U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/88013(DRP)

Docket No. 50-263 Licensee No. DPR-22

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

Facility Name: Monticello Nuclear Generating Station

Inspection At: Monticello Site, Monticello, Minnesota

Inspection Conducted: July 16 through September 6, 1988

Inspectors: P. L. Hartmann

C. L. Vanderniet

D. L. Schrum

Approved By: T. M. Jackiw, Chief
Reactor Projects Section 2B

9-23-88
Date

Inspection Summary

Inspection on July 16 through September 6, 1988 (Report No. 50-263/88013(DRP))
Areas Inspected: A routine, unannounced inspection by the resident inspectors of previous inspection findings; operational safety verification; maintenance; surveillance; Licensee Event Reports; Information Notices; SIMS MPA B-58 (Scream Discharge Volume Capability); and Bulletins.
Results: During this inspection period the plant operated at full power the majority of the time. Several power reductions to maintain adequate condenser vacuum occurred due to low river flow and high ambient temperature. Toward the end of the inspection period, full power was achievable when weather conditions improved. Of the seven areas inspected, no violations or safety concerns were identified. The licensee continues to perform well in most areas. At the end of the inspection period, the inspectors began to pursue questions regarding plant design specifications. This inspection will continue into the next inspection period.

DETAILS

1. Persons Contacted

*W. A. Shamla, Plant Manager
M. H. Clarity, Assistant to the Plant Manager
D. E. Nevinski, General Superintendent, Operations
R. L. Scheinost, General Superintendent, Quality, Security and Administration
J. H. Swailes, Superintendent, Radiation Protection
B. D. Day, Acting General Superintendent, Engineering and Radiation Protection
L. L. Nolan, Superintendent, Nuclear Technical Services

The inspector also contacted other licensee employees including members of the technical and engineering staffs, and reactor and auxiliary operators.

*Denotes the licensee representatives attending the management exit interviews.

2. Licensee Action on Previous Inspection Findings

a. (Closed) Violation (263/86004-01): Standby Liquid Control (SBLC) System Not Being Capable of Providing Injection Flow. The inspector reviewed the violation response and found the corrective action adequate to prevent recurrence. The inspector reviewed the fuse coordination review study and found it to be comprehensive and a quality document. In addition, Significant Operating Event 87022 was reviewed. This report documented field walkdowns of protection devices and resulted in further corrective action which included a wholesale improvement in the awareness of breaker-fuse coordination requirements. Several modifications were made prior to startup identified during the fall 1987 refueling outage field walkdowns. The inspector also verified that modifications were made to the SBLC system to eliminate the fuse coordination problem. The inspector previously observed a test of the squib valve circuitry which had verified the SBLC circuitry was modified properly.

b. (Closed) Violation (263/86004-02): Conditions Adverse to Quality Were Not Promptly Identified and Addressed. The cause of not promptly correcting problems with SBLC squib valve actuation circuitry was failure to properly assess NRC and General Electric notices. This, in part, was due to a single review. The operating experience review process was improved to prevent recurrence by: requiring an additional technical review; formalizing prioritization of all followup actions identified by the process; and requiring that plant safety be assessed. The inspector verified that the above changes were implemented into the program.

c. (Closed) Violation (263/86006-01): Mode Switch Position Contrary to Technical Specifications. The licensee completed the corrective actions identified in the violation response. The inspector verified that: instructions were issued for personnel to use the plant work control process to govern fuse replacement; modifications were made to process monitors providing for failing in a conservative manner upon loss of power; and the 24 VDC battery chargers were replaced.

d. (Closed) Violation (263/87004-01): Fire Door Blocked Open. The licensee response was adequate and corrective actions appear sufficient to prevent recurrence. The inspector verified that additional training in fire doors was incorporated into fire watch training and general employee training, and a checklist detailing fire watch responsibilities was implemented.

e. (Closed) Violation (263/87004-03): Failure to Follow Procedure. Two examples of failure to follow procedure were identified. The first involved failure of operators to strictly adhere to a surveillance procedure. The inspector verified that the procedure was revised to require independent verification, terminals were labeled to indicate panel number, and a modification was made to preclude the use of a jumper. The second involved a failure to use proper temporary change procedures with a surveillance procedure. The inspector verified the surveillance was changed to correct identified deficiencies, and management met with each operations crew to discuss the requirement of strict procedure adherence. The violation response was adequate to prevent recurrence.

