

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-282/92008 (DRP); 50-306/92008 (DRP)

Docket Nos. 50-282; 50-306

License Nos. DPR-42; DPR-60

Licensee: Northern States Power Company
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Minneapolis, MN 55401

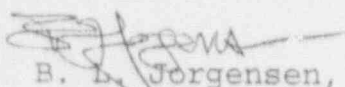
Facility Name: Prairie Island Nuclear Generating Plant

Inspection At: Prairie Island Site, Red Wing, Minnesota

Inspection Conducted: April 14 through May 26, 1992

Inspectors: M. L. Dapas

D. C. Kosloff

Approved By:  B. L. Jorgensen, Chief
Reactor Projects Section 2A

4/11/92
Date

Inspection Summary

Inspection on April 14, through May 26, 1992

(Reports No. 50-282/92008 (DRP); 50-306/92008 (DRP))

Areas: Routine unannounced inspection by resident inspectors of operational safety including onsite followup of events, maintenance, surveillance, radiological controls, licensee event reports, licensee action on previous inspection findings, and allegation followup.

Results: One non-cited violation of NRC requirements and one deviation were identified in the areas inspected.

Operations:

No new strengths or weaknesses were identified. However, the inspectors considered the decision to declare the D2 emergency diesel generator inoperable, as a result of a lubricating oil leak, a positive example of conservative operating philosophy (paragraph 4).

Maintenance and Surveillance:

No new strengths or weaknesses were identified. One non-cited violation was identified in the surveillance area (paragraph 5).

Engineering/Technical Support:

No new strengths or weaknesses were identified. System engineering support of plant activities continued to be strong.

Radiation Protection:

No new strengths or weaknesses were identified. The licensee identified and repaired a leak in the liquid radioactive waste effluent line (paragraph 8).

Safety Assessment/Quality Verification:

Performance in this area was generally a strength. However, a weakness was identified with the performance of random QC inspection related to work in progress for the Station Blackout/Electrical Safeguards Upgrade project (paragraph 10).

No new strengths were identified.

DETAILS

1. Persons Contacted

E. Watzl, General Manager, Prairie Island
*M. Sellman, Plant Manager
*K. Albrecht, General Superintendent, Engineering
*M. Wadley, General Superintendent, Operations
*G. Lenertz, General Superintendent, Maintenance
*R. Lindsey, Assistant to the Plant Manager
*D. Schuelke, General Superintendent, Radiation Protection
and Chemistry
G. Miller, Superintendent, Technical Support
*M. Reddemann, General Superintendent, Electrical and
Instrumentation Systems
*M. Klee, Superintendent, Quality Engineering
A. Hunstad, Staff Engineer
J. Hill, Superintendent, Instrumentation and Controls
Systems
J. Maki, Superintendent, Electrical Systems
*G. Rolfson, General Superintendent, Engineering, Nuclear
Projects Department
*P. Ryan, Shift Manager
*D. Benner, Shift Supervisor
*T. Parker, Manager, Nuclear Support Services
*J. McDonald, Superintendent Site Quality Assurance

*Denotes those present at the management interview of
June 1, 1992.

2. Operational Safety Verification (71707, 71710, 92701, 93702, 42700)

Both units operated at full power throughout the inspection
period except as noted below.

On May 16, 1992, at 1:00 a.m. Unit 1 power was reduced to
about 45 percent to conduct valve testing and clean the main
condenser. During the power reduction the inspectors
observed that the licensee could not close the normal supply
breaker for the backup pressurizer heaters. The heaters
were energized using the alternate supply breaker. Breaker
troubleshooting is discussed in paragraph 4. On May 17,
1992, the unit was restored to full power operation. During
the return to full power the inspectors observed no abnormal
conditions.

The inspectors observed control room operations, reviewed
applicable logs, conducted discussions with control room
operators, and observed shift turnovers. The inspectors
verified operability of selected emergency systems, reviewed

equipment control records, verified the proper return to service of affected components, conducted tours of the auxiliary building, turbine building and external areas of the plant to observe plant equipment conditions, including potential fire hazards, and to verify that maintenance work requests had been initiated for equipment in need of repairs.

