U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No: 50-282/80-19; 50-306/80-19

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

Inspection Conducted: October 1 - November 30, 1980

Inspectors:

C. D. Feierabend — 12/11/80

B. L. Burgess — 12/11/80

Approved By: W. S. Little, Chief
Reactor Projects Section 2 — 12/17/80

Inspection Summary

Inspection on October 1 - November 30, 1980 (Report No. 50-282/80-19; 50-306/80-19)

Areas Inspected: Routine resident inspection of plant operation, maintenance, surveillance, security, radiation protection, organization, followup on IE Bulletins, followup on licensee event reports, followup on NRR letters, followup on TMI lessons, and emergency preparedness. The inspection involved 305 inspection hours onsite by two NRC inspectors this included 52 hours of offshift inspection.

Results: No items of noncompliance were identified. One deviation from a commitment was identified related to a commitment to revise procedures.

DETAILS

1. Personnel Contacted

F. Tierney, Plant Manager
J. Brokaw, Plant Superintendent, Operations and Maintenance
E. Watzl, Plant Superintendent, Plant Engineering and Radiation Protection
A. Hunstad, Staff Engineer
R. Lindsey, Superintendent, Operations
J. Nelson, Superintendent, Maintenance
J. Hoffman, Superintendent, Technical Engineering
D. Mendele, Superintendent, Operations Engineering
D. Schuelke, Superintendent, Radiation Protection
R. Stenroos, Assistant Radiation Protection
A. Smith, Senior Scheduling Engineer
M. Klee, Superintendent, Nuclear Engineering
K. Albrecht, Superintendent, Quality Assurance
D. Haugland, Engineer
G. Lenertz, Engineer
K. Beadell, Engineer
D. Stember, Engineer
G. Miller, Engineer
G. Sundburg, Production Engineer
L. Anderson, Production Engineer
G. Sabaitis, Responsible Engineer
D. Cragoe, Shift Supervisor
G. Edon, Shift Supervisor
P. Ryan, Shift Supervisor
M. Balk, Shift Supervisor
T. Goetsch, Shift Supervisor
D. Walker, Shift Supervisor
P. Valtakis, Shift Supervisor

2. Organization and Administration

M. Klee has been promoted to the position of Superintendent, Nuclear Engineering. He replaces M. Sellman, who has been reassigned to the corporate training staff.

3. Operational Safety Verification

a. General

Unit 1 refueling and maintenance outage was completed and the plant was back on line October 24th. Power was limited to less than 50% for two days while the licensee evaluated a flux tilt identified during physics testing. Startup test results were reviewed by RIII inspectors.

EG&G representatives are on site with a mobile laboratory to conduct special sampling in conjunction with an NRR contract relating

to a research program on effluent measurements. Site visitors included R. Woodruff, IE Headquarters, November 3-5, and W. S. Little, RIII on November 20, 1980.

b. Plant Trips

1) Unit 2 Manual Reactor Trip

On October 20, 1980, at approximately 16:11 Prairie Island Unit 2 was manually tripped when a control room operator noticed a decreasing turbine load and turbine control valves closing. Investigation of the cause revealed that a construction worker apparently had inadvertantly tripped breaker 25M, which deenergized the 480 volt bus that supplies power to the Unit 2 turbine EH Control System. The breaker was reset and turbine EH Control restored. The inspector observed that the licensee notified NRC of the trip via the red phone.

Following the trip all systems responded normally except that one source range channel did not respond when high voltage was automatically restored. The source range detector was replaced and surveillance testing was completed prior to restart.

2) Safety Injection and Reactor Trip Unit 1

On November 11, 1980 at 09:28 while performing SP-1032, Safeguards Logic Test Surveillance, an instrument technician caused activation of one train of safety injection (SI) and a reactor trip. The control room operator started the other SI pump until the cause could be determined.

Plant design provides that although the SI system is actuated, the borated water is not injected unless reactor coolant system pressure falls below the SI pump discharge pressure, so SI action was terminated without injection to the reactor coolant system.

