

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-282/92015(DRP); 50-306/92015(DRP)

Docket Nos. 50-282;  
50-306

License Nos. DPR-42;  
DPR-60

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

Facility Name: Prairie Island Nuclear Generating Plant

Inspection At: Prairie Island Site, Red Wing, MN

Inspection Conducted: July 21 through September 14, 1992

Inspectors: M. L. Dapas  
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10-02-92  
Date

Inspection Summary

Inspection on July 21 through September 14, 1992 (Reports No. 50-282/92015(DRP); 50-306/92015(DRP))

Areas Inspected: Routine unannounced inspection by resident and regional inspectors of operational safety including onsite followup of events; Temporary Instruction 2515/115, "Verification of Plant Records;" outage preparation activities; maintenance; surveillance; radiological protection; and engineering and technical support. A routine management meeting was also conducted at the NRC Region III office on August 13, 1992.

Results: No violations of NRC requirements were identified in the areas inspected. Three unresolved items were identified in the area of operations; two involved potential discrepancies in plant records and one involved surveillance testing of electrical equipment. One inspection follow-up item was identified in the area of engineering and technical support relative to inservice testing and inspection. No new strengths or weaknesses were identified in any of the areas inspected.

Operations No new strengths or weaknesses were identified. One unresolved item was identified with the verification of plant records related to vital area checks (paragraph 2.b) and one unresolved item was identified with the

verification of plant records related to inspections of scaffolding (paragraph 2.c). Operators responded well to the identification of missed surveillances which in one case resulted in the request for a temporary waiver of compliance (paragraph 2.a). Application of enforcement policy relating to this issue requires additional NRC review and is identified as an unresolved item. Operators responded well to minor plant transients including a runback on Unit 2 (paragraph 2.d).

Maintenance and Surveillance No new strengths or weaknesses were identified. Two missed surveillances were identified (paragraphs 2.a and 5). The missed surveillances did not result from personnel errors or scheduling deficiencies. Activities in this area were well-organized and technician performance was excellent.

Engineering and Technical Support No new strengths or weaknesses were identified. The inspectors noted the licensee's continuing efforts to improve its operability verification process. This was apparent in the evaluation of inservice inspection and testing deficiencies identified by the licensee during the inspection period (paragraph 7) and in the evaluation of the licensee-identified missed testing of undervoltage relays (paragraph 2.a) and steam exclusion dampers (paragraph 5).

Security No new strengths or weaknesses were identified. The inspectors had no significant findings in this area.

Emergency Preparedness No new strengths or weaknesses were identified. The NRC-evaluated emergency preparedness exercise was conducted during this inspection period and will be discussed in a separate inspection report.

Radiation Protection No new strengths or weaknesses were identified. Personnel radiation exposure remained low and there were few radioactive personnel contaminations. An isolated personnel error resulted in access to a designated high radiation area being not adequately controlled (paragraph 6).

Safety Assessment/Quality Verification No new strengths or weaknesses were identified. Improved operability verification activities, noted in the area of Engineering and Technical Support, were also noted in this functional area (paragraphs 2.a, 5, and 7). Management exhibited strong evaluation skills and a good focus on safety in oversight meetings and management presentations (paragraphs 10 and 11).

## DETAILS

### 1. Persons Contacted

#### Northern States Power Company (NSP)

- \*L. Eliason, Vice President, Nuclear Generation
- \*\*E. Watzl, General Manager, Prairie Island
- # N. Sellman, Plant Manager
- # K. Albrecht, General Superintendent, Engineering
- # M. Wadley, General Superintendent, Operations
- # G. Lewertz, General Superintendent, Maintenance
- \*R. Lindsey, Assistant to the Plant Manager
- \*J. Maurer, Outage Coordinator
- \*D. Schuelke, General Superintendent, Radiation Protection and Chemistry
- # G. Rolfson, General Superintendent Engineering
- # M. Reddemann, General Superintendent, Electrical and Instrumentation Systems
- # A. Hunstad, Staff Engineer
- J. Hill, Superintendent, Instrumentation and Controls Systems
- # J. Maki, Superintendent, Electrical Systems
- # G. Aandahl, Superintendent Design Standards
- \*B. Fraser, Superintendent, Mechanical and Civil Engineering
- G. Miller, Superintendent, Technical Support
- # M. Klee, Superintendent, Quality Engineering
- # L. Anderson, Shift Manager
- \*J. Sorensen, Shift Manager
- # P. Ryan, Shift Manager
- \* T. Asmus, Senior Production Engineer
- \* P. Hellen, Electrical Systems Engineer
- R. Sloss, Electrical Engineer
- # J. McDonald, Power Supply Quality Assurance
- # E. Eckholt, Nuclear Support Services
- # J. Leveille, Nuclear Support Services

