U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No: 50-282/82-04; 50-306/82-04(DPRP)

Docket No: 50-282; 50-306 License No: 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 55066

Inspection Conducted: February 1-28, 1982

Inspectors:

C. D. Feierabend 3/16/82

for B. L. Burgess 3/16/82

Approved By:

R. L. Nelson, Acting Chief 3/29/82
Reactor Projection Section 2C

Inspection Summary

Inspection on February 1-28, 1982 (Report No. 50-282/82-04; 50-306/82-04(DPRP)
Areas Inspected: Routine resident inspection of plant operation, maintenance, surveillance, security, training, radiation protection, followup of TMI-2 items, review of plant trip, shipment of radioactive waste and design change control. The inspection involved a total of 121 inspector hours onsite by 2 NRC inspectors including 34 inspector hours onsite during off-shifts.
Results: Of the ten areas inspected, no apparent items of noncompliance or deviations were identified in nine areas, one item of noncompliance was identified in the area of design change control. (Paragraph 8)

DETAILS

1. Personnel Contacted

*F. Tierney, Plant Manager
J. Brokaw, Plant Superintendent, Operations and Maintenance
*E. Watzl, Plant Superintendent, Plant Engineering and Radiation Protection
D. Mendele, Superintendent, Operations Engineering
D. Schuelke, Superintendent, Radiation Protection
*K. Albrecht, Superintendent, Quality Assurance
*J. Goldsmith, Superintendent, Nuclear Technical Services
M. Klee, Superintendent, Nuclear Engineer
R. Lindsey, Superintendent, Operations
R. Stenroos, Assistant Radiation Protection Superintendent
J. Nelson, Superintendent, Maintenance
J. Hoffman, Superintendent, Technical Engineering
*E. Sabaitis, Project Engineer
D. Silvers, Quality Assurance Engineer
A. Hunstad, Staff Engineer
A. Smith, Senior Scheduling Engineer
S. Northard, Nuclear Engineer
J. Curtis, Engineer
D. Brown, Engineer
B. Frazer, Engineer
G. Lenertz, Engineer
G. Miller, Engineer
T. Thomas, Engineer
B. Stephens, Engineer
K. Beadell, Engineer
R. Oelschlager, Engineer Associate
D. Cragoe, Shift Supervisor
P. Ryan, Shift Supervisor
M. Balk, Shift Supervisor
D. Walker, Shift Supervisor

*Denotes those present at the exit interview.

2. Operational Safety Verification

a. General

Unit 1 operated routinely throughout the month.

Unit 2 tripped from 100% power on 2/24/82 and returned to power operation the same day. The trip resulted from an operator failing to place feedwater into manual control prior to performing steam generator level logic test. The unit operated routinely through the rest of the month.

b. Control Room Observations

The inspector observed control room operation, reviewed applicable logs, conducted discussions with control room operators, and observed shift turnovers. The inspector verified the operability of selected emergency systems, reviewed equipment control records, and verified the proper return to service of affected components.

c. Tours

Tours of the auxiliary and turbine buildings and external areas were conducted to observe plant equipment conditions, including potential fire hazards, and to verify that maintenance work requests had been initiated for equipment in need of maintenance.

No items of noncompliance were identified.

3. Surveillance

The inspector witnessed portions of surveillance testing of safety related systems and components. The inspection included verifying that the tests were scheduled and performed within Technical Specification requirements, observing that procedures were being followed by qualified operators, that LCO's were not violated, that system and equipment restoration was completed, and that test results were acceptable to test and Technical Specification requirements.

Tests witnessed included:

a. SP-1093 Diesel Generator Manual and 4KV Voltage Rejection-Restoration Scheme Test.

The surveillance was performed after preventive maintenance was completed on D-2 diesel generator. The test was completed satisfactorily.

b. SP-1113 Annual Steam Exclusion Damper Inspection.

The test is performed to verify that the steam exclusion dampers are seated properly and that damper seating surfaces are not distorted or damaged. A visual inspection was made of each damper and minor gaps were noted between damper seat mating surfaces. Work requests were written to investigate and repair as necessary. The dampers were inspected by plant maintenance personnel. The gaps observed between damper seat mating surfaces were determined to be within damper design tolerance.

The licensee plans to revise the surveillance procedure to provide acceptance criteria.

No items of noncompliance were identified.

