U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/93015(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 Plant

Inspection At: Monticello Site, Monticello, MN

Inspection Conducted: August 12 through October 7, 1993

Inspectors: S. Ray
W. Stearns

Approved By: M. P. Phillips, Chief
Reactor Projects Section 2B

10/19/93
Date

Inspection Summary

Inspection on August 12 through October 7, 1993 (Report No. 50-263/93015(DRP))

Areas Inspected: A routine, unannounced inspection by the resident inspectors and others of plant operations, maintenance, engineering and technical support; and plant support, including a review of the employee concerns program in accordance with Temporary Instruction 2500/028, and follow-up of licensee event reports.

Results: No violations or deviations were identified. The following strengths and weaknesses were noted:

Plant Operations

Improvements were noted in the formality of communications among operators.

Maintenance

A strength was noted in that a mechanic went beyond the basic requirements of a work request to improve the performance of a safety-related system.

Engineering

The inspectors discovered an improperly supported pipe which might have impacted safety related equipment in a seismic event. The pipe had been in place for several years without being noted by the licensee.

Three examples of proactive and conservative system engineering activities were noted. Engineers discovered and corrected a small nonconservative bias in their computer algorithm for calculating core thermal power, they noted and analyzed the effect of a possible failure of a turbine bypass valve to fully open, and they noted a faster than expected wearing of recirculation pump motor generator brushes.

Through an extremely thorough and detailed review of an engineering calculation, site quality assurance personnel identified errors in the contractor performed analysis.

Plant Support

The inspectors determined that the licensee had an adequate means for employees to raise safety concerns without the fear of retribution.

DETAILS

1. Persons Contacted

Northern States Power Company

L. Waldinger, General Manager Monticello Nuclear Site
G. Crosby, Superintendent Quality
W. Dhein, General Superintendent Operations (acting)
M. Hammer, General Superintendent Maintenance
*W. Hill, Plant Manager
M. Onnen, General Superintendent Operations
C. Schibonski, General Superintendent Engineering

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 October 8, 1993.

2. Plant Operations

The plant operated at full power for the entire inspection period except for brief power reductions for steam valve testing and control rod adjustments.

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.

No discrepancies were noted.

The inspectors noted an increased emphasis on the part of the operating crews on formality of communications during the inspection period. Increased use of repeat backs of orders and acknowledgment of correct repeat backs was noted.

b. Management Change

On September 15, 1993, Mr. Marv Onnen was named as the new General Superintendent Operations. Mr. Onnen held an active Senior Reactor Operator license on the unit and had formally been a Shift Manager. As part of Mr. Onnen's new position, he was also designated as a member of the plant operations committee.

No violations or deviations were identified.

3. Maintenance

a. Activities Observed (61726, 62703)

Routinely, station maintenance and surveillance activities were observed and/or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry 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:

Test 0004	Reactor Water Level
Test 0301	Safeguards Voltage
Test 0255	High Pressure Coolant Injection Operability
WRA 93-02376	Screenwash Pump Replacement
WRA 93-02398	Replace Coupling on #11 Emergency Diesel Oil Pump
WRA 93-02490	Measure Currents on #11 Recirc MG Brushes
Mod 93Q345-01	Vessel Level Backfill Line Installation (partial job observed - ongoing work)

For all activities observed the inspectors noted good communications and safe work practices.

b. Comments on Work Observed

For work request authorization (WRA) 93-02398, the mechanic displayed a good sense of ownership and pride in workmanship. The pump coupling was being replaced due to increased vibration. The instructions in the work request stated that alignment of the coupling should be checked at the completion of the job. The specifications for alignment given in the vendor technical manual were quite coarse and easily met. However, the mechanic believed that he could improve pump performance by improving the alignment through shimmying the motor.

After discussing his plans with the system engineer and superintendent of maintenance, he spent about two extra hours fine tuning the alignment. As a result, vibrations on the pump were significantly reduced and the service life of the flexible coupling should be increased.

Although the effort resulted in the #11 emergency diesel generator being inoperable for about two extra hours, the net result should be an increase in safety because the need for future equipment outages to replace the coupling may be reduced.

No violations or deviations were identified.