When plant conditions permitted, and in accordance with plant procedures and Technical Specifications, the SI signal was reset and systems realigned for Unit 1 restart.

Following the plant trip the inspector ascertained the status of the reactor and safety systems by observation of control room indicators and discussions with licensee personnel concerning plant parameters, emergency system status and recovery in progress. The inspector verified establishment of proper communications and reviewed the corrective actions taken by the licensee. All systems responded as expected and the plant was returned to operation at 1733, November 11, 1980.

c. Small Fire in Administration Building

The inspector observed licensee fire brigade extinguish a fire in the roof of the administration building on October 28, 1980. The fire was caused by sparks from a welder's torch igniting insulation during construction of the addition to the administration building. The fire was quickly extinguished and caused no damage except to the roofing insulation.

d. Tours

Tours of the auxilliary and turbine buildings and external areas were conducted to observe plant equipment conditions, including potential fire hazards, and to verify that maintenance requests had been initiated for equipment in need of maintenance. By observation and direct interview, the inspector verified that security procedures were being implemented in accordance with the plant security plan.

The inspectors observed plant housekeeping/cleanliness conditions, and verified implementation of radiation protection controls. During the tours the inspector noted two constant air monitors (CAM's) that had low air flow. Also the deaerator offgas monitor local alarm was activiated, although there was no indication of activity increase on the monitor recorder chart. These items were discussed with radiation protection and plant supervisory personnel. Subsequent tours found the CAM's operable.

The inspector participated in a scheduled inspection of Unit 2 containment at power. The licensee conducts weekly inspections of containment, alternating units, so that each unit is inspected every other week. No items of concern were identified.

e. Independent Verification

The inspector performed an independent verification of the accesible portions of the safety injection, containment spray and caustic addition systems. No items of concern were identified.

4. Emergency Preparedness

The inspector observed the licensee's participation in exercise of the State Emergency Plan, conducted on October 14th. The licensee initiated the drill and provided the communications for the drill, simulating an accident that required activation of the Emergency Plans for the states of Minnesota and Wisconsin. This included dispatch of an ambulance to the site to transport an "injured" employee to the hospital. The drill was completed with minimum affect on plant activities.

5. Design Changes and Modifications

Through record review and direct observation, the inspector verified that design change 80Y127 Safety Injection Piping reroute was initiated in accordance with 10 CFR 50.59; that the design change was reviewed according to Technical Specification requirements; that the design change was

conducted in accordance with written procedures which included identification of inspections required by codes or standards, and acceptance test procedures which defined acceptance values or acceptance standards; that test records verified equipment and system performance met Technical Specification/FSAR requirements, that installation procedures were adequate for the identified function and that records of design changes were maintained as described in the established QA program.

6. Maintenance

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

The inspector 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. Work observed included the following work requests:

WR-D6318-NI-Q Replace 2N32 SR/IR Detector

WR-D6458-MS-Q Repair (Furmanite) of MSIV Stuffing Box Flange

7. Surveillance

The inspector witnessed portions of surveillance testing of safety related systems and components. Witnessing included verifying that the tests were scheduled and performed within Technical Specification Requirements, observing that procedures were being followed, that LCO's were not violated and that system restoration was completed. Tests witnessed included test No. SP-1022, Boric Acid Tank Level Analog Test. This test was performed after maintenance on the 121 Boric Acid Storage Tank prior to placing the tank in service. Two level channel bistable trip points were found below acceptance levels. Work Requests were initiated to adjust the bistables. After adjustment the surveillance was repeated and the test was satisfactory.

The inspector observed preparations for the containment integrated leak rate test and observed portions of the safety injection flow test. The inspector also witnessed portions of Test No. SP-1032, Unit 1 Safeguards Logic Test, Test No. SP-1093, Diesel Generator Manual and 4 KV Voltage Rejection - Restoration Scheme Test, and SP-1006, Unit 1 Nuclear Power Range Axial Offset Test. All tests were completed satisfactorily.

8. Storage of Solid Radioactive Waste

The inspector reviewed the status of the licensee's onsite storage to estimate capacity of the facility. No areas of concern were identified.