#### U. S. Nuclear Regulatory Commission (NRC)

- \*A. B. Davis, Regional Administrator, RIII
- \*E. Greenman, Director, Division of Reactor Projects, RIII
- \*T. Martin, Deputy Director, Division of Reactor Safety, RIII
- \*M. Ring, Chief, Engineering Branch, RIII
- \*W. Shafer, Chief, Projects Branch 2, RIII
- \*B. Jorgensen, Chief, Projects Section 2A, RIII
- \*J. Wilcox, Senior Operations Engineer/Team Leader, NRR
- \*M. Leach, Operations Examiner, RIII
- \*R. Westberg, Team Leader, RIII
- \*R. Gardner, Chief, Plant Systems Section, DRS, RIII
- \*\*E. Schweibinz, Senior Project Engineer, RIII
- # M. Dapas, Senior Resident Inspector, Prairie Island
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- R. Mendez, Reactor Engineer, RIII
- #\*D. Kosloff, Resident Inspector, Prairie Island
- W. Stearns, Resident Inspector, Monticello
- \*J. Neisler, Reactor Inspector, RIII
- \*R. Bywater, Reactor Engineer, RIII
- \*M. Gamberoni, Project Manager, NRR
- \*T. Kozak, Radiation Specialist, RIII

\*Denotes those in attendance at the management meeting on August 13, 1992.

#Denotes those in attendance at the management interview on September 17, 1992.

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

Both units operated at full power except for a short runback and recovery on Unit 2 on September 6, 1992.

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, and 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.

- a. Inoperable Safety Related Bus. The Technical Specifications (TS) require that at least once each 18 months the licensee must simulate a loss-of-offsite power in conjunction with a safety injection (SI) signal and verify de-energization and load shedding of the emergency (safeguards) buses followed by automatic starting and loading of the associated emergency diesel generator (EDG). This surveillance test is referred to as the integrated SI test. The integrated SI test demonstrates that the EDGs will start automatically and provide emergency power to the 4160 VAC safeguards buses in the event of a loss-of-coolant accident coincident with a loss of all other ac power sources. This includes demonstrating proper tripping of motor feeder breakers, main supply and tie breakers (source breakers) on the affected bus, and sequential starting of essential equipment.

Based on a review of NRC Information Notice 92-40, "Inadequate Testing of Emergency Bus Undervoltage Logic Circuitry", and an operating experience assessment of Licensee Event Report (LER) 92-011 for the Kewaunee Nuclear Plant, the licensee identified on July 27, 1992, that the surveillance testing requirements for the integrated SI test were not being satisfied. The licensee was simulating a loss-of-offsite power during its routine (18 month) surveillance test by manually opening the safeguards bus main supply breaker. By using this simulation method, the licensee did

not challenge the undervoltage (UV) logic circuitry to automatically de-energize the safeguards bus in response to a UV condition. The licensee had tested the UV tripping function of the safeguards bus source breakers during alternate outages (vice 18 months) as part of preventive maintenance that was performed on one of two safeguards buses each refueling outage. This post-maintenance test had always shown the UV function to be operable. The UV tripping function of the source breakers for No. 16 Bus (Unit 1, Safeguards) and No. 26 Bus (Unit 2, Safeguards) had last been tested on February 20 and September 20, 1990, respectively. This exceeded the allowed surveillance test interval of 18 months plus 25 percent for No. 16 Bus.

As of July 27, 1992, when the licensee identified that the integrated SI test was not being performed correctly, the surveillance test interval for No. 26 Bus had not been exceeded. However, the licensee noted that this test interval would end in nine days on August 5, 1992. The licensee declared No. 16 Bus inoperable at 4:00 p.m. CDT on July 27, 1992, placing Unit 1 in an eight-hour TS limiting condition for operation. The licensee requested relief via a temporary waiver of compliance (TWOC) to defer TS required safeguards bus testing for both units to the dual-unit outage scheduled for late October 1992. The NRC granted the TWOC at 8:25 p.m. on July 27, 1992, which deferred required testing until issuance of a related emergency TS change. On August 11, 1992, the NRC issued a license amendment providing for a one-time extension of the surveillance test interval for periodic testing of the source breaker UV trip feature of the automatic voltage restoration function of the 4160 VAC safeguards buses. Should either unit enter cold shutdown prior to the dual-unit outage the deferred testing would be required before restart. The licensee is planning to replace the UV relays on both units during the dual-unit outage.