4. Engineering

a. Improper Pipe Support

On August 27, 1993, while on a plant tour with the acting general superintendent of operations (GSO), the inspectors identified a nonsafety-related pipe in the emergency filtration train (EFT) building that was supported in two places with wire. In one case, the wire was attached to a safety-related conduit and the pipe was located above a safety-related circuit breaker panel. The hangers appeared to be "temporary" construction artifacts that were intended to hold the pipe in place while it was fit up. However, the pipe had been in place for several years apparently without the improper supports being noticed.

The acting GSO immediately contacted the appropriate system engineer who issued non-conformance report 93-254 to document and track resolution of the issue. The inspectors and licensee identified four technical questions associated with the condition:

1) Could the pipe damage the safety-related conduit in a seismic event?

2) Could the pipe damage the safety-related panel if it failed?

3) If the pipe failed, what would be the effect on the control room and EFT ventilation system from the opening?

4) Was there a broader problem with piping support in general in the EFT building?

In its analysis of the non-conformance, the licensee determined that the configuration was not in accordance with the construction specifications for the building, but it was not safety significant. The two inch pipe was not sufficiently heavy to damage either the conduit or panel. It was a dry vent pipe and would therefore not cause flooding if it failed. Since it was a small pipe, it would also not provide a significant ventilation bypass path and the control room and EFT building would meet their design basis. An initial inspection did not discover any other similar configurations but a complete walkdown of the building had not been completed at the end of this inspection period.

The licensee installed a temporary support for the pipe in accordance with their temporary modification (jumper and bypass) program. A permanent modification to bring the pipe into conformance with the construction specifications was in progress.

Since the improperly supported pipe was nonsafety-related and would not have had a significant effect on any safety-related equipment should it have failed, this finding was not considered a violation. However, it was a fairly obvious deficiency that should have been identified by the licensee at the time of the EFT building construction or sometime in the last several years.

b. <u>Nonconservatism in Reactor Thermal Power Calculation</u>

On September 15, 1993, during an evaluation of base line thermal efficiency data, a licensee system engineer identified what he believed to be a nonconservative bias in the computer algorithm for calculating core thermal power. The bias was a result of the fact that the feedwater flow used in the feedwater enthalpy calculation was measured upstream of where reactor water cleanup (RWCU) system flow returned into the feedwater line, but the feedwater temperature used in the same calculation was measured downstream of the junction. Since RWCU temperature was lower than normal feedwater temperature, this should have resulted in a small nonconservative bias.

The engineer calculated that the temperature error would be about 0.6 degrees Fahrenheit assuming perfect mixing of the two streams. The licensee immediately ran a test to confirm the potential error by securing RWCU and measuring the effect on indicated feedwater temperature. The results confirmed the engineer's theory. The net result was that the reactor could have been operated at about 1.5 megawatts thermal (Mwth) above the licensed limit of 1670 Mwth.

The licensee immediately lowered reactor power and issued an order to the operators to limit indicated power to 1668.5 Mwth. The reactor vendor was contacted to discuss the plant specific and generic implications of the finding. On September 24, 1993, the licensee revised the computer algorithm to remove the bias. The licensee issued nonconformance report (NCR) 93-265 on September 27 to document the finding and corrective actions.

The licensee determined by record review that there were times in the past that the error had resulted in the plant being operated above its licensed power limit. However, the magnitude of the error was less than one tenth of one percent and well within the two percent overpower assumed in licensing and design basis calculations to account for instrument uncertainties. Thus the licensee concluded that they had operated within the plant's design basis and that the finding was not required to be reported per 10 CFR 50.72 or 50.73.

The inspectors concluded that the finding was not safety significant but was a good example of aggressive system engineering involvement and timely corrective action.

c. <u>Quality Assurance Identified Problem With Contractor Calculations</u>

The inspectors and NRC management have expressed a concern to the licensee in regard to the ability of the quality assurance (QA) organization to identify problems through early analysis of trends and findings. During this inspection period, the inspectors noted an example of improvement in this area.

The site QA group independently decided to follow-up resolution of nonconformance report (NCR) 93-098 concerning motor operated valves (MOVs) that were heavier than analyzed. The QA engineer performed a surveillance on the NCR resolution documented in surveillance report SR-MO-93-186.

The surveillance included an extremely detailed and indepth review of an MOV limiting component analysis performed by an outside contractor. The QA engineer noted numerous discrepancies in the calculations indicating that the original review by the licensee had been inadequate. The discrepancies were rapidly evaluated by licensee engineers and operability concerns were resolved.

