U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/92009(DRP)

Docket No. 50-263 License 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, MN

Inspection Conducted: May 28 through July 8, 1992

Inspectors: S. Ray

W. Stearns

Approved By: for M. Phillips, Chief, Reactor Projects Section 2B — 7/14/92 Date

Inspection Summary

Inspection on May 28 through July 8, 1992 (Report No. 50-263/92009(DRP))
Areas Inspected: A routine inspection by the resident inspectors of operational safety verification; onsite followup of events; Temporary Instruction 2515/115, "Verification of Plant Records;" maintenance and surveillance activities; engineering and technical support activities; followup of Licensee Event Reports; and other safety assessment and quality verification activities.

Results:

Plant Operations

The plant operated at or near full power for the entire inspection period except for brief power reductions on some weekends for control rod adjustments and turbine valve testing. Power was also briefly reduced to about 80% on June 3, 1992, due to a loss of condenser vacuum. Operators responded well to two events which could have resulted in reactor trips had not the proper actions been taken in a timely manner. Failure of operators to report or compensate for the inability to adequately see the view from a video camera in the reactor water cleanup room was a weakness.

Radiological Controls

An unresolved item was identified in that some radiation control specialists did not appear to spend enough time in the intake structure to correctly perform a required daily functional check of a contamination monitor. This will require additional evaluation by the NRC.

Maintenance and Surveillance Activities

Some minor problems were noted during the inspectors' maintenance and surveillance observations but none that created significant safety concerns. An open item was identified concerning the reuse of rubber gaskets during repairs of equipment.

Engineering and Technical Support

The engineering staff discovered a problem with an application of the loss of coolant accident analysis and were able to rapidly resolve the questions.

Safety Assessment and Quality Verification

Three licensee event reports were closed and information was provided with help from the licensee in response to two requests for information. An open item was identified concerning records for several hangers which did not have the required signature of the authorized inspector.

DETAILS

1. Persons Contacted

Northern States Power Company

D. Antony, General Manager, Monticello Nuclear Site
*B. Bart, Superintendent, Site Quality Assurance
M. Brandt, Acting General Superintendent, Operations
G. Brevig, Acting Quality Supervisor
G. Crosby, Superintendent, Quality Services
B. Day, General Superintendent, Engineering
M. Hammer, General Superintendent, Maintenance
*W. Hill, Plant Manager
J. Swailes, General Superintendent, Operations
*J. Windschill, General Superintendent, Radiation Services

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

*Denotes those attending the resident inspectors' exit meeting on July 8, 1992.

2. Plant Operations

a. Operational Safety Verification (71707)

The inspectors verified that the facility was being operated in conformance with the license and regulatory requirements and that the licensee's management was effectively carrying out its responsibilities for safe operation of the facility.

The inspectors verified proper control room staffing and coordination of plant activities; verified operator adherence with procedures and Technical Specifications; monitored the control room for abnormalities; verified that electrical power was available; and observed the frequency of plant and control room visits by station managers.

The inspectors also monitored various records, such as hold and secure card records, jumpers and bypasses, shift logs and surveillances, daily orders, and maintenance items.

All operations were considered acceptable except as noted elsewhere in this report.

(1) Loss of Condenser Vacuum

On June 3, 1992, the "B" off gas recombiner suddenly tripped while the plant was operating at 100% power. As a result,

condenser vacuum began to decrease toward the turbine trip setpoint. Operators reacted quickly to reduce generator load and start up the standby recombiner. Power was reduced to about 82%. The standby recombiner was started and vacuum began to recover with condenser vacuum at about 23.6 inches mercury. The turbine trip setpoint was about 23 inches.

The inspectors were present in the control room during the event. Shift management and the reactor operators performed well. Before the recovery was started, the shift manager briefed the crew on what had happened and what the recovery plans were.

A work request authorization was written to investigate and repair the cause of the recombiner failure. The results of that investigation were discussed in section 4.b.(1) of this report.