f. (Closed) Violation (263/87004-04): Failure to Develop Test Procedure For Technical Specification Surveillance Test. The licensee replaced heat tracing and temperature controllers which included indicating lights. A procedure was developed to test the heat tracing each refueling outage and whenever heat tracing is required. An initial review of technical specification surveillance was done and it was determined that no other operability requirements exist without corresponding test requirements. A further consultant review of technical specifications including surveillance requirement was performed. The licensee does not consider that any surveillance requirements are being inadequately addressed. The inspector verified the above corrective actions which should prevent recurrence.

g. (Closed) Unresolved Item (263/87015-06): Work Request Authorization (WRA) Preparation. This Unresolved Item identified several discrepancies in the completion of WRAs. The inspector reinspected active WRAs and noted that the previously identified discrepancies were no longer evident in either old or new WRAs. In addition, the procedure governing the completion of WRAs (4 ACD-15.5) has undergone revision and the WRA form itself has been revised. These improvements should help prevent any recurrence of the above discrepancies.

h. (Closed) Violation (263/87020-01): Failure to Develop Procedure for Verification of Flow to Motor Coolers. The licensee developed Test Procedure No. 1339, ECCS Pump Motor Cooler Flush, to provide a flush flow verification of service water through the core spray and residual heat removal pump motor coolers. The weekly checklist was reviewed so that only the flush valve on the motor coolers will be manipulated. The inlet and outlet valves are no longer allowed to be operated by the checklist. The inspector verified that the corrective actions were implemented and appear adequate to prevent recurrence.

i. (Closed) Open Item (263/88003-01): RHR System Discrepancies. This open item contained several discrepancies that were identified by the resident inspector during the walkdown of the RHR system train A. These items have been addressed by the licensee and corrective actions have been taken. One discrepancy on the RHR pump instrument lines has not been corrected; however, this discrepancy has been incorporated into open item 263/88013-01.

j. (Closed) Unresolved Item (263/88004-02): Fire Doors Left Open. This unresolved item resulted in a violation issued in Inspection Report 263/88006. The matter is resolved.

k. (Closed) Open Item (263/88004-03): Water Hammers. Two water hammers occurred which required additional attention by the licensee. The first occurred while placing the RHR A train in the torus cooling mode. The licensee initiated a change to the operations manual to require venting the RHR system prior to manual initiation. The second water hammer involved the high pressure coolant injection (HPCI) system. A small section of piping was insulated and upon review it was learned that originally this section of line was uninsulated. The insulation was removed, and that section of line's routine temperature dropped significantly. The operation of HPCI was then performed and no water hammer occurred. This item is closed.

l. (Closed) SIMS MPA B-58 Open Item (263/88004-05): This item was opened during the inspection for Temporary Instruction (TI) 2515/90, Inspection of Licensee's Implementation of Multi-Plant Action Item B-58, Scram Discharge Volume Capability.

The inspector had previously verified that the licensee was in full compliance of all selected criteria in TI 2515/90 except for Item 04.07. The required action was to verify that procedures exist for operator action in the event water is detected in the instrument volume (IV). The list of description of indicator light and alarms and corrective actions was not adequate for the operator to respond to the indication of water in the IV.

The licensee has written a new Alarm Response Procedure. This document has detailed document actions for an operator to respond to water in the IV. The inspector has reviewed the required operator actions in the alarm response procedure and found the licensee corrective action adequate. Based on these findings, Open Item 263/8804-05 is closed.

m. (Closed) Open Item (263/88010-03): High Vibration on No. 11 Standby Gas Treatment (SBGT) Fan Motor. The inspector verified that the licensee was adequately addressing high vibration readings for the No. 11 Fan Motor. The licensee has been trending high vibration for this non-section 11 tested motor over a two-year period. Currently an active WRA has been issued to replace the motor during the next refueling outage. If the motor fails, the work will be conducted at that time since a technical specification action statement requires the system to be operable.

n. (Closed) Unresolved Item (263/88015-03): Review of Operational Events. Two events required review to close out this item, LER 87016 and 87020. These two events were not part of Violation 263/87021-01. The LER 87016 is reviewed and closed in Paragraph 6 of this report. LER 87020 was closed by Inspection Report 88009. That report closed a violation regarding log keeping (263/88015-04) which was improperly labeled 88015-03. In summary, no further action is required for this item 263/88015-03 and it is closed. Violation 263/88015-04 was closed by report No. 88015-03 and the designation contained a typographical error.

o. (Closed) Violation (263/87021-01): Failure to Follow Approved Procedures. This violation cited six examples of a failure of licensee personnel to follow approved procedures. One of the examples (1.c.) was incorrectly identified and is; therefore, removed as an example.