The regulatory significance of the failure to perform bus 16 testing at the specified frequency requires additional NRC review. This is considered an unresolved item, pending review and evaluation of the licensee's corrective actions described in LER 92009 (50-282/92015-01;50-306/92015-01).

b. Verification of Plant Records (Temporary Instruction (TI) 2515/115)

This temporary instruction provided guidance for evaluating the licensee's ability to obtain accurate and complete log readings from either licensed or non-licensed operators.

The inspectors obtained security door transaction records for a representative number of doors to rooms containing safety-related and other important equipment for a representative number of days. The transaction records were compared with operator logs which indicated that readings had been taken in those rooms or that the

rooms had been checked. Room entries were verified for the emergency diesel generator rooms, 4160 VAC bus rooms, 480 VAC bus rooms, screenhouse (intake structure), auxiliary feedwater pump rooms, cable spreading room, and battery rooms. Log takers required to enter those rooms were turbine building non-licensed operators. Records were checked for one day each in March, July and August, 1992. The days were on weekends and entries were checked for all shifts for both units. In all, 130 required room entries involving 14 individual log takers were checked.

The inspectors observed two discrepancies in the required room entries for two bus rooms. The licensee requires these rooms to be checked twice each shift (four times each day) for suspicious activities, unusual equipment behavior, unidentified objects and combustible material. The licensee has a written commitment to the NRC to check these rooms once a day for accumulation of combustible material. No log readings are required to be taken in the bus rooms. The security door transaction records for one day indicated that each bus room had been checked only three times. The inspectors verified with security personnel that there was no known malfunction of the keycard readers for the bus rooms on that day. It appears that one operator missed both rooms on one of his rounds. The room checks were logged on a Turbine Building - Unit 2 Vital Area Check form. This form lists, in a vertical column, each room that is required to be checked. Operators generally placed their initials in the initial block for the first room checked and indicated that they had completed their rounds by drawing a vertical arrow through the contiguous initial blocks for other rooms. The inspectors discussed this log keeping practice with the licensee and the licensee directed its operators to initial each block to minimize the possibility of inadvertently missing a room check.

The inspectors discussed the apparent missed room checks with NRC management. As a result of this discussion the inspectors notified licensee management of the two room checks that appeared to have been missed. This is considered an unresolved item, pending NRC review of the licensee's actions related to this matter (50-282/92015-02; 50-306/92015-02).

c. Additional records verification issue:

Scaffolding is erected in many areas throughout the Turbine and Auxiliary Buildings to facilitate work on the station blackout/electrical systems upgrade (SBO/ESU) project. Due to the extensive work associated with the SBO/ESU project, some of the scaffolding has been in place for many months. In November 1991 the inspectors questioned the licensee's administrative controls for the use of scaffolding. Specific concerns are discussed in inspection reports 50-282/91024 (DRP); 50-306/91024 (DRP). In response to those concerns, NSP revised its procedural guidance for scaffolding construction and instructed the carpenter foremen

to begin daily checks of each scaffold associated with the SBO/ESU project. In addition, an engineer assigned to the SBO/ESU project inspects each scaffold weekly, and a plant engineer independently inspects the SBO/ESU scaffolds every two weeks. The daily checks and the weekly inspections are documented on a "DAILY SCAFFOLDING INSPECTION CHECKLIST" that is kept in a plastic envelope attached to each scaffolding assembly.

During the inspection period the inspectors noted that several checklists had not been initialed for daily checks on each of two consecutive days. The next day the inspectors observed that these same checklists had initials for daily checks for the previous two days. The inspectors then reviewed the checklists for all SBO/ESU scaffolding in the Turbine and Auxiliary Buildings. The checklists indicated that on several days the daily checks of many scaffolds had been conducted at the same time by a single individual.

The inspectors met with one of the engineers who had conducted the weekly scaffolding inspections and selected licensee management for the SBO/ESU project. The licensee confirmed that the carpenter foremen assigned to perform the daily scaffold checks had received appropriate training on checking scaffolds.