4. Maintenance

a. Review of Work Request (WR's) and Work Request Authorization (WRA's)

The inspectors selected and reviewed several WR's and WRA's to determine the status of safety related systems, to verify that proper priorities were given and to verify that design changes were initiated where appropriate.

b. Observations

The inspectors observed portions of safety related maintenance activities to determine that the activities did not violate limiting conditions for operation (LCO's), that administrative approvals and equipment control tags were completed prior to initiating the work, that approved procedures were used (or activity was within the "skills of the trade"), that the procedures used were adequate to control the activity, and that proper QA/QC controls were used.

Maintenance activities witnessed included:

1) No.122 Control Room Air Chiller Heat Exchanger Visual and Eddy Current Tube Inspection.

The work was completed satisfactorily and after maintenance surveillance testing was performed prior to returning the No.122 Control Room Air Chiller to service.

2) Steam Exclusion Damper CD-31488.

The inspector observed repair of a steam exclusion damper identified as inoperable during surveillance testing. WRA-FO592-VH-Q documented the work requirements and parts used. A repair part was installed and the damper tested satisfactorily prior to returning the damper to service.

No items of noncompliance were identified.

5. Licensee Event Report Followup

a. P-RO-81-29 4.16 KV Bus Out of Service (Closed)

The inspector reviewed the event report (LER) to determine that reportability requirements were fulfilled and corrective actions were accomplished to prevent reoccurrence.

The original report issued 1/15/82 inaccurately described the event. The inspector discussed the event with the system engineer to determine exact event details. After discussion of the event details, the system engineer agreed to have the LER revised to accurately describe the event. A revised LER was issued on 2/12/82.

b. P-RO-81-30 Degraded Voltage Relay for 4.16 KV Bus 25 Out of Specification (Closed)

A revised report was issued correcting the event date.

c. P-RO-81-26 Safeguards Bus Loss of Voltage Protection Relays Found Out of Specification (Closed)

No items of noncompliance were identified.

6. TMI-2 Lessons Learned Items

The inspector reviewed the status of several licensee actions in response to NRC requirements as clarified by NUREG-0737. Paragraph identification relates to those paragraphs of NUREG-0737.

a. I.A.2.1.4.B Upgrading of RO and SRO Training and Qualifications.

The inspector has previously reviewed the training requirements and has periodically monitored SRO and technical staff training sessions. The training program was again reviewed and evaluated during review of the licensee's training program.[1/] (Closed)

b. I.C.5 Provisions for Feedback of Operating Experience to Plant Staff.

The inspector previously furnished information for the Safety Evaluation Report. The evaluation has been completed by NRR.[2/] (Closed)

c. I.C.6 Procedures for Verifying Correct Performance of Operating Activities.

The inspectors had furnished input for the Safety Evaluation Report. The evaluation has been completed by NRR.[3/] (Closed)

1/ IE Inspection Report No. 50-282/81-24; 50-306/81-26.
2/ NRR Letter to NSP dated January 4, 1982.
3/ Ibid.

d. II.E.1.1.1 Auxiliary Feedwater (AFW) System Evaluation, Short Term.

The inspector reviewed the status of completion of licensee commitments in response to NRR requests[4/] for additional information related to AFW system design.

1) Recommendation GS-1 which requires a more restrictive time limit for inoperable motor-driven auxiliary feedwater pumps.

Licensee Amendments No.46 to OL No.DPR-42 and No.42 (Unit 1) OL No.DPR-40 (Unit 2) provides the revised LCO. (Closed)

2) Recommendation GS-2 which requires that the licensee lock open valves in the AFW pump suction and that could interrupt all AFW flow.

The licensee has included requirements for locks on the valves and requirements for monthly verification in the plant Technical Specifications. The inspector confirmed that procedures have been implemented. (Closed)

3) Recommendation GS-4 which requires that emergency procedures be available for transfer to alternate water sources.

Emergency Procedure E5, Loss of Feedwater Supply, has been revised to provide the requirements. (Closed)

4) Recommendation GS-5 which requires capability of providing AFW flow without an AC power source available.

This requirement was satisfied by eliminating all AC requirements for system initiation per Recommendation GL-3. (Closed)

5) Recommendation GS-6 which addresses surveillance procedures to verify flow path availability of an AFW system flow train that has been out of service.