(2) Reactor Water Cleanup (RWCU) Room Camera

On June 19, 1992, during a routine plant walkdown, the inspectors noted that one of three camera views (RWCU pump 11) within the RWCU high radiation area was essentially inoperative providing only the slightest variations of gray for detail. On June 24, 1992, during a similar walkdown, the inspectors noted the condition remained unchanged. Operations shift management was asked if plant personnel had been entering the room to monitor the status of the equipment since the camera view was not usable. The cameras were recently installed as a radiation dose reduction measure to reduce the number of required entries into the RWCU room. Before the cameras were installed, entries were conducted on a shiftly basis. Discussions with the operators and a review of the radiation protection records indicated entries had not been made into the RWCU room for this one week period. As a result of the inspectors' concern, the room was entered and a burned out light was discovered and replaced making the camera functional again.

Although no specific direction had been given to the operators to enter the RWCU room if the cameras were not operable, this finding was discussed with operations management who stated that it would have been their expectation that the camera problem be reported and entries made until it was repaired. The failure of the operators to take prompt corrective actions to regain camera operation as well as failure to enter the room to monitor equipment status for a week were both considered weaknesses.

(3) Failure of Thermo-Lag 330 Fire Barrier System

On June 24, 1992, the inspectors provided the plant manager

with an advanced copy of NRC Bulletin 92-01, "Failure of Thermo-Lag 330 Fire Barrier System to Maintain Cabling in Wide Cable Trays and Small Conduits Free From Fire Damage." The inspectors discussed the importance of taking prompt compensatory measures in response to the bulletin. Within less than two hours the licensee had posted a continuous fire watch in the only location in the plant containing Thermo-Lag fire barrier material.

This item was previously discussed in Inspection Report 263/91017, section 5.a. At the end of that inspection, the licensee believed that the configuration of the Thermo-Lag material at the Monticello plant was not susceptible to the kinds of problems discussed in NRC Information Notice 91-47, "Failure of Thermo-Lag Fire Barrier Material to Pass Fire Endurance Test." Bulletin 92-01 reported the results of further testing on the material and discussed fire damage in configurations similar to Monticello's. The licensee had already started work on a design change to replace the material and as a result of the bulletin intended to increase the priority of the modification.

On July 2, 1992, the licensee installed and tested a temporary smoke detection and alarm system in the vicinity of the Thermo-Lag material and reduced the continuous firewatch to an hourly firewatch in accordance with Technical Specifications. The inspectors observed portions of the post-installation testing of the alarm system.

(4) Lockup of Feedwater Regulating Valves

On July 7, 1992, both feedwater regulating valves locked up. The feedwater control hardware trouble alarm and the feedwater control valve locked alarm were received in the control room. Reactor water level started to increase and a high level alarm was received. Operators rapidly began dumping water through the reactor water cleanup system rejection path and took manual control of the feedwater valves to stop the level rise. Reactor water level rose from the normal 35 inches to greater than 45 inches by the time operators were able to stop the increase. The reactor trip setpoint was 48 inches. Feedwater control was then returned to automatic using the backup controller and reactor water level returned to normal.

The licensee's investigation of the problem was continuing but had not determined the cause of the lockup or been able to duplicate the problem by the end of the inspection period.

The rapid and correct operator action in response to the problem avoided a reactor trip.

b. Onsite Followup of Events (93702)

Potential High Pressure Coolant Injection Inoperability

On June 30, 1992, the licensee notified the NRC via the emergency notification system (ENS) that the high pressure coolant injection (HPCI) system had been declared inoperable. The licensee had just performed a quarterly inservice test which included recording pump bearing vibrations. Analysis of the recorded vibration data showed that one pump bearing had a measured vibration in the required action range. Since excessive vibration was not noted by the personnel during the test and the recorded reading was significantly greater than it had been on previous tests, the licensee decided to rerun that portion of the test.

The licensee reran the test with the inspectors observing. For the second test, recorded vibration data was normal and the licensee concluded that the previous data had been misrecorded. The licensee then declared the HPCI system operable and withdrew their ENS notification. Since retesting showed that the system had never been inoperable, the licensee did not intend to submit a licensee event report.

