

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-282/94004(DRS); 50-306/94004(DRS)

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 Station

Inspection At: Prairie Island Site, Red Wing, MN

Inspection Conducted: March 14 - 18, 1994

Inspectors:

D. Schrum
D. Schrum

4/1/94
Date

Inspection Summary

Inspection conducted March 14-18, 1994 (Reports No. 50-282/94004(DRS)); 50-306/94004(DRS))

Areas Inspected: Routine, unannounced fire protection inspection of surveillances, equipment, impairments, control of combustibles, fire brigade training and drills, and fire protection audits. The inspector utilized selected portions of NRC inspection procedures 64704 and 92702.

Results: Overall, the fire protection program was good. The program could of been rated excellent, except for weaknesses identified in this report which detracted from the overall assessment rating. The main program strength was fire prevention which included control of combustibles, control of oil leaks, housekeeping, and cleanliness of the plant.

A violation was cited regarding the failure to take timely corrective actions with two examples: (1) for updating the FHA and revising the modification process to ensure fire loading changes are included in the FHA (paragraph 3.2) and (2) regarded the failure to identify and take timely corrective action for ensuring that a fire barrier for the safety injection pump was replaced or this condition was assigned as an impairment requiring compensatory measures (paragraph 3.3). A second violation identified the failure to remove combustible materials within 35 feet of a grinding activity (paragraph 3.4). Additional weaknesses observed during this work activity was that no fire watch had been stationed below the area where the grinding activity was being performed. In addition, no designated fire extinguisher of adequate size was available to the fire watch. A weakness noted was updated fire strategies were not made available to the fire brigade. An additional weakness noted was not performing off-site response drills. A concern was that no quantitative system for control of transient combustibles exists to ensure that an area does not exceed its fire loading during outages. The quality assurance(QA) audit group should have been more aggressive in obtaining a more timely resolution of their finding for FHA not being updated rather than accept repeated finding response extensions.

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DETAILS

1.0 Principal Persons Contacted

#E. Watzl, General Manager, Prairie Island
#M. Wadley, Plant Manager
#M. Werner, Site Fire Protection and Safety Administrator
D. Carlson, Fire Protection System Engineer
#G. Lenertz, General Superintendent, Maintenance
R. Beck, Facilities Coordinator
#M. Dapas, NRC Senior Resident Inspector
#R. Bywater, NRC Resident Inspector

#Denotes those present at the March 18, 1994 exit meeting.

Other persons were contacted as a matter of course during the inspection.

- 2.0 (Closed) Unresolved Item 92011-01 This item addressed a concern with circuit failure modes that could adversely affect the ability to maintain a hot shutdown status during a control room fire, when power operated relief valves (PORVs) were opened and rendered inoperable. The licensee took credit for closing block valves in the control room and for additional actions in the plant to recover from this condition. The problem with this method of control was that a short time would exist between evacuating the control room and taking alternative actions to ensure compliance with Appendix R III.L performance criteria (i.e., pressurizer level on-scale).

To resolve this problem, the licensee conducted a bounding analysis that determined sufficient time was available for the operator to shut the PORVs from outside the control room by pulling fuses. The analysis concluded that sufficient time was available to stop the loss of reactor coolant and maintain pressurizer level within the indicating range. The licensee had made appropriate changes to procedures and has trained the staff to respond to this condition. The licensee planned to apply for an exemption for not meeting the specific requirements of Appendix R by May 1, 1994. A plant modification is required if the Appendix R exemption is not approved. Based on the planned request for an exemption and the current corrective actions this item is considered closed.

3.0 Routine Fire Protection Program Review

This inspection consisted of plant area observations and reviews of fire protection surveillances, maintenance on fire protection equipment, fire brigade training and drills, fire reports, deviation reports, work requests, safety evaluations, and audits of fire protection activities.

3.1 Observation of Plant Areas

The inspector toured the auxiliary, turbine, and screen house building areas to observe the adequacy and control of combustibles, fire doors, hose stations, detection equipment, extinguishers, sprinkler systems, emergency lights, and housekeeping.

Control of combustibles in the plant was excellent. Very few transient combustibles were noted in the plant. This included having minimal combustible materials in storage cages. Flammable liquids and lubricants were stored in fire proof cabinets and flammable liquids were stored in safety cans. Most of the wood and plastics used in the plant were fire resistant. Equipment oil leaks were minimal with oil being collected in pans or on paper towels, which was being removed before becoming excessive. Cleanliness and housekeeping were excellent.

