

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/83-01(DPRP)

Docket No. 50-263

License No. DPR-22

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

Facility Name: Monticello Nuclear Generating Plant

Inspection At: Monticello Site, Monticello, MN

Enforcement Conference At: U.S. NRC Region III Office, Glen Ellyn, IL

Inspection Conducted: January 10 through February 15, 1983

Enforcement Conference Conducted: February 18, 1983

Inspectors: *J. H. Brown*
J. H. Brown

4-8-83

J. A. Grobe
J. A. Grobe

4-8-83

Approved By: *R. D. Walker*
R. D. Walker, Chief
Reactor Projects Section 2C

4-8-83

Inspection and Enforcement Conference Summary

Inspection on January 10 through February 15, 1983 and Enforcement Conference on February 18, 1983 (Report No. 50-263/83-01(DPRP))

Areas Inspected: Special, unannounced inspection by resident and region based inspectors of a licensee event involving breach of primary containment. The inspection involved a total of 62 inspector-hours onsite by two NRC inspectors including four inspector-hours onsite during off-shifts. The enforcement conference involved a total of 16 hours by eight NRC Region III personnel.

Results: Of the one area inspected, four items of noncompliance were identified (failure to maintain primary containment integrity - Paragraph 2; failure to follow work request authorization procedure - Paragraph 2; failure to follow equipment control procedure - Paragraph 2; and failure to perform local leak rate testing using an approved procedure - Paragraph 2).

DETAILS

1. Persons Contacted

Northern States Power Company

a. Monticello Nuclear Generating Plant

- +*W. Shamlu, Plant Manager
- *M. Clarity, Superintendent, Engineering and Radiation Protection
- R. Scheinost, Superintendent, Quality Engineering
- S. Pearson, Superintendent, Operations
- B. Day, Superintendent, Nuclear Technical Services
- *S. Hammer, Nuclear Technical Services Engineer
- A. Wojchowski, Associate Production Engineer
- F. Schober, Plant Scheduler Administrator
- E. Reilly, Scheduler Coordinator
- R. Mielke, Shift Supervisor
- C. Neirode, Associate Production Engineer
- M. Onnen, Site Superintendent
- M. Lechner, Site Superintendent

b. Corporate Personnel

- +D. McCarthy, Chief Executive Officer
- +D. Gilberts, Senior Vice President, Power Supply
- +C. Larson, Director, Nuclear Generation
- +L. Eliason, General Manager, Nuclear Plants
- F. Tierney, General Manager, Nuclear Engineering and Construction
- +D. Musolf, Manager, Nuclear Support Services

*Indicates those persons present at the exit interview on January 18, 1983.

+Indicates those persons present at the Enforcement Conference on February 18, 1983.

2. Licensee Event Report Review

(Closed) LER 50-263/83-01: Combustible Gas Control System (CGCS) return line containment isolation valve found open and system vented. At 1:40 p.m. on January 9, 1983, the Senior Resident Inspector (SRI) was informed that an open flow path was discovered between the pressure suppression chamber free volume (primary containment) and the reactor building (secondary containment). At the time of the discovery, January 8, 1983, at 1:00 p.m., the reactor was in cold shutdown. The licensee subsequently reported the event via the ENS telephone.

a. Circumstances Surrounding the Breach of Primary Containment

This event was discovered by the system operating engineer during a tour of the reactor building. The engineer observed the pipe

cap missing from the local leak rate test (LLRT) line located between the inboard and outboard containment isolation valves for the CGCS west return line. The engineer obtained a pipe cap and, when attempting to install it, noted gas flow out of the test line. He then checked the containment isolation valves and LLRT line isolation valves and found that they were in the following positions:

<u>Valve No.</u>	<u>Function</u>	<u>Position</u>
A0-7424B	CGCS West Return Line 6" Inboard Containment Isolation Valve	25% Open
A0-7425B	CGCS West Return Line 6" Outboard Containment Isolation Valve	Fully Closed
CGC-4-2	LLRT Line 3/4" Inboard Isolation Valve	50% Open
CGC-5-2	LLRT Line 3/4" Outboard Isolation Valve	Fully Open

The containment isolation valves were chained and locked in those positions. The reactor was in cold shutdown and primary containment integrity was not required at the time of the discovery, so the system operating engineer attempted to determine the as-found leakage rate using the normal LLRT procedure. This attempt was unsuccessful; the leak rate was too high to quantify utilizing that procedure. The engineer obtained a Work Request Authorization (WRA No. 83-67) to have the inboard containment isolation valve closed. The valve was unlocked and closed and a successful LLRT was performed. Following the leak rate test, the inboard isolation valve was locked in the closed position and tagged to prevent inadvertent operation opening the valve. The LLRT line isolation valves were then closed, the outboard valve was tagged to prevent inadvertent opening of the valve and a pipe cap was installed on the test line.