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

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

The inspectors obtained security door transaction records for a representative number of doors to rooms containing safety-related and other important equipment for a representative number of days. The transaction records were compared to the operator logs which indicated that readings had been taken in those rooms. The rooms checked were the emergency diesel generator room, upper and lower 4160 VAC switchgear rooms, intake structure, remote shutdown panel room, cable spreading room, and security diesel generator building. Log takers required to enter those rooms included the turbine building and reactor building non-licensed operators and the control room licensed operators. Records were checked for six separate days in June 1992. The days included both weekdays and weekends and entries were checked for all shifts. In all, about 130 room entries involving about 25 individual log takers were checked.

No discrepancies were noted in any of the entries checked for plant operators. Additional findings concerning this TI are discussed in section 3 of this report.

No violations or deviations were identified.

3. Radiological Controls

Verification of Plant Records (Temporary Instruction 2515/115)

As part of the activities associated with TI 2515/115, the inspectors examined records of the daily functional source check of the exit hand and foot personnel contamination monitor in the intake structure for the period of May and June 1992. The daily checks were to be accomplished by the duty radiation protection (RP) specialist in accordance with radiation protection procedure R.9.17, "Hand and Foot Monitor Check."

The monitor was located in the northeast corner of the intake structure about 100 feet away from a security door with a key card control system. Procedure R.9.17 specified that the daily source check be accomplished by checking each of four detectors in the monitor separately. That required operating the monitor four separate times with the source in a different location for each check. Each of the checks would normally take from 5 to 15 seconds depending on the automatically computed count time which varied with background radiation. The inspectors estimated that it should take at least about one and one half minutes to enter the room, proceed to the detector, accomplish the daily check, initial the calibration sheet attached to the monitor, and exit the room.

Procedure R.09.17 also required that the RP specialist completing the daily check record the results of the test on form 5771. That form, attached to the monitor, had spaces for the specialist to record sat/unsat and initial for each day. The inspectors verified that Form 5771 was completed and initialled by the duty RP specialist for each day during May and June, 1992.

The inspectors noted that for about 30% of the daily source checks, the RP specialist who had initialled Form 5771 spent only about one minute to one minute fifteen seconds in the room. For the other 70% of the checks, the specialist typically spent two and one half to three minutes in the room. The specific dates, times, and individuals checked were as follows:

Date	RP Specialist	Time in Room (min:sec)
5/1	A	3:30
5/2	A	2:29
5/3	A	2:41
5/4	B	1:06
5/5	C	11:09 & 1:04 (technician entered room twice during the day)
5/6	D	0:59
5/7	E	2:20
5/8	E	2:25
5/9	E	2:28
5/10	E	2:34
5/I1	F	2:27
5/I2	F	3:10

5/13	F	2:40
5/14	C	6:18 & 2:04 (technician entered rom twice during the day)
5/15	C	1:05
5/16	C	1:55
5/17	C	1:06
5/18	G	2:24
5/19	G	1:13
5/20	G	0:56
5/21	F	2:41
5/22	D	1:01
5/23	A	2:27
5/24	A	1:54 & 2:46 (technician entered room twice during the day)
5/25	D	1:00
5/26	D	0:59
5/27	D	0:58
5/28	A	2:46
5/29	G	1:10
5/30	G	1:51 & 0:51 (technician entered room twice during the day)
5/31	G	2:50
6/1	A	2:52
6/2	A	2:48
6/3	F	2:49
6/4	D	1:05
6/5	D	1:01
6/6	D	1:15
6/7	D	2:36 & 2:09 (technician entered room twice during the day)
6/8	E	2:40
6/9	E	2:35
6/10	E	2:29
6/11	A	3:00
6/12	A	3:10
6/13	A	2:29
6/14	A	2:50
6/15	C	1:35
6/16	C	1:13
6/17	D	1:14
6/18	E	2:53
6/19	E	2:46
6/20	E	2:53
6/21	E	2:49
6/22	F	2:44
6/23	F	1:03
6/24	A	2:43
6/25	C	2:55
6/26	C	1:15
6/27	C	2:21
6/28	C	2:23
6/29	G	2:30

6/29	G	2:30
6/30	G	0:56

It appeared that some specialists had not spent enough time in the room to accomplish the daily source check in accordance with the procedure.