(1) This example was that of a failure to correctly perform a heat-up soak on the CGCS reaction chamber surveillance test. The individual involved was counseled regarding his actions. The inspector observed the most recent performance of the test and noted that it was performed correctly.

(2) This example regarded the method of performing independent verification. The licensee has instructed all Shift Supervisors as to who is qualified to perform independent verification. This action should prevent any recurrence of the above example of the violation.

(3) This example was covered in Licensee Event Report (LER) 263/87018, and was closed by Inspection Report 263/88009. The corrective action to prevent recurrence for this example was identical to the actions covered in the LER; therefore, this example is closed.

(4) This example was covered in LER 263/87019 and was closed by Inspection Report 263/88009. The corrective action to prevent recurrence for this example was identical actions in the above LER; therefore, this example is closed.

(5) This example was covered in LER 263/87021 and is closed in Paragraph 6.e. of this report. The corrective action to prevent recurrence for this example was identical to the action in the above LER; therefore, this example is closed.

3. Operational Safety Verification (71707)

During the inspection period the plant operated near full power. Several power reductions occurred in order to maintain adequate condenser vacuum. Late in the inspection period, river flow rose significantly due to increased rainfall. Also, ambient temperatures dropped considerably. These two changes provided for 100 percent power operation with adequate condenser vacuum.

Routine Inspection

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the inspection period. The inspector verified the operability of selected emergency systems, reviewed tagout records, and verified proper return to service of affected components. Tours of the radwaste building, reactor building, intake structure, and turbine building were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance.

The inspector performed a system walkdown of the Residual Heat Removal System Train A during this inspection period.

The inspector, by observation and direct interview, verified that portions of the physical security plan were being implemented in accordance with the station security plan.

The inspector observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. The inspector also witnessed portions of the radioactive waste system controls associated with radwaste shipments and barreling.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

No violations or deviations were identified in the review of this program area.

4. Monthly Maintenance Observation (62703)

Station maintenance activities of safety-related systems and components listed below were observed/reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards and in conformance with technical specifications.

The following items were considered during this review: the limiting conditions for operation were met 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; parts and materials used were properly certified; radiological controls were implemented; and fire prevention controls were implemented. Work requests were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety-related equipment maintenance which may affect system performance.

Portions of the following maintenance activities were observed/reviewed:

- Installation of Starting Solenoids for the Diesel Fire Pump
- Post Accident Sampling Torus Gas Pump

No violations or deviations were identified in the review of this program area.

5. Monthly Surveillance Observation (61726)

The inspector observed surveillance testing and verified that testing was performed in accordance with adequate procedures, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspector observed/reviewed the following test activities:

- Drywell High Pressure Scram and Group 2 and 3 Isolation Test
- Fire Detector Functional Test

No violations or deviations were identified in the review of this program area.

6. Licensee Event Reports (93702)

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to deter that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence been accomplished in accordance with technical specifications.

a. (Closed) LER 263/86018: Inoperable Intermediate Range Monitor (No. 15, 16 and 17. On June 14, 1986, during refueling, a voltag transient was experienced that caused the protective fuses in al IRMs on the "B" Reactor Protection System (RPS) to blow. When t +24 VDC power supply fuse was replaced, all alarms cleared and t IRM readings returned on-scale. When the IRM functional test wa later performed, all four "B" IRMs were found to be inoperable.

Subsequent testing revealed a design flaw in the IRM electronics Failure of one IRM power supply does not cause an annunciated or tripped condition of the IRM. Prior to startup, a modification installed that activates the IRM INOP circuitry under these conditions.

The inspector verified that: instructions were issued for perso to use the plant work control process to govern fuse replacement modifications were made to process monitors providing for failin a conservative manner upon loss of power; and 24 VDC battery chargers were replaced.

b. (Closed) LER 263/87005: Trip of Reactor Building Vent Wide Rang Gas Monitor Due to Noise Spike. During full power operation on February 11, 1987, at 12:13 p.m., a reactor building ventilation isolation and standby gas treatment system initiation occurred. This was caused by a High High trip of Channel B (RBV) wide rang gas monitor. The trip and the RBV isolation were reset and the system was shut down within five minutes.

At the time of the event, the RBV Channel B WRGM was operating normally. Spurious electronic noise was sensed by the detector causing it to indicate false high counts causing the trip and actuations.