The inspectors examined the security door transaction records for room entries on some of the days that the checklists indicated daily checks had been performed. The security records for one day indicated that no vital area entries had been made by the individual whose initials were on the respective checklists for having performed daily scaffold checks on that day. Similarly, the security records indicated that the same individual had not entered some vital rooms on another day, although the checklists indicated that daily checks of scaffolding located in those rooms had been performed by this individual on that day.

The inspectors asked the Superintendent of Security if there had been any problems with the security computer or the vital area keycard readers on the days in question. The Superintendent of Security stated that there had been some intrusion alarm problems, but no indication of any problems with the individual keycard readers. It appears the checklists in question were falsified.

NRC management reviewed the inspectors' findings and requested, in a separate letter, that NSP investigate this issue and report the results to the NRC. The inspectors will review the licensee's actions related to this matter during a future inspection. Pending further review, this is considered an unresolved item (50-282/92015-03; 50-306/92015-03).

- d. Unit 2 Runback: On September 6, 1992, at 1:29 p.m. a Unit 2 runback of four megawatts occurred when the overtemperature differential temperature signal exceeded its variable setpoint.

The operators stabilized the unit and observed no abnormal plant conditions. The plant was returned to full power at 1:48 p.m. The licensee is continuing its investigation.

- e. Mispositioned Circuit Breakers: On August 5, 1992, an operator observed several open circuit breakers for heat tracing circuits. The breakers were not in the tripped position. Once energized the affected circuits functioned normally. Some of the dead circuits were required by Technical Specifications (TS). Based on earlier observations of the breakers in the closed position, the licensee concluded that no TS Limiting Conditions for Operation had been exceeded. The redundant circuits were operable while the breakers were open. At the close of the inspection period the licensee had found no one who had any knowledge of how the breakers had been opened. The licensee is continuing its investigation.

Three unresolved items were identified. No violations, deviations, or inspection follow-up items were identified.

3. Licensee Action on Previous Inspection Findings (37700-03, 92701, 92702)

- a. (Closed) Open Item 282/89018-02; 306/89018-01(DRP): Demonstration of a diesel-driven, vertical cooling water pump's ability to deliver 19,800 gpm. Loss of offsite power without a safety injection, and failure of one of the two diesel-driven cooling water pumps (CWP) would require the remaining diesel-driven CWP to deliver 19,800 gpm.

The ability to deliver 19,800 gpm had not been demonstrated for any of the CWPs. However, the pump manufacturer informed NSP that a pump of the same model had been factory tested to 22,500 gpm without damage, and that the pump could run in excess of one hour at 17,500 gpm. A test of No. 22 diesel-driven CWP demonstrated its ability to deliver 18,400 gpm at 71 psi. The test was stopped before reaching 19,800 gpm because the plant was operating and the test caused low flow to the main generator exciter coolers. A flow of 19,000 gpm was observed, but not maintained long enough to record data. A value of 19,800 gpm on the pump curve corresponds to 58 psi discharge pressure. This indicates that it is probable that a single diesel-driven CWP could deliver 19,800 gpm.

This item was previously closed based on the licensee's planned testing of one of the pumps during the next dual-unit outage. However, during the upcoming dual-unit outage, modifications will complete the upgrade of the No. 121 motor-driven CWP to a safety-related, vertical pump with emergency power available. On a loss of offsite power, all three vertical CWPs would be available. Postulating a single failure of an emergency generator or a CWP would still result in two CWPs being available to provide 19,800 gpm. A single failure scenario will no longer require that a single pump provide 19,800 gpm. This item remains closed on this new basis.



- b. (Closed) Violation 282/90016-01(DRP): Shield building ventilation was inoperable due to heater control switch CS 57054-01 being in the off position. The licensee found the control switch in the off position during a surveillance of the shield building ventilation system. The licensee's investigation of the mispositioned switch did not identify any specific cause. The licensee concluded that the switch had been inadvertently mispositioned. The licensee installed protective covers on the switch and on seven other similar switches to prevent inadvertent operation. The inspectors visually verified that the protective covers had been installed. This item is closed.
- c. (Closed) Unresolved Item 306/91027-01(DRP): Security breach caused by cable tray installation. This item was reviewed by Region III security inspectors and documented in Inspection Report No. 50-282/92014(DRSS); 50-306/92014(DRSS). It was considered an example of a non-cited violation. This item is closed.

No violations, deviations, unresolved, or inspection follow-up items were identified.