The material condition of fire protection equipment was excellent. This included dampers, fire extinguishers, hose stations, emergency lighting, and fire pumps. Most fire doors in the plant were in excellent condition which included self-closure and latching. No discrepancies were noted with sprinklers or with fire main valves or headers. Extinguishers had been inspected and had a current inspection date. Fire fighting gear was in good condition and well organized. The licensee completed regular surveillances on fire brigade equipment to ensure that critical items were stocked and available in the event of a fire. Fire fighting foam was being replaced prior to the expiration date. For those emergency lights inspected, the lights were functional and aimed correctly.

The following items were observed during the plant tour as minor deficiencies in the plant. The fire protection staff took timely actions to correct these items.

A hole was identified in a koawool fire barrier. The fire marshal notified plant staff who responded to repair the barrier.

A ladder hanging on a wall was observed blocking a sprinkler head which would effect the spray pattern of this sprinkler during a fire. The fire marshal ensured that this ladder was moved and posted a sign so no one hung a ladder on this bracket. In addition, a work request(WR) was written to remove the bracket from the wall.

Oil was found stored in a coffee can in a fire rated cabinet and the doors between the auxiliary and turbine building were not labeled as fire doors. The can was removed from the plant and the doors were labeled as fire doors. These doors had been on the plant's surveillance list so had been regularly inspected.

Two deluge valves had frozen during the winter as a result of being located near doorways. One freezing deluge valve had caused a deluge system actuation. The licensee had built temporary enclosures and had supplied heat by a heater or a vent hose from an adjoining area. The licensee planned to build permanent enclosures to protect these valves.

During the plant tour the fire marshal noticed that the diesel fire pump had a leak on its cooling water supply. A WR was written to have this condition corrected. Except for this condition, the material condition of the diesel and electric fire pumps were good. A review of the maintenance history on the diesel fire pump indicated a low number of problems with this pump.

3.2 Welding and Cutting Permits

During a tour of the turbine building, the inspector observed a hotwork (grinding) activity, WR 9401684, on floor grating as not performed according to plant procedures and good work practices. This work was performed above the turbine lube oil tank. The area around the lube oil tank contained paper towels with some absorbed oil and a bucket containing oil. Plant Administrative Control Directive 5ACD 3.13, Revision 11, requires the following:

"The following fire protection General Requirements (as contained in Section A of the permit) SHALL be observed whenever a HW/FMUP [Hot Work/Flammable Material Use Permit] is issued for an ignition source: a. Verify or clear the work area of all combustible materials below or within 35 feet of the work, if possible. b. Provide suitable protective covering for equipment, cabling, machinery or other immovable combustible materials below or within 35 feet of the work."

The work was performed without the removal of combustible materials or the covering of immovable combustible materials within 35 feet of the work. The sparks from the grinding activity dropped into the area containing the combustible materials. The WR also required that a fire blanket be placed directly below the work area to contain sparks. No fire blanket had been placed below the work area. Failure to follow the fire protection procedure is a violation of 10 CFR 50, Appendix B, Criterion V(50-282/306/94004-02(DRS)). The plant determined that the employees had received adequate training and disciplinary action was taken against the two employees. This problem of not following hotwork procedure requirements was considered an isolated event, so no licensee response is required and this violation is considered closed.

Additional weaknesses were also observed for this work activity. For example, no fire watch had been stationed below the area where the grinding activity was performed and no designated fire extinguisher of adequate size was available to the fire watch. The fire marshal stated that the stationary plant fire extinguisher was not intended to be used for fire watch purposes.

3.3 Fire Hazards Analysis Not Updated

Two weaknesses noted during the inspection were that the Fire Hazards Analysis (FHA) had not been updated to include plant modifications for six years and no program existed to quantitatively track transient combustibles in the plant. These two weaknesses resulted in fire loading calculations not being maintained. The QA group had recognized both of these problems, but the plant staff had chosen not to resolve these problems in a timely manner.

A problem with the modification check list and a licensee decision to delay the FHA update until the completion of the Station Blackout(SBO) modification resulted in the fire loading for the plant not being accurate for 6 years. The checklist problem contributed to the condition of modifications not being sent to the fire protection staff to assess and increase the fire loading for the fire areas. These problems had been identified during an annual QA audit in 1991. The plant had hired a contractor in 1992 to identify the modifications that had been left out of the fire loading calculations. This list of modifications was available but an additional delay was caused by the plant staff's decision to not complete the update until the SBO modification was completed. The fire marshal stated that original data for SBO had been destroyed in a trailer fire on March 1991, so the data could not be included in the FHA prior to performing the modification. The fire marshal also stated that the procedure, which contained this check list, had been recently revised and the procedure was currently in the review cycle for concurrence. The site planned to have the updated FHA sent to the NRC for review by June 1, 1994. The inspectors concluded that the update to the procedure should have occurred when the problem with the modifications was identified. With the FHA not being updated, the potential existed for fire areas to be above the fire loading allowed. The failure to take timely actions to correct conditions adverse to quality is considered an example of a violation of 10 CFR 50, Appendix B, Criterion XVI(282/306/94004-01B(DRS)).