The licensee contacted the manufacturer and identified all field change orders (FCO) relating to noise suppression applicable to Monticello equipment. One FCO was found not installed and was subsequently added to the WRGMs. Presently, the licensee is wor with the manufacturer in an attempt to identify possible solutio in order to reduce noise generated from the stack selector for t RBV WRGMs.

c. (Closed) LER 263/87014: Substation Transformer Design Deficiency Causes Phase Fault and Results in Reactor Scram. On July 16, 198 while at 100 percent power, a substation transformer phase conduc broke free, caused a phase-to-phase fault and a plant undervoltag condition which resulted in tripping the reactor recirculation pumps, circulating water pumps, and a cooling tower pump. The undervoltage condition also caused a transfer to the emergency mo of the emergency filtration train, an Engineered Safety Feature (ESF) system. Condenser low vacuum, which resulted from the circulating water pump trips, initiated a reactor scram. The electrical fault cleared automatically and plant bus voltages immediately returned to normal. Plant operators restarted the required pumps and stabilized plant conditions. The transformer bus/phase conductor connection was not designed with sufficient strength to withstand the mechanical loads imposed on this connection.

The immediate corrective action was to replace the three-phase connectors with improved hardware. Further long term corrective action has been identified, budgeted, and scheduled.

d. (Closed) LER 263/87016: Standby Gas Treatment Initiation Due to Wide Range Gas Monitor (WRGM) Power Loss During Modification. A reactor building ventilation isolation and standby gas treatment system initiation occurred during the fall 1987 refueling outage a result of a procedural inadequacy during the performance of a modification procedure. The contract electricians performing the work inadvertently shorted an energized lead to ground resulting a blown fuse. Performance of the procedure was stopped, the fuse replaced, the isolation reset and the standby gas treatment syste shut down. The inspector verified that the modification procedur was revised to include the installation of bypass jumpers to prev such an event from recurring and that the licensee provided training to all electrical maintenance personnel concerning energized electrical work.

e. (Closed) LER 263/87021: ESF Actuations Due to Improper Jumper Placement During Preoperational Testing. On November 24, 1987, during a refueling outage, several Engineered Safety Features (ES were actuated from a single event. The initiations were generate while performing a modification preoperational test procedure anc jumper was inadvertently installed across an isolation logic rela coil instead of the intended relay contact. This caused the fuse an upstream distribution panel feeding the entire primary containment isolation logic panel to blow. A shutdown cooling tr standby gas treatment system initiation, and an isolation of reac water cleanup and reactor building and drywell ventilation systen resulted. The blown fuse was replaced and shutdown cooling was promptly restored.

The cause of the event was failure to recognize the correct relay terminal designations; therefore, attributed to personnel error. Improper fuse coordination affected the extent of the event. To preclude similar events, additional training was conducted and relay drawings were made available in key areas. Fuses have been changed to improve fuse breaker coordination.

The inspector verified that the above corrective actions were completed.

7. I.E. Information Notices Followup (92701)

For the I.E. Information Notices listed below, the inspector verified that the licensee is reviewing Information Notices (IN) and taking appropriate corrective actions. The responses were found to be adequate. The licensee often took additional steps to investigate items related to the IN to ensure that problems did not exist for other equipment, etc. in the plant. A brief synopsis of the licensee's engineering analysis is also provided.

The licensee has a backlog of INs that have not been completed. The number of backlog items on the "ETS assignments" has remained fairly constant over the past year--that presently being 284 assignments; so out of 13 INs reviewed per memorandum by the Director of Division of Reactor Projects who requested audits of INs, only six have been completed. This situation was found acceptable to the inspector because INs are reviewed for applicability and priority at the time of receipt so that INs that could have a large effect on safety would be reviewed and have corrective actions taken prior to other items in the backlog of items.

IN 87008 and IN 87042 were closed in Inspection Report 88006. Review of IN 87004, IN 86007, IN 87006, and IN 87023 are as follows:

a. (Closed) IN 87023: Loss of Decay Heat Removal During Low Reactor Coolant Level Operation. This notice alerted licensees to the potential loss of decay heat removal capability resulting from the loss of RHR pump suction during plant operation with low reactor coolant levels.

After review of this IN, it was concluded that the event described is specific to PWRs and is not applicable to the Monticello Nuclear Generating Plant.

