made to estimate how long after an accident the plenum exhaust fans could be left running without exceeding regulatory dose guidelines assuming the more restrictive source term from R.G. 1.3 and 2600 cfm bypass flow. These calculations by General Electric showed that the fans could remain running for at least 45 minutes following a LOCA. (Calculations for REFA are underway. No fuel movements will be permitted until they are complete.) Based on these results, the licensee decided that manual actions to turn off the plenum exhaust fans after a LOCA were an acceptable short-term fix to the question. A method was developed, tested, and proceduralized to accomplish this.

e. Corrective Actions (See LER 263/89029)

Summary of Corrective Actions Taken:

- (1) All work requiring secondary containment integrity was stopped immediately upon identification of the concern.
- (2) The Secondary Containment Capability Test was changed to require securing the Reactor Building Plenum Exhaust Fans during the test.
- (3) All Secondary Containment Isolation dampers were inspected; six sets of dampers were repaired.
- (4) Access plates were installed in ventilation ducts to permit inspection of damper vanes.
- (5) The threshold weatherstrip gasket material for Reactor Building Railway Airlock doors was replaced.
- (6) After all inspections and repairs were completed, the revised Secondary Containment Capability Test was performed satisfactorily.

- (7) Operating procedures were revised to require tripping the Reactor Building Plenum Exhaust Fans within 45 minutes of any event that requires initiation of Standby Gas Treatment System for radioactive releases from within secondary containment.

Summary of Corrective Actions to be Taken:

- (1) Corrective maintenance testing procedures will be standardized to assure that secondary containment isolation dampers are fully functional. Procedures will be prepared, reviewed and approved by March 1, 1990.
- (2) Preventive maintenance procedures will be written to require inspection of material condition of secondary containment isolation dampers and to require corrective maintenance as degradation is discovered. Procedures will be prepared, reviewed and approved by December 31, 1990.
- (3) Preventive maintenance procedures will be written to require inspection of the material condition of secondary containment airlock doors and to require corrective maintenance as degradation is discovered. Procedures will be prepared, reviewed and approved by December 31, 1990.
- (4) Design changes are being considered to improve the Reactor Building to Reactor Building Plenum boundary integrity and to reduce bypass flow during secondary containment isolation conditions. This review will be complete by December 31, 1990.
- (5) All Technical Specification required surveillance tests will be reviewed to ensure that performance of Safety Related equipment is not being enhanced by the operation of Non-Safety Related equipment. Tests will be reviewed by June 1, 1990.
- (6) The design basis of secondary containment and Standby Gas Treatment systems will be reviewed as part of the licensee's configuration management program on an expedited basis. This review will be completed by December 1990.

3. Exit Interview

The inspectors met with D. Antony, Plant Manager, on November 27, 1989, to discuss the scope and findings of the inspection. In addition, the inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents or processes as proprietary.