9. Containment Sump Level Monitoring

The inspector reviewed the status of containment sump level alarms and control room indications per RIII request for information. No areas of concern were identified.

10. Interim Criteria for Shift Staffing

The licensee had taken steps to limit operator working hours in response to IEC 80-02, Nuclear Power Plant Staff Work Hours. The inspector confirmed that the licensee had issued administrative procedure for control of working hours in accordance with the NRR requirements,/1 and that the requirements were implemented prior to November 1, 1980.

11. Licensee Event Reports

Through direct observation, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportablity requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with Technical Specifications. (Closed)

a. P-RO-80-17 Inoperability of Two Charging Pumps

b. P-RO-80-19 Power Range High Power Trip Setpoint

c. P-RO-80-21 Design Change Discrepancy

Details were described in a previous inspection report./2

d. P-RO-80-22 Inoperable Fan Coil Unit Dome Damper

e. P-RO-80-25 Steam Generator Bolting Found Defective

Details were described in a previous inspection report./3 The licensee submitted a corrected report on September 25, 1980.

f. P-RO-80-26 Inoperable No. 22 Auxiliary Feedwater Pump

g. P-RO-80-27 Steam Flow Transmitter Drift

h. P-RO-80-29 Failure of No. 23 Inverter

i. P-RO-80-30 D2 Diesel Tripped on High Crankcase Pressure

j. P-RO-80-31 Missed Steam Exclusion Test

k. P-RO-80-33 Inoperability of a Unit 1 Steam Flow Transmitter

l. P-RO-80-34 Inoperable Auxiliary Building Special Ventilation System

The inspector noted that the letter transmitting the report identified the Unit 2 docket number. The report correctly identifies the license and docket numbers.

/1 NRR Letter to All Licensees, Subject: Interim Criteria for Shift Staffing, dated July 31, 1980
/2 IE Inspection Report No. 50-282/80-13
/3 IE Inspection Report Nos. 50-282/80-15; 50-306/80-16

12. I. E. Bulletins

The inspector reviewed the licensee's written response to the following bulletins, verified that the response included the required information and confirmed that the information in the response was accurate.

a. IEB 80-12 Decay Heat Removal System Operability

The licensee's response/4 stated that changes to procedures were being initiated and would be incorporated by August 1, 1980.

Review of procedures and discussions with licensee technical staff personnel verified that controls were in effect to assure that the decay heat removal system would be operable, through control of start of all maintenance and testing by shift supervisors. However, the additional commitment to impose initial conditions upon electrical, mechanical and instrumentation and control maintenance procedures was not incorporated by August 1, 1980.

During the inspection period the licensee reviewed the applicable procedures, verified that operating and maintenance procedures already included appropriate precautions and submitted revisions to preventive maintenance procedures to add appropriate precautions.

The inspectors discussed the item with licensee technical staff and management and emphasized the need to communicate all commitments (including time schedules) to all personnel affected.

The licensee's controls appeared adequate to assure operability of the decay heat system, therefore no response to the identified deviation will be required. (Closed)

b. IEB 80-15 Possible Loss of Emergency Notification System (ENS) With Loss of Offsite Power

The inspector confirmed that the ENS had been transferred to a safeguards power source and observed a portion of testing for operability with a simulated loss of offsite power. (Closed)

c. IEB 80-19 Failure of Mercury-Wetted Relays in Reactor Protective Systems

No relays of this type are installed in this facility. (Closed)

d. IEB 80-20 Failures of Westinghouse Type W-2 Spring Return to Normal Control Switches

The inspector confirmed that the licensee had initiated actions including continuity testing prior to receipt of the bulletin. In addition, the licensee initiated special testing to be performed on each circuit monthly and after each actuation until the circuit is modified.

/4 NSP Letter to RIII. Response to IEB 80-12, dated 6/6/80

Modifications for Unit 1 were completed during the refueling outage except for certain switches where the "standard" revision would not provide the desired results. The design change procedure has been amended to provide workable circuits. These circuits will be modified during the next equipment outage that will permit the work. Unit 2 switches will continue to be tested until they have been replaced.