The design at Monticello that precludes the condition described in the IN is that the shutdown cooling system isolates on a low reactor water level signal of +9" which is more than 20 feet above the shutdown cooling suction penetration. The shutdown cooling suction isolation valve is also interlocked with the RHR pump and trips the RHR pump when it isolates. Control room alarms will provide indication of a low reactor water level and of a RHR pump trip when it occurs.

The response for this IN was reviewed and found acceptable by the plant OC review group.

b. (Closed) IN 87006: Loss of Suction to Low Pressure Service Water System Pumps Resulting From Loss of Siphon. The licensee's summary for this IN is the following: No action was taken for this IN because the condenser circulating water, service water, emergency service water, RHR service water, and fire water systems at the Monticello Nuclear Plant are all supplied by separate pumps in the intake structure and do not use siphoning as a means of maintaining water flow.

The inspector verified by reviewing Drawing M-811 that the ESW and SW systems are independent and cannot lead to the situation as described in the Information Notice.

This IN assessment was reviewed and was found acceptable by the OC review committee.

c. (Closed) IN 87004: Diesel Generator Fails Test Because of Degraded Fuel. This notice was issued to alert licensees of the potentially significant problem pertaining to long term storage of fuel for diesel engines for emergency service.

The licensee investigation of this IN determined that all filters and strainers of the Diesel Oil System are cleaned periodically per PM 4101-1 and 4101-2. The fuel oil is tested monthly to ensure that the oil is within specifications. The diesel generator oil storage tank and diesel generator day tanks were last cleaned in 1984.

Additional steps the licensee is taking as a result of this IN are to investigate the use of additives in the fuel oil, write a procedure and schedule cleaning of the fuel oil storage tanks every 10 years, and schedule the cleaning of the base tanks on the diesels during the 1989 refueling outage.

In addition to the above responses by the licensee to the IN, the inspector interviewed system engineers for additional information on diesel fuel storage. A summary of this interview is that the licensee has a well-structured inspection, sampling, and test program for the diesel fuel. A sample is also taken of new diesel fuel prior to it being mixed with existing fuel oil. The tested fuel oil parameters were verified by the inspector to be within specifications. Test 0192, Diesel Fuel Oil Quality Check, was reviewed and found adequate.

The corrective actions for this IN were reviewed and found acceptable by the OC review group.

d. (Closed) IN 86007: Lack of Detailed Instructions and Inadequate Observance of Precautions During Maintenance and Testing of Diesel Generator Woodward Governors. This notice alerted licensees to a problem of loss of engine speed control which resulted from inadequate oil inventory following maintenance on the governor and ensured that they knew the importance of starting the engines in a highly controlled manner following maintenance activities.

The licensee actions were as follows: Current preventive maintenance procedures, surveillance procedures, and vendor technical manuals on the diesel generators and engine governors were reviewed to determine applicability to the problem in IN 86007. Due to design differences, it was determined that IEIN 86007 is not applicable to the security or fire pump diesels.

It was determined that the standby diesel generators use Woodward VG-8 dial type hydraulic governors and are subject to a loss of speed control on a low oil level in the governor. Because of design differences at Monticello, there is essentially no time delay between reaching the overspeed setpoint and the shutoff of fuel to the engine. The design at Grand Gulf Nuclear Station has a three to six-second time delay and allowed the diesel to be damaged. Therefore, the conditions that led to diesel damage at Grand Gulf would not occur at Monticello.

Due to the loss of speed control on low oil level, Monticello made a change to the daily log and round sheets to ensure that the oil level on each standby diesel generator governors is checked on each shift.

The inspector verified that the log and round sheets had been changed and that the oil level was being checked each shift.

The corrective actions for this notice were reviewed and found acceptable by the OC review group.

8. Bulletins (92703)

(Closed) Bulletin 87001: Defects in Westinghouse Circuit Breakers (TAC 67690). The bulletin response was reviewed by NRR and found acceptable. NRR notified the licensee by memo dated August 26, 1988, that their response was adequate.

9. Modification Review (37700)

During the systems walkdown of the Residual Heat Removal system the inspector reviewed an instrumentation modification on the RHR pump differential pressure instruments. While reviewing this modification several discrepancies were noted and assistance was requested from the region. Follow-up inspections on this issue have been initiated. The results of this follow-up will be tracked as an open item (263/88013-01).

10. Exit Interview (30703)

The inspectors met with the licensee representatives denoted in Paragraph 1 at the conclusion of the inspection on September 9, 1988. The inspectors discussed the purpose of the inspection and the findings.

The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any documents/processes as proprietary.