Radiation protection procedure R.09.17, "Hand and Foot Monitor Tests," revision 3 is used to accomplish this task.

During the period of May and June, 1992, it appears that several radiation protection specialists apparently did not follow procedure R.09.17 while conducting daily functional checks of the hand and foot monitor in the intake building. This will require additional review and evaluation by the NRC and is considered an Unresolved Item (263/92009-01(DRP)).

The hand and foot monitor in the intake building was used as a exit monitor for personnel leaving the radiological controlled area. Plant operators used the monitor several times each day during routine rounds. Failure to detect an inoperable monitor due to failure to properly perform the daily source check could result in spreading radioactive contamination outside of the radiologically controlled area. The intake structure contained no contaminated areas and the hand and foot monitor has a long history of reliability so the probability of spreading contamination outside of the controlled area by that path was small. However, the monitor in the intake structure was the only one that the inspectors were able to check against security card reader records. The RP specialists were required to accomplish daily functional checks of numerous other radiation monitors throughout the plant.

This finding was discussed with the general superintendent, radiation services, who was conducting interviews with the personnel involved and investigating the expected time requirements for performing the evolution.

The nature of the unresolved item discussed above was reviewed at the exit interview on July 8, 1992. Licensee management took exception to the finding in that the radiation protection specialists had apparently not performed the procedure correctly and stated their interviews indicated that the specialists had correctly done the procedure. However, it was noted that the specialists had not been able to duplicate the procedure under controlled, observed conditions within some of the times recorded in the security records.

One unresolved item was identified.

4. Maintenance/Surveillance (61726 & 62703)

a. Work Observed

Routinely, station maintenance and surveillance activities were observed and/or reviewed to ascertain that they were conducted in

codes and standards, and in conformance with Technical Specifications.

The following items were considered during this review: approvals were obtained prior to initiating work; test instrumentation was calibrated; 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; results were within specification and properly reviewed, and any deficiencies identified were properly resolved. The following maintenance and surveillance activities were observed:

WRA 92-05154	Investigate and Repair the Cause of the "B" Off Gas Recombiner Trip
Test 0034	ECCS Valve Permissive Sensor Calibration
Test 0108	HPCI System Tests
PM 7070	RHR Service Water System Instrument Maintenance Procedure
Test 0255-04-1A	RHR Pump and Valve Tests
WRA 92-05309	Install Temporary Fire Detectors
WRA 92-05231	Acoustic Monitoring for Microbiologically Induced Corrosion

b. Comments

(1) For WRA 92-05I54, the situation leading to the issuance of this work request was discussed in section 2.a.(1) of this report. The licensee's investigation determined that the "B" off gas recombiner main flow control computer amplifier had failed. The amplifier was replaced and the system operated normally.

(2) For Test 0034, the instrument technician had difficulty adjusting the trip setpoints on the Barton pressure detector. He then noticed that the two trip adjustment screws were labeled backwards. He had been trying to adjust one trip switch while monitoring the opposite trip switch's relay. The technician then relabeled the switches and informed his supervisor of the problem.

(3) For PM 7070, the instrument technicians had great difficulty adjusting the Barton differential pressure detector's trip switches for the #12 residual heat removal heat exchanger tube/shell differential pressure high and low alarms. Some of the "as found" trip setpoints were significantly out of

tolerance and the required "as left" trip setpoints were difficult to achieve. The technicians noted that simply reinstalling the glass cover on the instrument would cause the trip switches to go out of tolerance.