These containment isolation valves and LLRT line isolation valves were installed as part of Design Change No. 81Z076 for the CGCS during an outage which began in September 1982. On October 6, 1982, WRA No. 82-8126 was assigned to a contractor to perform overpressure testing and 10 CFR Part 50, Appendix J, required leak rate testing of the CGCS west return line containment isolation valves and piping connected to the pressure suppression chamber in accordance with an Operations Committee approved procedure. That procedure was not prepared by the station under its Quality Assurance (QA) program, but was prepared by the corporate Nuclear Engineering and Construction (NE&C) department. The NE&C QA program is not as comprehensive as the station QA program and NE&C test procedures do not require management review and approval of the test results prior to completion of the test. During the performance of that test, the contractor made unauthorized changes to the procedure and only conducted the overpressurization test of the piping and welds associated with that containment penetration. To satisfy the technical specification and 10 CFR 50, Appendix J, LLRT requirements for those valves, credit was taken for an unauthorized test that was performed without an approved Procedure on September 26, 1982. (The testing procedure utilized

for that LLRT appeared to be adequate and the results technically acceptable.) However, by not following and completing the approved procedure, the contractor left the valves in the positions as found on January 8, 1983 and did not contact the station operations department to secure the valves in the closed position as required in the testing procedure. The completion of WRA 82-8126 was approved by the Northern States Power Company (NSP) corporate construction supervisor and quality assurance engineer following discussions with the contractor Quality Control Supervisor. Those approvals were not based on documentation review or physical examination. The duty shift supervisor completed WRA 82-8126 by certifying that all followup actions had been completed while it was indicated above his signature that system lineup was to be verified on unit startup. No station procedures were written or revised to accomplish this pre-startup system lineup verification.

On December 2, 1982, WRA No. 82-10023 was initiated and assigned to the same contractor. That work authorization was issued to install chains and locks on the four CGCS return line containment isolation valves. In addition, tags were to be placed on the valves to assure that the valves remained closed. The chains and locks were installed on the west return line isolation valves securing them in the positions as found on January 8, 1983 (out-board isolation valve closed, inboard isolation valve approximately twenty-five percent open). An operator was then dispatched with instructions from the duty shift supervisor to place tags on the "Drywell Recombiner Outlet" valves. Those tags were actually placed on the containment isolation valves for the CGCS supply line from the drywell; not the containment isolation valves for the CGCS return line to the pressure suppression chamber, as intended. The completion of WRA 82-10023 was approved by the NSP corporate construction supervisor and quality assurance engineer following discussions with the contractor Quality Control Supervisor. Again, those approvals were not based on work review or physical examination. The completion of all followup actions was certified by the duty shift supervisor, while independent tag placement verification was not accomplished in accordance with station procedures and the tags were placed on the wrong valves.

b. Summary of Work Request Authorization Procedure Violations

The licensee did not adhere to Administrative Control Directive 4 ACD-3.6, "Work Request Authorization" in that:

- (i) Unapproved changes were made to the leak rate test procedure required to be performed under WRA 82-8126.
- (ii) The job supervisor for WRA 82-8126 signed the "Work Completed and Released By" blank on the WRA indicating that the work was acceptably completed while the local leak rate test had not been performed, facility operators had not been contacted to align and

tag the containment isolation valves, and unapproved procedure changes had been made.

- (iii) The Quality Control Supervisor and Quality Assurance Engineer signed the "Quality Assurance Requirements Satisfied" blank on WRA 82-8126 while the test procedure had not been completed and the "Quality Control Supervisor Review" blank on the procedure had not been signed.
- (iv) The shift supervisor had not verified and documented that adequate equipment alignment verification following completion of work on WRA 82-8126 could be made through completion of appropriate system and valve checklists and no checklist was listed in the "System Alignment" blank on the WRA.

These findings represent noncompliance with the requirements to adhere to procedures in 10 CFR Part 50, Appendix B, Criterion V and Northern States Power Company Operational Quality Assurance Plan (263/83-01-01).

c. Summary of Equipment Control Procedure Violations

The licensee did not adhere to Administrative Control Directive 4 ACD-4.5, "Equipment Control Procedure," in that:

- (i) The valve identification section of the "Secure" cards that were to be placed on the CGCS return line torus penetration isolation valves in accordance with WRA 82-10023 did not include valve types or numbers and the valve description, "Drywell Recombiner Outlet", was misleading. Those tags were placed on the CGCS supply line drywell penetration isolation valves.
- (ii) Independent verification of the installation of those "Secure" cards was not performed or documented.