A concern was noted with the licensee's control of transient combustibles. Transient combustibles, such as, scaffolding, liquid flammables, and other materials are controlled in separate plant documents. These documents are fire permits, inventory list which is only updated weekly, and a scaffolding log. With this method of controlling transient combustibles, no quantitative system exists to ensure that an area does not exceed its fire loading during outages. An additional concern was that some materials are not being included in the current transient combustible control system, i.e., acetylene bottles. The significance of this concern could not be determined during the inspection because the plant contained a minimal amount of transient combustible materials and the plant was not in an outage.

3.4 Impairments

The inspectors observed during a plant tour that new safety injection pump power cables, installed during a SBO modification, did not contain any fire barrier material. The safety injection power cables did not meet the 20 foot separation requirement for Appendix R so fire barrier material was required. This condition existed since January 1993. The plant staff stated that the requirement for installation of fire barrier material was in the modification package, but that the installation of the barrier material had not been performed because the plant was not certain what materials were acceptable. The modification group had not made the fire marshal aware of this condition so no impairment was issued for this condition. No compensatory measures were taken for this impaired condition. The fire watch normally tours this area as a compensatory measure for Thermo-lag insulation, but this impaired condition had not been identified for the fire watch rounds. While the significance of this issue is mitigated considerably by the fire watch

tours established for the Thermo-lag barriers, the failure to take timely actions to identify and to correct conditions adverse to quality is considered a violation of 10 CFR 50, Appendix B, Criterion XVI(282/306/94004-01A(DRS)).

3.5 Fire Protection Staffing

The staff was experienced, knowledgeable, and proactive in dealing with most plant problems. Good cooperation was observed among the staff. The fire marshal was very knowledgeable about the fire protection program and Appendix R. An example of a good resolution of a problem by the fire marshal was a QA identified deficiency for D5 and D6 building stairway sprinklers. The resolution of this problem was pursued and the condition corrected.

3.6 Fire Brigade

The plant requirements for the fire brigade were all being met in an effective manner. Good fire brigade critiques were being performed. The critiques identified two recurring problems during fire drills. The fire brigade clothing was too small to protect larger members of the fire brigade and communication via radios could not be conducted in various areas of the plant. The fire protection group had attempted to resolve both of these problems. Larger coats had been purchased prior to the inspection. The power for the microwave units had been increased and the licensee had identified dead spots for communications in the plant. Those areas in the plant were to be marked so brigade members could move to another location away from the communication dead spots.

The fire brigade training program was good. A review of records indicates that the fire brigade was meeting its quarterly fire brigade training. Three of the four fire drills performed on each shift for fire brigade qualifications were unannounced. Two to three members of the fire brigade had sufficient training of plant safety-related systems to understand the effects of a fire on safe shutdown capability. One weakness noted was updated fire strategies were not made available to the fire brigade. The potential for communication problems about what equipment to isolate during a fire could result in the electrocution of members of the fire brigade. An additional weakness noted was not performing an off-site response drill. The fire marshal stated that an off-site drill is planned for this summer. The licensee was attempting to take credit for emergency training with the local fire departments, a plant tour, and the fire department responding to a site fire for the off-site response drill.

3.7 Fire Reports

There were a few insignificant fires in the plant during the assessment period and the fire brigade responded appropriately to the fires. The low number of fires indicated good fire prevention in the plant.

3.8 Zebra Mussels

Zebra mussels were being adequately monitored and represent no threat to the fire protection systems at this time. No zebra mussels had been

found on the licensee's test plates.

3.9 Audits and QA Surveillances

Audit investigations for fire protection were detailed and thorough with adequate staff hours devoted to each audit. The QA surveillances were performance based observations of conditions in the plant and were effective in identifying fire protection program problems. One QA weakness noted was regarding to the QA audit finding that the FHA had not been updated. The QA audit group should have been more aggressive in obtaining a more timely resolution of this problem rather than accept repeated finding response extensions. The following audits were reviewed:

- a. Prairie Island Annual Fire Protection Audit - AG 93-37-07, 11/16/93 - 1/19/94.
- b. Prairie Island Triennial Fire Protection Audit - 09-0910-0444, 7/29/91 - 8/5/91.

3.10 Surveillances and Fire Watches Logs

A review of a sample of surveillances indicated that the surveillance program was being performed and that the fire protection equipment was in good condition with few equipment items found impaired. For the fire watch logs reviewed the fire watches had performed their hourly rounds.

4.0 Exit Meeting

The inspectors met with the licensee representatives as noted in paragraph 1 during the inspection period and at the conclusion of the inspection on March 18, 1994. The inspectors summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection was proprietary in nature.