No violations, deviations, unresolved or open items were identified.

3. Licensee Action on Previous Inspection Findings (92701, 92702)

(Closed) Open Item (50-282/90015-01; 50-306/90016-01 (DRS)):
Reanalyze small break LOCA to address three inconsistencies found in the current analysis.

The licensee submitted the new analysis to the NRC as an attachment to a letter dated March 3, 1992. The inspectors reviewed the licensee's reanalysis and considered it acceptable, subject to additional technical review. The analysis showed a peak cladding temperature of 1077 degrees F compared to the safety limit of 10 CFR 50.46 of 2200 degrees F. The new analysis will be included in the next revision of the Updated Safety Analysis Report.

No violations, deviations, unresolved or open items were identified.

4. Maintenance Observation (71707, 37700, 62703, 42700)

Routine preventive and corrective maintenance activities were observed to ascertain that they were conducted in accordance with approved procedures, regulatory guides, industry codes or standards, and in conformance with Technical Specifications. The following items were considered during this review: adherence to limiting conditions for operation while components or systems were removed from service, approvals were obtained prior to initiating the work, activities were accomplished using approved procedures and were inspected as applicable, functional testing and/or calibrations were performed prior to returning components or systems to service, quality control records were maintained, activities were accomplished by qualified personnel, radiological controls were implemented, and fire prevention controls were implemented.

Portions of the following maintenance activities were observed or reviewed during the inspection period:

- a. Troubleshooting and repair of component cooling water (CCW) pump breaker. During the previous inspection period the 4160 volt ABB breaker for CCW Pump No. 22 did not close on demand. The licensee performed preventive maintenance (PM) on the breaker using a PM revised for this work. The PM identified a breaker control device that exhibited varying contact resistance. The control device was replaced and test cycling of the breaker was satisfactory. The licensee had no record of a similar failure at the plant. The licensee's review of the industry component failure database revealed that the control device was involved in about half of the failures of similar breakers. The licensee considers the failure rate for the ITE and ABB breakers, as reported in NPRDS, to be extremely low. The special PM, which checks the control device, will be used to develop a new PM to be used for all future PM of 4160 volt ABB and ITE breakers. The inspectors will continue to review the performance and maintenance of 4160 volt breakers in future inspections.

- b. Troubleshooting and repair of normal power supply breaker (480 volt) for the Unit 1 backup pressurizer heaters. The licensee identified a broken lug on a jumper wire in the breaker that prevented the closing spring release solenoid from energizing. The licensee could not identify any mechanism that would have broken the Thomas and Betts brand lug. The licensee replaced the jumper wire with a new jumper that has more sturdy Burndy lugs. The licensee had no record of a similar failure at the plant. The licensee's review of the industry database did not reveal any record of similar failures. Past licensee maintenance histories did not record details of how jumper wires were checked. The licensee is planning to provide direction on recording such information during future breaker maintenance. The inspectors will continue to review the performance and maintenance of 480 volt breakers in future inspections.

- c. Repair of the No. 11 safety injection (SI) recirculation pump discharge line. The licensee identified a leak in a section of the SI recirculation pump discharge piping. The licensee performed non-destructive dye penetrant testing of the subject pipe. The inspectors observed the results of this testing which revealed several crack indications. The licensee suspects the cracks resulted from intergranular stress corrosion cracking due to boric acid concentration. The licensee began replacement of the section of piping which was cracked.

- d. Repair of lubricating oil leak from Emergency Diesel Generator (EDG) No. D2. The licensee identified a leak from the lubricating oil cooler while performing a surveillance test of the EDG. The licensee declared the EDG inoperable because there was not enough lubricating oil on site to make up for the leak for long-term (seven days) EDG operation. This decision reflected a conservative operating philosophy which has previously been recognized as a strength. The oil cooler packing compression ring was resealed using thinner packing and the surveillance was then successfully completed. The inspectors will observe future operation of the EDG's to verify that the new packing installation method completely corrected the problem.
- e. Installation of temporary liquid effluent line.
- f. Modification of intrusion alarm system.
- g. Installation of new emergency diesel generators.