These findings represent noncompliance with the requirements in 10 CFR Part 50, Appendix B, Criterion XIV to provide indication of the operating status of safety related equipment to prevent inadvertent operation (263/83-01-02).

d. Summary of Violation of Technical Specification Requirements to Conduct Testing of Safety Related Equipment with Approved Procedures

The licensee conducted leak rate testing of the CGCS west return line torus penetration isolation valves without an approved procedure. This represents noncompliance with the requirements in Technical Specification 6.5.C.1 to conduct testing of safety related equipment with approved procedures (263/83-01-03).

e. Summary of Violation of Technical Specification Requirements to Maintain Primary Containment Integrity During Operations

All of the breakdowns in the management controls over safety related work resulted in the licensee operating for thirteen days with the CGCS west return line torus penetration inboard isolation valve open and the associated local leak rate test line isolation valves open creating a leakage pathway from the torus free volume (primary containment) to the reactor building (secondary containment). The leakage rate from this open pathway exceeded the Technical Specification leak rate limits. This represents noncompliance with the Technical Specification 3.7.A.2 and 1.0.P requirement to maintain primary containment integrity during operations (263/83-01-04).

f. Summary of Licensee Corrective Actions Completed

Following this event, the licensee initiated comprehensive actions to correct and prevent recurrence of the violations. These actions, as identified below, were completed during the period January 8 through February 17, 1983:

- (i) Visual valve position verification was performed of all accessible LLRT line isolation valves and primary containment isolation valves.
- (ii) The valve pre-start checklists were revised to include independent position verification for LLRT line isolation valves.
- (iii) A valve pre-start checklist was prepared for the CGCS.
- (iv) The master valve checklist was revised to include the CGCS checklist.
- (v) A review and revision of LLRT procedures was performed to ensure that they include position verification of appropriate valves.
- (vi) A review of all current equipment control tags was performed to ensure proper placement and control.
- (vii) The equipment control procedure was revised to require that operations personnel position valves, lock valves, and install tags on equipment that could affect facility operations.
- (viii) A review and revision of the design change process was made to ensure that appropriate operating procedures are written or revised, approved and distributed prior to the time they are operationally required.
- (ix) A review of facility administrative controls was performed with construction management.

- (x) Shift Supervisors and Site Superintendents were retrained on equipment alignment verification and equipment tagging controls.
- (xi) A revision of the equipment control procedure was made to require more specific equipment identification on tags.

g. Summary of Licensee Corrective Actions Initiated but not Completed

In addition to those completed actions, the following tasks have been initiated:

- (i) A program is being developed to improve the interface between plant modifications activities and facility operations.
- (ii) A Quality Assurance audit has been initiated to ensure no other programmatic breakdowns occurred during the control of outage work.
- (iii) Procedures are being developed for physical valve position verification methodologies.
- (iv) Operator retraining has been initiated on completion and installation of equipment control tags.
- (v) A corporate task force has been initiated to ensure that all applicable actions to prevent recurrence of plant operations/plant modifications interface problems have been identified and resolved.
- (vi) Northern States Power Company has joined with the Institute of Nuclear Power Operations to consider this event with other events involving human error in an effort to develop generic industry recommendations for reducing human errors.

h. Summary of Potential Offsite Dose Estimates

The licensee also performed calculations to evaluate the significance of this breach of primary containment. The licensee concluded that the maximum allowable leakage rate permitted by Technical Specifications (1.2 weight percent per day at 41 psig) was exceeded. However, using assumptions similar to those specified in Regulatory Guide 1.3, Revision 2, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Boiling Water Reactors," the licensee calculated that in the event of a loss of coolant accident, off-site doses resulting from that containment penetration would not have exceeded the 10 CFR Part 100 limits. The calculated doses at the exclusion area boundary during the first two hours following

a postulated accident would have been 0.239 rem to the whole body and 18 rem to the thyroid. During the first thirty days following that postulated accident, those doses become 0.301 rem to the whole body and 125 rem to the thyroid.

3. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on January 18, 1983. The inspectors summarized the findings of the inspection.

4. Enforcement Conference

The Region III staff met with licensee representatives (denoted in Paragraph 1) for an Enforcement Conference on February 18, 1983. The purpose of the conference was to verify that the inspection findings were correct and determine what corrective actions had been planned or were completed.

The staff provided a discussion of the facts surrounding the breach of primary containment integrity which occurred during the period October 6, 1982 through January 8, 1983. The staff categorized those findings as violations of the Technical Specification Limiting Condition for Operation requiring primary containment integrity, the Quality Assurance program requiring implementation of the work control and equipment control procedures, and the Technical Specification requiring written procedures covering containment local leak rate testing.

The licensee responded by stating that the facts were correct as presented by the Region III staff and provided a discussion of their proposed and completed corrective actions.