The licensee will update the bulletin response. (Open)

e. IEB 80-23 Failures of Solenoid Valves Manufactured by Valcor Engineering Company

The licensee response describes actions taken to identify valves installed. The licensee evaluated the eight valves installed in the recently installed containment auxiliary building chilled water system and they function to transfer containment cooling systems to the safeguards mode, allowing cooling water to provide cooling for the fan coil units. As the design provides that deenergizing the coil will transfer the system to the safeguards mode, failure of the solenoid provides the same function, so does not present a safety concern.

In order to assure realiability and to provide uniformity in plant equipment for improved maintenance and spare parts supply, the licensee plans to replace the valves at the first outage after replacement valves are on hand. (Open)

f. IEB 79-01B Environmental Qualification of Class IE Equipment

During the licensees detailed review of Class IE electrical equipment in response to the bulletin, the licensee reviewed the environmental qualification test report for NAMCO Controls Model EA-180 limit switches. The test report included installation instructions stating that "the wire's passage through switch conduit entrance must be sealed in such a way as to maintain switch integrity under required service conditions." The licensee has ordered qualified seals for the EA-180 limit switches inside containment and will install them at the first opportunity after receipt.

The licensee reported the findings in their recent bulletin response/5 and also informed NRR of the situation in a supplemental letter/6 discussing TMI lessons learned implementation. The inspector discussed additional reporting requirements of the Technical Specifications and the licensee will submit an event report. (Open)

13. Review and Audit

The inspector attended an Operations Committee meeting as an observer. No areas of concern were identified.

/5 NSP Letter to RIII Subject: Fiscal Response to IE Bulletin No. 79-01B, dated October 31, 1980

/6 NSP Letter to NRR Subject: Lessons Learned Item 2.1.3.a, Position Indication - Relief and Safety Valve, dated November 13, 1980

14. TMI-2 Lessons Learned Items

Paragraph 15 lists correspondence relating to actions required by licensees resulting from the NRC staff reviews regarding the TMI-2 accident. This inspection included additional review and inspection efforts to assure that inspection of the items identified as short term requirements had been completed and documented in inspection reports. The inspectors reconfirmed licensee actions where necessary to provide the documentation. Items are identified by NUREG-0578 paragraph identification.

2.1.1. Emergency Power Supplies

(a.) Pressurizer Heaters

The inspector had verified that the licensee demonstrated capability of transfering the backup heater group "B" to the safeguards bus. No changes were required.

(b.) Power Operated Relief Valve (PORV) and PORV Block Valves

No changes were required. The design provided for actuation via uninterruptable power supplies.

(c.) Pressurizer Level Instruments

No changes were required. The instruments are powered from uninterruptable power sources.

2.1.3 (a.) Direct Indication of PORV and Safety Valve Position

The inspector had confirmed that the licensee had installed and tested acoustic monitors, and that the PORV limit switches were as described in the licensee response. The licensee had scheduled replacement of additional limit switches to be installed during refueling outage, to provide qualification for the "open" position. These switches are now scheduled to be installed when qualified seals are received, because of information received concerning requirements for sealing the switch conduit entrance. (Paragraph 12.f)

2.1.6 (a.) Integrity of Systems Outside Containment Likely to Contain Radioactive Materials

The inspectors had reviewed the licensee's procedures for verifying integrity during review of the licensee's actions in response to IE Circular 79-21. /7 The inspectors verified integrity of the ECCS systems outside containment during independent verifications performed in June and July, 1980. /8 No items of concern were identified.

/7 Inspection Report Nos. 282/80-09; 306/80-10

/8 Inspection Report Nos. 282/80-13; 306/80-13

2.1.7 (a.) Automatic Initiation of Auxiliary Feedwater System

The inspectors had reviewed the auxiliary feedwater system and verified system alignments during previous inspections. /9 /10 The licensee's design did not require change to meet the TMI-2 system requirements.