No violations, deviations, unresolved or open items were identified.

5. Surveillance (61726, 71707, 42700)

The inspectors reviewed Technical Specification required surveillance testing as described below, and verified that testing was performed in accordance with adequate procedures, test instrumentation was calibrated, and limiting conditions for operation were met. The inspectors further verified that the removal and restoration of affected components were properly accomplished, test results conformed with Technical Specifications and procedure requirements, test results were reviewed by personnel other than the individual directing the test, and deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

Portions of the following test activities were observed or reviewed:

- a. SP 1097, Quarterly Battery Check
- b. SP 1093, D1 Diesel Generator Slow Start and Train A Auto Load Sequencer Test
- c. SP 1035, Reactor Protection System Logic Test

No violations, deviations, unresolved or open items were identified.

6. Radiological Controls (71707, 92701, 37700)

On May 1, 1992, the licensee notified the inspectors that it had detected elevated levels of tritium in an onsite well. The onsite well is used to measure ground water elevation and was not routinely tested for tritium. Tritium concentrations were 1,300-1,500 picocuries per liter, compared to 300-400 picocuries per liter in other onsite wells. As a result of the higher than normal tritium level detected in the onsite well, the licensee hydrostatically tested the liquid radioactive waste effluent line between the discharge tanks standpipe and the discharge gates at the circulating water discharge canal. Test results indicated a leak of about five gallons per minute at a pressure of about ten psig. The licensee installed and tested a temporary hose from a spool piece where the discharge pipe exits the Auxiliary Building to the discharge gate structure. The inspectors observed maintenance activities related to this temporary repair. Permanent corrective action will be reviewed as part of the NRC's normal effluent monitoring inspection program.

7. Safety Assessment/Quality Verification (92701, 40500)

The inspectors attended a meeting relating to quality control (QC) inspection activities associated with the Station Blackout/Electrical Safeguards Upgrade (SBO/ESU) project and reviewed the results of quality assurance (QA) surveillance that addressed the SBO/ESU QC function. A weakness was identified with random QC inspection of work in progress for the SBO/ESU project. A program for performing random QC inspection, of attributes related to work in progress that cannot be verified at final inspection, was not being implemented by the licensee. The licensee's current QC inspection program is based upon 100 percent final inspection of pre-identified critical attributes. As a result of this QA finding, the licensee is implementing a monthly surveillance program to assess QC activities related to work in progress. The inspectors discussed the licensee's planned corrective action with the superintendent of the quality services department. The effectiveness of the licensee's corrective action will be monitored during ongoing inspection activities associated with the SBO/ESU project.

8. Licensee Event Report (LER) Followup (92700, 92701)

- a. (Closed) Licensee Event Report 50-282/92004: Failure to Perform a Full Flow Test of Turbine-Driven Auxiliary Feedwater (AFW) Pumps Due to Personnel Error.

During a review of Technical Specification surveillance requirements, licensee system engineers realized that, due to a personnel error, existing procedures did not ensure full flow testing of the turbine-driven (AFW) pumps at the required frequency. Further review revealed that there had been four historic occasions when the required surveillance interval had been exceeded. During each of the excessive test intervals there had been plant trips followed by operation of the turbine-driven AFW pumps. Records available for plant trips in November and December of 1990 confirmed that the turbine-driven AFW pumps had met the full flow surveillance testing requirements following those plant trips. However, on two occasions in 1989 and 1990, records of AFW flow following reactor trips were no longer available. No. 11 AFW pump was required to be tested by December 28, 1989, but it was not tested until January 17, 1990. This was an example of a violation of Technical Specification 4.8.A.2. The test conducted on January 17, 1990, indicated that the pump was operable, so this was not a significant violation. No. 22 AFW pump was required to be tested by July 29, 1990, but it was not tested until September 10, 1990. This was another example of a violation of Technical Specification 4.8.A.2. The test conducted on September 10, 1990, indicated that the pump was operable, so this likewise was not a significant violation.