In addition, the inspectors noted that the technicians were using plus or minus 2% as the "as left" tolerance when the required tolerance according to the instrument and controls supervisor was plus or minus 1%. By general procedure, when the desired tolerance is not listed on the PM procedure and the instrument calibration card, it is assumed to be plus or minus 1% as it was in this case. In addition, there were other instruments listed in this procedure with an acceptance criteria of plus or minus 2%. Additionally, the technicians seemed to have forgotten the general practice. The actual data for these instruments turned out to be within plus or minus 1%. The inspectors informed the instrument and controls supervisor of the finding.

(4) During the part A, "Valve Exercising," portion of test 0255-04-1A, motor operated valve MO-2014, "11-RHR LPCI Inbound Injection Valve," was determined to be leaking. This valve was a pressure isolation valve. Discussion with the system engineer led to the conclusion that it was leaking within its allowed leakage rate of five gallons per minute even though leakage was great enough to cause the annunciator, "∇P between SWRHR and RHR," to annunciate on low ∇P. The system engineer stated that this valve would be placed on the ready log to be repaired during the next available shutdown opportunity.

(5) During the performance of WRA 92-05231, licensee personnel determined that some sections of service water piping were below the specified minimum wall thickness allowed by the ASME code due to erosion/corrosion. The licensee was still conducting measurements and evaluations at the end of the inspection period. The inspectors will follow this item in a future inspection.

c. Reuse of Gasket Material

During the review of Nonconforming Item Report (NCI) 91-067 which reported the #11 residual heat removal auxiliary air compressor being rendered inoperable, a concern was raised regarding the reuse of rubber gaskets. This practice resulted in "A" combustible gas control system being declared inoperable due to an air leakage of sufficient capacity to require isolation of the instrument air system. The licensee's evaluation of NCI 91-067 determined the root cause of this air leak to be a result of maintenance practices. The evaluation stated, "The gasket had apparently been reused several times. Each time it was reused, the filter bowl had to be clamped tighter to the filter head to

obtain an effective seal. This had two effects: (1) the gasket was being increasingly deformed, and (2) the filter bowl was being bowed on the sides by the increased torque..." Discussion on this issue with both engineering and maintenance supervision indicated that the reuse of rubber gaskets was not an uncommon practice with both safety-related and nonsafety-related equipment. The above issue is considered an open item pending further investigation by the inspectors and discussions with regional specialists (263/92009-02).

No violations or deviations were identified. One open item was identified.

5. Engineering and Technical Support (92701)

a. Nonconservative Pump Flow Criteria

On June 12, 1992, a system engineer reviewing the plant's loss of coolant accident (LOCA) analysis discovered that the criteria the plant used for required system flow from the core spray (CS) and low pressure coolant injection (LPCI) pumps was nonconservative. The General Electric SAFER/GESTR LOCA analysis had provided criteria for required flow through the core which had been incorrectly assumed to be for flow from the pumps. Because there was expected to be some loss of flow due to leakage through mechanical slip joints, not all of the system flow would reach the reactor core.

Previous testing had shown that system flow in the CS and LPCI systems was consistently greater than the criteria being used and the amount of leakage through the slip joints was expected to be small. For those reasons, licensee engineering personnel made the decision that the pumps could be considered operable while they gathered additional information.

By June 11, the licensee had received information from General Electric which confirmed that the expected flow loss was small enough that the systems had, in fact, always met the analysis criteria. However, a change to the licensee's technical specification for CS will be required to make the specified flow for the CS pumps consistent with the analysis. No change will be necessary to the LPCI technical specifications.

The licensee's identification, notification to the inspector's, and rapid resolution of this issue was considered strong. However, engineering personnel did not inform the plant operators of the operability question with the emergency core cooling systems. The inspectors emphasized the need to keep the licensed operators informed about all operability questions during engineering training sessions after this event.

b. Misaligned Seismic Restraint

On June 17, 1992, the inspectors informed an engineering supervisor that they had noted a seismic pipe restraint in the "B" residual heat removal room that appeared to be misaligned such that the hanger strut was tight against the pipe clamp. The inspectors were concerned that the strut might not have adequate freedom of motion to perform its design function during a seismic event. The system engineer inspected the hanger and contacted the manufacturer to determine the alignment specifications. The manufacturer stated that the recommended maximum angle between the clamp and the strut was 5 degrees. The strut in question was not within that tolerance.