4. Maintenance Observation (J7700, 62703)

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:

- D1 emergency diesel generator (EDG) troubleshooting.
- Repair of D1 EDG speed switch.
- Installation of insulation to protect D1 EDG speed switch.
- No. 22 diesel-driven cooling water pump annual inspection
- VOTES testing of component cooling water supply valve to the residual heat removal heat exchanger.

- Calibration of instrumentation for D5 and D6 EDGs.

No violations, deviations, unresolved or inspection follow-up items were identified.

5. Surveillance (61726, 71707)

The inspectors reviewed Technical Specification (TS) 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 (LCO) were met. The inspectors further verified that the removal and restoration of affected components were properly accomplished, test results conformed with TS 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:

- SP 1219, Monthly 4 KV Bus 16 Undervoltage Relay Test. During the test the inspectors observed that two leads were landed on terminal point SBU16-8 although drawing NF-40258-1, Revision R, indicated only one lead. The inspectors determined that the drawing had not been properly revised following a modification which installed several test switches. The licensee issued a deviation report to correct the drawing. The error had no safety significance because the installation was correct.
- Steam exclusion check damper testing. This testing was controlled with a work request because a testing procedure did not exist. On August 20, 1992, the licensee concluded that it was probable that the check dampers might require testing. TS 4.8.C requires that isolation dampers in each duct that penetrates rooms containing equipment required for a high energy line rupture outside of containment, be tested for OPERABILITY once each month. In addition, this TS states that damper mating surfaces shall be examined visually once each year to assure that no physical change has occurred that could affect leakage. The licensee's surveillance program tested the control dampers but not the check dampers. Since the check dampers cannot be leak tested, the licensee inspected them and moved them by hand; an acceptable practice. Some of the check dampers were sticky and hard to operate. The steam exclusion system was declared inoperable and the appropriate LCO was entered. The sticky check dampers were restored to operability. On August 27, 1992, the licensee determined that there was sufficient evidence to conclude that the check dampers should have been tested and surveillance tests had been missed. The licensee is preparing a licensee event report (LER) for the missed surveillances. The inspectors will complete their review of this event upon receipt of the LER. Since the licensee's discovery of the missed surveillance did not occur

until August 27, 1992, the LER is not due until September 26, 1992.

- SP 1001AA Unit 1 Reactor Coolant System Leak Rate Test
- SP 2001AA Unit 2 Reactor Coolant System Leak Rate Test

No violations, deviations, unresolved or inspection follow-up items were identified.

6. Radiological Protection (71707, 92701)

On September 9, 1992, the inspectors observed that the access door to the spent fuel pool filter room, a designated high radiation area, was open with the room unattended. The inspectors questioned the licensee's administrative controls for access to high radiation areas. The Technical Specifications (TS) require doors to high radiation areas in which the intensity of radiation is greater than 1000 mrem/hr, to be locked or attended to prevent unauthorized entry into these areas. However, the licensee stated that while there was no specific requirement, it was general practice to lock the doors to all unattended high radiation areas (>100 mrem/hr).

10 CFR Part 20, Section 203(c)(2) requires that each entrance or access point to a high radiation area be equipped with a control device which shall energize a conspicuous visible or audible alarm signal in such a manner that the individual entering the high radiation area and the licensee or a supervisor of the activity are made aware of the entry. The TS state that in lieu of the control device or alarm signal required by paragraph 20.203(c)(2), each high radiation area in which the intensity of radiation is 1000 mrem/hr or less shall be "barricaded and conspicuously posted" as a high radiation area. The inspectors observed that the access door to the spent fuel pool filter room was open against the adjoining wall. Thus, the area was not conspicuously posted, because the high radiation area posting located on the front of the door could not be seen. The inspectors also observed that a step-off pad was located at the room entrance since the room is considered a potentially contaminated area. The inspectors questioned whether the step-off pad satisfied the TS barricading requirement with the access door open and the room unattended.

The inspectors referred to NUREG/CR-5569, "Health Physics Positions Data Base", a collection of summaries of NRC staff positions on various radiation protection topics. This NUREG states that IS with the "barricade and posting" requirement provide a method for control of high radiation areas that is an alternative to the method specified in 10 CFR 20.203(c)(2). Although not explicitly stated, these controls are designed to prevent inadvertent entry into the area. Controls specified in TS must achieve the same basic aim (namely -- prevention of inadvertent entry), but in a different manner from that specified in Part 20. Inadvertent entry is interpreted to mean entry by an individual who is not paying sufficient attention to postings and who may walk into the high radiation area unless their attention is drawn to

these postings. The assumption is that if an individual's attention is drawn to the postings, that individual will recognize their implication and take appropriate action. A barricade is one mechanism to accomplish this purpose. A step-off pad is not a barrier to movement into the area and therefore does not qualify as a barricade required by TS.