In January 1992, before the licensee identified this violation, it had submitted a license amendment request to change the frequency of the full flow test for the turbine-driven AFW pumps from annual to once each refueling cycle. The motor-driven AFW pumps have always had a refueling cycle frequency for this test. Until recently a refueling frequency test was performed at essentially the same interval as an annual test because the operating portion of each refueling cycle was about one year long. The license amendment is still in review. The licensee plans to conduct the test of the AFW pump annually if the license amendment is not approved before the test is next due.

This violation will not be subject to enforcement action because the licensee's efforts in identifying and correcting the violation met the criteria specified in Section VII.B of the "General Statement of Policy and Procedures for NRC Enforcement Actions," (Enforcement Policy, 10 CFR Part 2, Appendix C (1992)). This LER is closed.

The licensee completed a review of AFW testing as corrective action. The licensee identified three

additional tests that were not being done or were being done at the wrong frequency. This is an unresolved item (282/92008-01(DRP)) pending completion of the inspectors review of the licensee's corrective action and the significance of the testing deficiencies.

- b. (Closed) Licensee Event Report 50-282/92005: Design Basis Reconstitution Effort Identified a Condition Outside 10 CFR 50 Appendix R Requirements.

The licensee identified a shutdown relay circuit for the No. 12 Diesel-Driven Cooling Water Pump that was not protected from a "hot short" condition postulated to occur during a control room fire. The licensee's immediate corrective actions were to revise the Control Room Evacuation Procedure to identify and direct removal of fuses in the circuit and to place a fuse puller at the appropriate DC panel. The inspectors verified that the procedure change had been made and that the fuse puller was in place. There is additional discussion of Appendix R concerns in paragraph 6.a. of Inspection Reports No. 50-282/92004; 50-306/92004. Followup of the licensee's immediate and long term corrective actions will be completed by the closeout of open item 282/92004-01(DRP), 306/92004-01(DRP). This LER is closed.

- c. (Closed) Licensee Event Report 50-282/92006: Condition Found Outside Appendix R Design Basis; Reactor Coolant System (RCS) Head Vent Solenoid Valve.

The licensee identified circuits for the RCS Head Vent Solenoid Valves that were not protected from "hot short" conditions postulated to occur during a control room fire. The licensee's immediate corrective actions were to revise the Control Room Evacuation Procedure to identify and direct removal of fuses in the circuits and to place fuse pullers at the appropriate DC panel. The inspectors verified that the procedure change had been made and that the fuse pullers were in place. There is additional discussion of Appendix R concerns in paragraph 6.a. of Inspection Reports No. 50-282/92004; 50-306/92004. Followup of the licensee's immediate and long term corrective actions will be completed by the closeout of open item 282/92004-01(DRP), 306/92004-01(DRP). This LER is closed.

One non-cited violation and one unresolved item were identified. No deviations or open items were identified.

9. (Closed) AMS No. RIII-92-A-0027

The inspectors performed a review to verify the accuracy of information in the licensee's response to AMS RIII-92-A-0027. This involved concerns with control room habitability as a result of a main steam pipe rupture in the Auxiliary Building, the ability to inspect encapsulated main steam piping in the Auxiliary Building, improper installation of the chemistry room ventilation system, and the improper wiring open of visible ventilation dampers in the battery room walls. These concerns were based on observations which had been made about 18 years ago.