The system engineer wrote a maintenance work request authorization to realign the strut and the work was completed the next day. The system engineer also wrote NCI Report 92-038 to initiate an evaluation of the cause and significance of the misaligned strut. The inspectors will review the licensee's evaluation of the NCI report when it is complete.

No violations or deviations were identified.

6. Safety Assessment/Quality Verification

a. Followup of Licensee Event Reports (LERs) (90712 & 92700)

(1) (Closed) LER 91008 Revision 0 and Revision 1: Inadequate Control Rod Drive Cap Screw Design Resulting in Stress Corrosion Cracking Indications

This item was previously discussed in Inspection Reports 263/91006, section 3.c.(3) and 263/91007, section 4.a. On April 23, 1992, the licensee issued revision 1 to the LER which reported the results of laboratory testing of the control rod drive cap screws. The revision reported that there was no evidence of active stress corrosion cracking on any of the eleven screws submitted for testing. The inspectors had previously noted that the screws submitted for testing were ones which showed the greatest indications. Based on the testing results, the licensee changed the LER to a voluntary report. No additional corrective actions are needed or planned. This issue is considered closed.

(2) (Closed) LER 92-006 revision 0 and revision 1: Inoperable Fire Barrier Due to Inadequate Fire Hazard Analysis

This issue concerned the unanalyzed potential for an oil fire to spread between two redundant trains of safe shutdown equipment. Revision 1 to the LER reported that the existing design features of the fire protection system were sufficient to prevent the scenario and the LER was changed to a voluntary report.

The issue was discussed in Inspection Report 263/92007, section 2.7 and was considered Open Item 263/92007-01(DRS) pending further review of the licensee's actions by a regional fire protection specialist. The LERs are considered closed to avoid duplicate tracking with the open item.

(3) (Closed) LER 92-007: Potential for Improper Sequencing of Loads Onto the Emergency Diesel Generators Caused by Inadequate Review of Modification

This issue was discussed in Inspection Report 263/92008, section 4.a. The LER was voluntarily issued by the licensee because of the potential generic interest in the issue. No further corrective actions remain that require inspector followup. This issue is considered closed.

b. Inadequate Inspection of ASME Section XI Class 3 Hangers

During this inspection period, the licensee informed the inspectors of a situation where an inservice inspection of Class 3 hangers at Monticello in 1984 through 1986 were not witnessed or otherwise verified by an authorized inspector as required by ASME (American Society of Mechanical Engineers) Section XI. Apparently 150 hanger assembly visual examination reports failed to have this signature. The licensee had determined this situation to be nonreportable due to the requirement being administrative only. Corrective actions planned by the licensee include visual examination and/or review of documentation by an authorized inspector as originally required by Section XI. This is considered an open item pending the completion of those reviews (263/92009-03).

c. Regional Requests

(1) Regional management requested that resident inspectors compile data regarding out of service times for emergency diesel generators for the past two years for use in a station blackout study. With the assistance of licensee personnel, the requested data was forwarded to NRC Region III.

(2) Regional management requested that resident inspectors compile simplified system drawings for use in a plant information book for reference during emergency response exercises or events. With the assistance of licensee personnel, the requested drawings were forwarded to NRC Region III.

No violations or deviations were identified. One Open Item was identified.

7. Management Change

On June 3, 1992, the licensee announced that Mr. John Swailes had been selected to fill the position of General Superintendent of Operations. Mr. Swailes had previously held the positions of nuclear engineer, radiation protection supervisor, and training center manager at Monticello and was most recently the training manager at another utility. Mr. Swailes assumed his new position on June 29, 1992.

8. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee, or both. Open items disclosed during the inspection are discussed in paragraphs 4.c and 6.b.

9. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 3.

10. Exit Interview

The inspectors met with the licensee representatives denoted in section 1 at the conclusion of the inspection on July 8, 1992. The inspectors summarized the purpose and scope 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 such documents or processes as proprietary.