The inspectors have previously verified that licensee procedures require independent verification of system alignment by a second operator. License DPR-42 Amendment No.45; DPR-60 Amendment No.40 added the requirement to verify the normal flow path from primary AFW source to the steam generators. (Closed)

4/ NSP Letter to NRR. Subject: Additional Feedwater System Information, dated November 24, 1981.

6) Recommendation GS-7 which requires the licensee to verify that the automatic start AFW signals are safety grade.

The licensee confirmed safety grade and described the circuits in the response[5/] to NRC request. (Closed)

7) Additional Short Term Recommendation 1 which requires NSP to provide information on condensate storage tank level alarms.

The licensee has provided redundant alarms as described in response to the NRR request.[6/] The inspector reviewed Design Change No.79L566 and confirmed that the alarms had been installed as described. In response to an additional NRR request the licensee has committed[7/] to reroute instrument cables to meet FSAR criteria for separation. The licensee has initiated Design Change No.81L676 to provide the required separation. This change is scheduled to be completed during the next refueling outage, Unit 1 now scheduled for November 1982, Unit 2 for August 1982. (Open)

8) Additional Short Term Recommendation 2 which requires NSP to provide information related to auxiliary feedwater pump endurance tests.

The inspector has previously confirmed that the endurance tests were completed. Results were satisfactory. (Closed)

9) Additional Short Term Recommendation 3 which requires NSP to provide information on auxiliary feedwater flow instrumentation.

This was reviewed in conjunction with NUREG-0737 requirement Item II.E.1.2.2.C.2. (Closed)

e. II.E.1.1.2 Auxiliary Feedwater Systems Long Term Modification.

1) Recommendation GL-3 which requires independence of the turbine-driven auxiliary feedwater pumps from all AC power.

The inspector had previously monitored installation and testing of both AFW steam driven pumps following completion of the design change. (Closed)

5/ NSP Letter to NRR. Subject: Auxiliary Feedwater Systems, dated November 21, 1979.

6/ NRR Letter to NSP. Subject: NRR Requirements for AFW Systems at Prairie Island, dated October 16, 1979.

7/ Ibid.

2) Recommendation GL-4 which requires auxiliary feedwater pumps to be protected against loss of suction.

The licensee has committed to install loss of suction protection for all AFW pumps. In response to NRC questions the licensee has revised the proposed design and has revised Design Change No.80L579 to provide the appropriate pump trip circuitry. The licensee response[8/] commits to complete the modification prior to startup following the next refueling outage of each unit. The next scheduled outage for Unit 1 is November 1982, and for Unit 2 is August 1982. (Open)

3) Recommendation GL-5 which requires auxiliary feedwater pump actuation circuitry to meet safety-grade standards.

The licensee provided documentation for staff review. No additional requirements were identified. (Closed)

4) AFW System Flow Design Basis.

The licensee provided[9/] the evaluation requested. (Closed)

No items of noncompliance were identified.

6. Shipment of Radioactive Waste

The inspector monitored licensee activities in preparation for and shipment of radioactive resins via exclusive use vehicle for burial at the Barnwell, S.C. site. The inspector observed security and radiation protection controls established and maintained while the exclusive use vehicle was onsite, observed receipt inspection of the cask and liner and observed portions of the operations associated with filling the cask and reinstalling the cask covers. The shipment consisted of 107 cubic feet of resin, activity content approximately 160 Ci.

The licensee ALARA program was evident in planning to minimize exposure to personnel during cask filling operations. This included installation of additional lead shielding and use of a TV camera to observe fill status, minimizing exposure time in the high radiation areas. The licensee also restricted access to adjacent areas to limit exposure to personnel involved in performing necessary operation and monitoring the shipment.

8/ NSP Letter to NRR. Subject: Modification to Provide Auxiliary Feedwater Pump Protection, dated January 27, 1982.

9/ NSP Letter to NRR. Subject: Auxiliary Feedwater System Information, dated February 4, 1981.

The inspector reviewed the shipment records, confirmed that required documentation for the cask was included in the records, verified that the cask serial number matched the documentation and confirmed that the shipping records identified the route that the shipment will follow and that the appropriate state agencies were notified prior to release of the vehicle from the site.

The inspector independently monitored radiation levels in working areas during the filling process, during replacement of the cask cover and after loading was completed. Radiation levels were within acceptable levels for shipment by exclusive use vehicle. The shipment departed the site at approximately 1700 on 2/22/82.