The inspectors reviewed Appendix I of the Updated Safety Analysis Report (USAR) which addresses high energy line breaks (HELB) outside of the containment structure. Appendix I establishes the design basis for encapsulation sleeves associated with high energy piping. The sleeves are designed to limit the flow of steam or water from a pipe break to preclude compartment pressurization beyond the allowable structure design limits. NRC acceptance of the licensee's evaluation of HELB outside of containment was documented in Supplement No. 1 to the operating license Safety Evaluation Report (SER) dated March 21, 1973. The inspectors verified by observation and review of system drawings that the Auxiliary Building ventilation system was configured with redundant steam exclusion dampers designed to automatically isolate the control room from the Auxiliary Building on high temperature.

The inspectors also reviewed the inservice inspection (ISI) requirements for high energy piping welds in the Auxiliary Building. The licensee is not required to inspect welds on encapsulated piping. The licensee requested relief from Section XI ASME Code requirements for ISI of selected welds on encapsulated piping due to their inaccessibility. The NRC granted relief in the SER related to amendment No. 43 to facility operating license No. DPR-42 and amendment No. 37 to facility operating license No. DPR-60. However, the licensee is required to perform ISI on non-encapsulated piping welds. During the course of its investigation of the concerns, the licensee identified a commitment in the FSAR to perform periodic inservice examination, in accordance with the ASME Section XI, Code Class II, Table ISC-261(b), Winter 1972 Addenda, of 100 percent of the non-encapsulated piping welds in piping runs traversing the Auxiliary Building. The inspectors verified that the scope of ISI for high energy piping in the Auxiliary Building is limited to examination of approximately 25 percent of the total number of subject welds during each 10 year inspection interval. This limited scope of inspection is considered a deviation

from the commitment in the FSAR to perform 100 percent weld inspection (Deviation 282/92008-02(DRP)). Upon identification of the deviation between FSAR commitments and actual implementation of the ISI program, the licensee performed a 10 CFR 50.59 safety evaluation to address operability concerns. The inspectors reviewed this evaluation and concluded that there was no immediate operability concern.

The inspectors concluded that the concern for control room habitability as a result of a main steam pipe rupture was not substantiated.

The inspectors verified the chemistry room ventilation system configuration and associated automatic isolation features by observation and review of selected system drawings. The chemistry room ventilation system is not a safety-related system. Pressure in the chemistry room is maintained slightly higher than Auxiliary Building pressure. A damper in the recirculation line around one of the supply fans reposition as a function of chemistry room and Auxiliary Building differential pressure. The chemistry room ventilation system supply dampers do not close on high pressure and the exhaust dampers do not close on high temperature. The supply fans draw air from the Turbine Building and discharge into the chemistry rooms while the exhaust fans draw air from the rooms through hooded sample sinks and direct the flow through particulate, absolute, and charcoal filters to the Unit 2 Auxiliary Building exhaust stack. The supply and exhaust fans are started manually using local pushbuttons. When each fan is started, its associated dampers open automatically. Similarly, when each fan is stopped, its associated dampers close automatically. The supply and exhaust dampers open and close only on signals from their associated fans. There is no steam exclusion system associated with the chemistry room ventilation system. The operation of the chemistry room ventilation system has no effect on safety-related equipment or systems.

The inspectors concluded that the concern for improper installation of the chemistry room ventilation system was not substantiated.

The ventilation dampers above the doors to the battery rooms were inspected. These were the only ventilation dampers visible in the battery rooms. The inspectors observed that the dampers were latched closed with a placard attached to each latch stating, "Damper closed because of environmental concerns. Contact EQ Coordinator or Design Standards Group before opening." An unused chain with fusible links was attached to each damper. This observation was consistent

with the inspectors' past regular observations of the condition of the dampers.

The inspectors concluded that the concern about the battery room ventilation dampers being improperly wired open was not substantiated.

One deviation was identified; no other violations, deviations, unresolved or open items were identified.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. An unresolved item is discussed in paragraph 8.

11. Management Interview (71707)

The inspectors met with the licensee representatives denoted in paragraph 1 after the conclusion of the report period on June 1, 1992. The inspectors discussed the purpose and scope of the inspection and the findings. The inspectors also discussed the likely information content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any documents or processes as proprietary.