The spent fuel pool filter room is provided with an area radiation monitor with a local indication at the entrance to the room. This monitor is set to alarm at a dose rate of 100 mrem/hr. At the time of discovery of the open door, the actual radiation level in the room as indicated by the area radiation monitor was approximately 20 mrem/hr. Radiation levels in the room are a function of the accumulated activity in the spent fuel pool filter located in the room. If a high radiation condition exists in the room, the area radiation monitor should alarm and alert an individual to the high radiation condition. The alarming monitor should prevent inadvertent entry into the high radiation area but it is neither a barricade nor a conspicuous posting. It serves the function of a conspicuous posting when in proper operation. The inspectors verified that the radiation monitor had been calibrated within the required periodicity.

The licensee shut the access door to the spent fuel pool filter room once the inspectors informed the licensee of the as-found condition of the room. In addition, the licensee moved the high radiation area posting so that it would be clearly visible with the door open and counseled the individual responsible for leaving the room in its original condition. The inspectors discussed with the licensee the importance of following prescribed administrative controls for potential high radiation areas.

As described above, the licensee failed to maintain the barricade and postings for the spent fuel filter room, a designated high radiation area. The access door was open and the room was unattended. However, there was minimal safety significance associated with the as-found condition of the room, because the actual radiation level was below 100 mrem/hr and an operable monitor was in service to alert personnel to a change of radiation above 100 mrem/hr. Thus, the inspectors concluded this failure to meet intended protection levels did not constitute a violation of any actual requirements.

No violations, deviations, unresolved or inspection follow-up items were identified.

7. Engineering and Technical Support (37700-03, 40500)

a. Inservice Testing

As a result of an inspection finding at another facility regarding ASME Code Section XI inservice testing (IST) of the non-return check valve associated with a main steam isolation valve (MSIV),

the inspectors questioned whether the licensee performed IST on similar valves. The licensee stated that the non-return check valves were not within the ASME code boundary and therefore were not subject to required Section XI testing. The inspectors reviewed generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs", which provided IST program approval for those licensees that had not received an NRC safety evaluation report (SER) at the time of the generic letter's issuance, April 3, 1989. This approval was to be based on each licensee's written confirmation that its IST program and implementation procedures conformed with NRC requirements, including the 11 technical positions delineated in the GL. The licensee was required to submit a confirmation letter documenting conformance with the 11 technical positions. For those licensees that had already received an NRC SER, which included Prairie Island, no confirmation letter was required. This was based on the premise that in conducting its review of IST program submissions, the NRC had used the same 11 technical positions presented in GL 89-04.

In June 1989, the NRC staff held four public meetings to discuss GL 89-04. Several questions regarding the implementation of GL 89-04 were raised at these meetings. The NRC issued the minutes of the public meetings which contained responses to many of the questions raised. Technical position 11 discusses IST program scope and states that while 10 CFR Part 50.55a delineates the testing requirements for ASME Code Class 1, 2, and 3 pumps and valves, the testing requirements of pumps and valves are not limited to those covered by 10 CFR 50.55a. The response to question 53 in the minutes of the public meetings discusses this statement in technical position 11. It states that paragraph (g) of 10 CFR 50.55a requires the use of Section XI of the ASME Code for IST of components covered by the Code. For other components important to safety, the licensee also has the burden of demonstrating continued operability. The Code-required IST program is a reasonable vehicle to provide a periodic demonstration of the operability of pumps and valves not covered by the Code. If non-Code components are included in the ASME Code IST program (or some other licensee-developed inservice testing program) and certain Code provisions cannot be met, the NRC regulations do not require a "request for relief" to be submitted. Nevertheless, documentation that provides assurance of the continued operability of the non-Code components through the performed tests should be available at the plant site.

Section XI requires that check valves performing a safety function in the closed position to prevent reverse flow, must be tested in a manner that proves that the disk travels to the seat promptly on cessation or reversal of flow. Since plant conditions would not support testing of the non-return valves in the manner prescribed by Section XI, a relief request would have had to have been submitted if they were inside the code boundary.