No items of noncompliance were identified.

7. Plant Trip

Prairie Island Unit 2 tripped from 100% reactor power at 1117 on 2/24/82. The trip occurred during reactor protection logic surveillance testing of the loop "A" steam generator (SG) level signal. During a preliminary step of the procedure, an operator failed to transfer feedwater (FW) to manual control. When the instrument technician applied a high level signal to the SG level transmitter the FW control system responded, reducing feedwater flow. This resulted in a reactor trip by the combined FW/steam flow mismatch and SG low level. All systems responded as expected and systems were stabilized at hot shutdown conditions.

The inspector observed operator and supervisory response, including response of the shift technical advisor, and observed identification of the cause prior to authorizing restart. The inspector observed the shift supervisor notify NRC via the ENS telephone. The inspector also notified RIII of the plant trip.

The inspector observed preparations for restart, and periodically observed plant operation during restart and return to power. The plant was back on line at 1413 on 2/24/82.

No items of noncompliance were identified.

8. Quality Assurance (QA) - Design Changes

During verification of the status of the AFW system and other TMI-2 related modifications, the inspector observed weaknesses in the licensee's control of design changes. Several design change packages reviewed were for work that had been completed several months before the inspection, but documentation was not complete. Additionally, design change packages that could contain QA type records were not being maintained in locked cabinets.

a. Implementing Procedures

The licensee's plant procedure, 5 ACD 6.1 - Design Change Control, requires that design change be controlled in accordance with corporate procedure 3 ACD 4.1 which implements the licensee's approved Operational Quality Assurance Plan. Plant Procedure 5 ACD 6.3 - Design Change Implementation provides additional guidance for implementing the design control process. Review of the implementing procedures and discussions with cognizant licensee personnel confirm that there is a need to provide requirements for physical security of QA records and to provide realistic controls for timely completion of all associated records.

Control for assuring that all areas are addressed prior to approval appear to be sufficient, however, after approval of the design change for installation there were no apparent management controls, after assignment to a Responsible Engineer, until the design change was complete including all documentation.

The inspector discussed the apparent need for additional controls with several of the plant technical and support engineers, with plant QA staff and with plant management at the exit interview. It was apparent that some of the personnel were either not aware of the requirement to close a design change within 3 months or were not able to close them because of the length of time needed to obtain "as built" drawing documentation from architect engineer support contractors. In two instances, design changes No. 80Y105 and No. 80Y109, drawing change requests had not been submitted although the design changes had been installed for more than 3 months. For design change No. 80Y129the design change package appeared to be complete, with the exception of "as built" drawings and data files. The change requests had been submitted, but revised drawings had not been completed.

Failure to ensure timely closeout of design changes is considered to be not in accordance with the requirement of 10 CFR 50 Appendix B, as described in the Appendix to the letter forwarding this inspection report.

b. Security of Design Change Packages

The inspector determined that some of the records he had reviewed in the design change package were copies of QA records and others had been microfilmed, so were not necessarily QA records, however, the probability existed that QA records were included in the packages for periods of time. The licensee acknowledged this and has taken actions to provide for control of the design package by the newly assigned coordinator.

Control of QA records has been discussed in previous inspection reports[10/][11/] and has been identified as an unresolved item (50-282/81-10-01; 50-306/81-11-01). Control of design change records will be included in future reviews of QA record control with regard to the unresolved item.

9. Exit Interviews

The inspector conducted interim interviews during the inspection period and met with Mr. Tierney and members of his staff, as identified in Paragraph 1, at the conclusion of the inspection.

The inspector discussed the results of the inspections and stated that his observations during recovery from the plant trip and in monitoring the resin shipment showed that the plant operators and radiation protection staff performed well.

The inspector discussed his findings with regard to design change controls and stated that it was his opinion that the item of noncompliance (Paragraph 8) resulted from a gap in the design change control process between approval for implementation and the requirement for closeout. The licensee did not disagree.

The licensee stated that it had been recognized that additional controls were needed, that additional controls of design change packages were in the process of being implemented and that discussions of the need for revising the design change controls were also in progress. These discussions involve the corporate QA staff and the Monticello staff.

10/ IE Inspection Report No. 50-282/81-10; 50-306/81-11.
11/ IE Inspection Report No. 50-282/81-24; 50-306/81-26.