The site superintendent of quality stated that he intended to conduct further surveillances on the licensee's reviews of contractor calculations. The inspectors considered this an example of proactive assessment by the quality assurance group and noted that this particular surveillance was extremely thorough and detailed.

d. <u>Analysis of Potential Reduced Bypass Valve Flow on Accident Results</u>

On September 24, 1993, the inspectors were informed that the most recent turbine bypass valve surveillance had indicated that one of the two bypass valves had only gone to 90 percent open. The system engineer thought that the problem was with the valve's test operator and the normal operator would not have been affected. However, as a conservative measure, the licensee conducted an analysis on the effect of reduced bypass flow on the accident analyses. Proper operation of the valve could not be verified until a shutdown.

The results of the analyses showed that the potential 5 percent overall reduction in steam flow on the accidents which depended on bypass flow for mitigation would have resulted in only a change in the third decimal place for critical power ratio. This effect was much smaller than the analysis error band and was, therefore, considered to be negligible.

The inspectors considered this issue to be an example of the licensee's conservative engineering and operating philosophy.

e. <u>Degradation of Brushes on Recirculation Pump Motor-Generators</u>

During this inspection period a system engineer performing periodic inspections of his system noted that the electrical brushes on the recirculation pump motor-generators were wearing faster than expected. The brush holders were of a slightly modified design and were being used for the first time during the current operating cycle. It soon became apparent that at least one of the brushes would probably not last until the end of the cycle. The concern was that if the brushes wore down further, arcing, loss of electrical continuity, and potential damage to the slip rings could occur. Any of the above could result in sudden loss of one of the recirculation pumps.

The licensee quickly developed the following action plan:

- Operators were instructed to institute a once every two hour inspection of the brushes.

- Operations was given guidance and criteria for securing the motor-generator if it became necessary.

- Nuclear engineers provided guidance for a rapid power reduction if it became necessary.

- The load dispatch center was consulted and the best date (October 16-17 weekend) for a power reduction to allow repairs was determined.

- The engineer consulted with the vendor about possible causes and corrective actions for the degradation.

- A work request was written and authorized for electricians to measure the current being carried by the brushes.

Although it was theoretically possible to replace the brushes one at a time while the motor-generator was operating, the licensee management decided conservatively to schedule a power reduction so that each motor-generator could be removed from service one at a time. At the conclusion of the inspection period, the power reduction was scheduled for October 17, 1993.

After discussions with the vendor, the engineer decided that the best course of action would be to replace the brush holders with refurbished old style holders rather than the modified ones until the cause of the wear was better understood.

No violations or deviations were identified.

5. <u>Plant Support</u>

a. <u>(Closed) Temporary Instruction 2500/028 - Employee Concerns Programs</u>

This temporary instruction (TI) was issued on July 29, 1993, and requested that the inspectors determine the characteristics of employee concerns programs that the licensee has implemented to provide employees, who wish to raise safety issues, an alternate path from their supervisor or normal line management to express those concerns and to encourage people to come forward with their concerns without fear of retribution. The inspection included interviews with the licensee personnel responsible for the employee concerns program, review of employee concerns hotline records, and examination of postings on licensee bulletin boards. The results of the inspection were documented in a questionnaire included as an attachment to this report.

As reported in the attached questionnaire, the licensee had an employee concerns hotline program which provided a means of raising concerns without retribution. However, because the licensee had a long history of successfully resolving concerns through normal management chains, the hotline program had seen little use since it was instituted.

b. <u>(Closed) Licensee Event Report (LER) 93-009: Uncontrolled Safeguards Information</u>

The licensee issued this LER on September 27, 1993, as a written follow-up for an August 26, 1993, event involving safeguards information. Inspection Report 50-263/93016(DRSS), Section 5, contained details of the NRC's inspection of the incident. Unresolved Item 50-263/93016-01 was issued pending completion of the NRC's review of this issue. Since the unresolved item was already issued and will include a review of the licensee's corrective actions, the LER is closed to avoid duplication.

No violations or deviations were identified.

7. <u>Exit Interview</u>

The inspectors met with the licensee representatives denoted in paragraph 1 at the conclusion of the inspection on October 7, 1993. The inspectors summarized the purpose and scope of the inspection and the findings. The licensee strengths and weaknesses identified in the report were discussed. 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.