The licensee currently performs a visual inspection of the non-return check valve internals during refueling outages. The licensee inspects one check valve each refueling outage and maintains a record of the inspection results. The inspectors concluded that this visual inspection satisfies technical position 11 of GL 89-04 and that a request for relief is not required since the non-return check valves are non-Code components. The inspectors discussed with the licensee the need to ensure that other non-Code components considered important to safety are tested to demonstrate continued operability.

b. Inservice Inspection

The licensee identified that certain longitudinal weld inspections of selected piping in the safety injection, residual heat removal, and main steam systems had not been performed. ASME Code Section XI requires that for those cases where a circumferential weld intersects a longitudinal weld, as in seamed piping joints, an area of the longitudinal weld that extends for two pipe diameters or 12 inches, whichever is greater, from each side of the circumferential weld, must be inspected. The licensee discussed this issue relative to an operability concern at an onsite review committee meeting. The licensee concluded that the associated system piping was not inoperable as a result of the missed weld inspections and decided to prepare a "justification for continued operation" (JCO) to document the basis for that conclusion. The inspectors discussed the missed weld inspection issue with regional management and determined that there was no immediate operability concern. This is considered an inspection followup item (50-282/92015-04; 50-306/92015-04), pending the inspectors review of the licensee's JCO in a future inspection.

One inspection follow-up item was identified. No violations, deviations, or unresolved items were identified.

8. Licensee Event Report (LER) Followup (37700-03, 92700, 92701)

a. (Closed) LER 50-306 92001: Unit 2 Reactor Trip from Generator Lockout Caused by Faulty Relay in Test Circuitry.

A relay in the local control panel of the Unit 2 generator bus duct cooling system failed during a test conducted when the unit was at full power on March 8, 1990. The test produced a simulated bus duct high temperature signal and because of the failed relay, a generator lockout, turbine trip, and reactor trip resulted.

Events involving the generator bus duct cooling system have been discussed in previous inspection reports (282/92004; 306/92004; 282/90019; 306/90020). The inspectors discussed the system with the licensee and were informed of plans to install an infrared thermal sensor to measure generator bus temperature directly

rather than rely on RTD measurements of air temperature in the bus ducts as described in the previous inspection reports. Final equipment installation for both units will be performed during the dual-unit outage and temperature set points will be determined during testing after the units are returned to service.

After previous events NSP determined that generator bus duct cooling is not required when generator output current is below approximately 9000 amperes. With this information, and accounting for the rate of temperature increase upon a loss of bus duct cooling, the licensee determined that a temperature alarm prompting operator action which might include power reduction was sufficient for protection in lieu of causing a generator lockout. The trip relay was removed from service in both units on May 18, 1992. The inspectors observed that the local alarm response procedures (C50.8 and C50.9) for bus duct cooling alarms had not been revised to reflect the new system configuration and had not been revised since November 11, 1988. However, the actions required by the local alarm response procedures would not adversely affect plant operation. The control room (versus local) alarm response procedures were appropriate for the current system configuration. The inspectors verified that on August 24, 1992, NSP personnel had, prior to discussion with the inspectors, submitted Procedure Submittal Forms (log nos. PC92168 and PC92169) to change Procedures C50.8 and C50.9 to reflect the current system configuration. This LER is closed.

- b. (Closed) LER 282/90003: Auto-Start of No. 12 Diesel Cooling Water Pump (CWP) on Low Header Pressure During a Surveillance At Approximately 0350 Hours on March 23, 1990.

This event was previously discussed in Inspection Report 282/90004(DRP); 306/90004(DRP), Section 8.a. The only outstanding corrective action at that time was replacement of No. 21 Motor-Driven CWP. Wear of that pump had caused a loss of prime and contributed to the event. The inspectors verified that No. 21 CWP had been replaced under Work Request No. P2124-CL-Q completed on May 23, 1990. No similar events have occurred since completion of the LER corrective actions. This LER is closed.

- c. (Closed) LER 282/90013: Inadvertent Mispositioning of the Control Switch of No. 11 Shield Building Ventilation Heater Control. The licensee found control switch CS 57054-01 off during a surveillance of the shield building ventilation system. The licensee's investigation of the mispositioned switch did not identify any specific cause. The licensee concluded that the switch had been inadvertently mispositioned. Violation 282/90016-01 was issued for this event (refer to paragraph 3.b). The licensee installed protective covers on the switch and on seven other similar switches to prevent inadvertent operation. The inspectors observed that the protective covers had been installed. This LER is closed.