(b.) Auxiliary Feedwater Flow to Steam Generators

The inspector verified that control grade flow instrumentation was operable and that the licensee had initiated actions to provide safety grade indications, scheduled to be completed by January 1, 1981.

2.2.1 (a.) Shift Supervisor Responsibility

The inspector reviewed corporate and plant administrative procedures and confirmed that the responsibilities and duties of the shift supervisor are delineated.

(b.) Shift Technical Advisor (STA)

The inspector reviewed the training requirements and qualification program and verified that the program was implemented. Activities of the STA are monitored during routine inspection program. No problems have been identified.

(c) Shift and Relief Turnover Procedures

The inspector reviewed the licensees procedures and confirmed that they are as described in the licensee's commitments. Observation of shift turnover is a part of the routine inspection program.

2.2.2 (a.) Control Room Access

The inspector reviewed the licensee procedures related to control room access and confirmed that the shift supervisor has the authority and responsibility to control access to the control room and to limit access whenever necessary to prevent disruption of normal or emergency operations.

(b.) Onsite Technical Support Center (TSC)

The inspector confirmed that the TSC had been established and that the center was equipped as described. Procedures for activating the TSC are included in the licensee's operations manual F3 - Emergency Plan.

/9 Inspection Report Nos. 282/79-13; 306/79-10

/10 Inspection Report Nos. 282/79-14; 306/79-15

(c.) Onsite Operational Support Center (OSC)

The inspector confirmed that the licensee had established the OSC and that it was equipped as described.

15. References - TMI-2 Lessons Learned

1. Letter, L. O. Mayer to Director, NRR, dated 10/17/79, Commitment to Implement Requirements of NUREG-0578.

2. Letter, L. O. Mayer to Director, NRR, dated 11/20/79, Lessons Learned Supplemental Information.

3. Letter, L. O. Mayer to Director, NRR, dated 12/14/79, Notification that Prairie Island would be in compliance with NUREG-0578 by January 31, 1980.

4. Letter, L. O. Mayer to Director, NRR, dated 12/18/79, transmitting information on auxiliary feedwater system.

5. Letter, L. O. Mayer to Director, NRR, dated 12/31/79, forwarding report on Lessons Learned Implementation.

6. Letter, L. O. Mayer to Director, NRR, dated 3/13/80, forwarding supplemental information on Lessons Learned Implementation.

7. NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short'Term Recommendations" dated July 1979.

8. Letter, D. Eisenhut, to All Operating Nuclear Power Plants, "Followup Actions Resulting From the NRC Staff Reviews Regarding the Three Mile Island Unit 2 Accident", dated October 17, 1979.

9. Letter, D. Eisenhut to All Operating Nuclear Power Plants, "Radioactive Release at North Anna Unit 1 and Lessons Learned", dated October 17, 1979.

10. Letter, H. Denton, to All Operating Nuclear Power Plants, "Discussion of Lessons Learned Short Term Requirements" dated 10/30/79.

11. Letter, A. Schwencer, to NSP, dated April 18, 1980, forwarding the staff evaluation of implementation of Category A Lessons Learned requirements.

16. Management Interviews

The inspectors attended exit interviews conducted by RIII inspectors G. Pirtle and T. Madena on October 24, and with N. Choules and D. Robinson on November 20, 1980.

The inspectors participated in a management meeting at the licensee's corporate offices on November 21, 1980 to discuss the results of the NRC systematic performance appraisal of the licensee.

The inspectors conducted interim interviews during the inspecting period and met with Mr. Watzl at the conclusion of the inspection. The inspectors discussed the scope and results of the inspection.

The inspector stated that one deviation from a commitment was identified during review of IE Bulletin 80-12, in that revisions to incorporate initial conditions for maintenance procedures were not completed by August 1, 1980. The inspector stated that because it appears that adequate control of the status of RHR systems was in effect via operational controls and that actions were taken to submit revisions to the maintenance procedures during this inspection, no response to the deviation would be required. The inspector emphasized the need to assure that all affected personnel are aware of commitments and time schedules.