- d. (Open) LER 282-92008: Inoperability of Thermo-Lag 330 Fire Barriers on Cable Trays and Conduits. This LER reported Thermo-Lag barriers declared inoperable as a result of information provided in NRC Bulletin 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Perform Its Specified Fire Endurance Function". The inspectors reviewed the licensee's immediate corrective and compensatory action and verified that there were no apparent safety issues. This LER will be reviewed during a future inspection in conjunction with the NRC review of Bulletin 92-01.
- e. (Closed) LER 282-92009: Inadequate Testing of 4KV Safeguards Bus Automatic Source Breaker Trip Feature Identified During Operating Experience Assessment. This LER reported inadequate testing of emergency bus undervoltage logic circuitry. The licensee was testing the undervoltage logic circuitry every other refueling outage instead of every refueling outage. This event is discussed in detail in paragraph 2.a. The corrective actions described in the LER will be reviewed in conjunction with unresolved item 50-282/92015-01; 50-306/92015-01. This LER is closed.

No violations, deviations, unresolved, or inspection follow-up items were identified.

9. Followup of Regional Requests

a. Zebra Mussels

At another facility dead zebra mussel shells were swept into safety-related equipment by high cooling water flow. This event indicated that design flows in cooling water systems could cause safety-related equipment to be degraded by dead zebra mussels, even though zebra mussels were controlled during normal operations. The inspectors verified that no zebra mussels have been found onsite. The licensee has a program in place to provide early warning of zebra mussels. In addition the plant biologist maintains contact with wildlife research personnel outside of the licensee's organization. The nearest zebra mussel sighting was at Lock and Dam No. 3 on the Mississippi River about one mile downstream from the site. Zebra mussels were recently found during a structural inspection of the lock and dam and appeared to have fallen from barges, rather than being part of an established colony on the lock and dam.

b. Storage of Items in Spent Fuel Pool

During the previous inspection period the inspectors conducted a visual inspection of the spent fuel pools (SFP). The inspectors were not able to visually inspect No. 121 SFP because it was covered with steel plating for heavy load protection. During this inspection period the steel plating was removed and the inspectors verified that the reactor cavity sipper basket was stored in the No. 121 SFP suspended by stainless steel cables.



No violations, deviations, unresolved, or inspection follow-up items were identified.

10. Safety Assessment/Quality Verification (2515/113, 40500)

The inspectors observed several onsite review committee (Operations Committee) meetings, including meetings to discuss operability issues. The licensee demonstrated excellent skills in evaluating safety issues and an aggressive approach to identifying and evaluating potential operability issues. The inspectors observed the licensee's second outage meeting for the dual-unit outage which is scheduled to begin in October 1992. Licensee management used the meeting to focus attention on safety issues and emphasized that concerns for plant and personnel safety exceeded concerns for maintaining the outage schedule. Specific plant safety concerns and goals were also discussed.

No violations, deviations, unresolved, or inspection follow-up items were identified.

11. Management Meeting (30702, 2515/113)

A management meeting, attended as indicated in paragraph 1, was conducted at the Region III office on August 13, 1992. The purpose of the meeting was to discuss the scope of activities during the upcoming dual-unit outage and management oversight to minimize shutdown risk.

The major work projects during the outage include:

- a. Routine refueling and inspection activities of Unit 1.
- b. Reactor coolant system (RCS) draindown modification on Unit 1. This modification includes installation of a self-limiting hot leg drain tap in the RCS which will preclude over-draining primary coolant when entering reduced inventory conditions during outages.
- c. Replacement of portions of the service water system for both units.
- d. Electrical connections and equipment installation for the station blackout/electrical safeguards upgrade project. This includes the new D5 and D6 EDGs, 4 KV and 480 V busses, and other equipment.

The licensee was well-prepared for the meeting and its presentations indicated a strong emphasis on plant safety.

12. Inspection Follow-up Items

Inspection follow-up items are matters which have been discussed with the licensee, and will be reviewed further by the inspectors. These involve some action on the part of the NRC or licensee or both. An inspection follow-up item identified during the inspection is discussed in Paragraph 7.

13. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. Unresolved items are discussed in paragraph 2.

14. Management Interview (71707)

The inspectors met with the licensee representatives denoted in paragraph 1 at the conclusion of the report period on September 17, 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.