Attachment: Employee Concerns Programs

Attachment

EMPLOYEE CONCERNS PROGRAMS

PLANT NAME: Monticello LICENSEE: Northern States Power Company DOCKET #: 50-263

NOTE: Please circle yes or no if applicable and add comments in the space provided.

A. PRDGRAM:

1. Does the licensee have an employee concerns program? (Yes or No/Comments)
   Formal program has been in place for about a year and a half.

2. Has NRC inspected the program? Report #_________
   No

B. SCOPE: (Circle all that apply)

1. Is it for:

   a. Technical? Yes, No/Comments)

   b. Administrative? Yes, No/Comments)

   c. Personnel issues? Yes, No/Comments)

2. Does it cover safety as well as non-safety issues? Yes or No/Comments)

3. Is it designed for:

   a. Nuclear safety? Yes, No/Comments)

   b. Personal safety? Yes, No/Comments)

   c. Personnel issues - including union grievances? Yes or No/Comments)

4. Does the program apply to all licensee employees? (Yes or No/Comments)

5. Contractors? (Yes or No/Comments)

6. Does the licensee require its contractors and their subs to have a similar program?
   (Yes or No/Comments) Contractors can use licensee system.

7. Does the licensee conduct an exit interview upon terminating employees asking if they have any safety concerns?
   (Yes or No/Comments)

C. **INDEPENDENCE:**

1. What is the title of the person in charge?
   Site Administrative Services Supervisor

2. Who do they report to?
   Superintendent Business Support

3. Are they independent of line management?
   Yes

4. Does the ECP use third party consultants?
   No

5. How is a concern about a manager or vice president followed up?
   Concern would be given to the manager's/VP's supervisor.

D. **RESOURCES:**

1. What is the size of the staff devoted to this program?
   One (to receive and log concerns and distribute them for resolution)

2. What are ECP staff qualifications (technical training, interviewing training, investigator training, other)?
   General human resources staff training appropriate for the position. No specific training in handling employee concerns.

E. **REFERRALS:**

1. Who has followup on concerns (ECP staff, line management, other)?
   Line management of the department involved with the concern is assigned responsibility for investigation and closure.

F. **CONFIDENTIALITY:**

1. Are the reports confidential?
   (Yes or No/Comments)

2. Who is the identity of the alleger made known to (senior management, ECP staff, line management, other)? (Circle, if other explain)

If anonymity is not requested, the identity of the caller would be available to whoever handles or reviews the concern.

3. Can employees be:

a. Anonymous? (Yes, No/Comments)

b. Report by phone? (Yes, No/Comments)

G. **FEEDBACK:**

1. Is feedback given to the alleger upon completion of the followup? (Yes or No - If so, how?)

The alleger's supervisor would normally provide the feedback.

2. Does program reward good ideas?

Unknown - no examples - not addressed in instructions for program. However, the licensee generally rewards good ideas from other programs.

3. Who, or at what level, makes the final decision of resolution?

Site General Manager

4. Are the resolutions of anonymous concerns disseminated?

Site newsletter

5. Are resolutions of valid concerns publicized (newsletter, bulletin board, all hands meeting, other)?

Unknown - no examples - not addressed in instructions for program

H. **EFFECTIVENESS:**

1. How does the licensee measure the effectiveness of the program?

No program to measure effectiveness. However, the licensee's QA department plans to interview employee's about program within the next few weeks in response to a whistleblowing allegation at the Prairie Island plant.

2. Are concerns:

a. Trended? (Yes or No/Comments)

There has been only one concern raised - too little to trend

b. Used? (Yes or No/Comments)

Unknown - not enough data to tell

3. In the last three years how many concerns were raised? one Of the concersn raised, how many were closed? 0 What percentage were substantiated? N/A

4. How are followup techniques used to measure effectiveness (random survey, interviews, other)?

N/A

5. How frequently are internal audits of the ECP conducted and by whom?

None

I. ADMINISTRATION/TRAINING:

1. Is ECP prescribed by a procedure? (Yes or No/Comments)

There is a one page instruction but not a formalized, reviewed procedure.

2. How are employees, as well as contractors, made aware of this program (training, newsletter, bulletin board, other)?

The phone numbers to call for the program are posted on almost all bulletin boards. In addition, the VP Nuclear recently issued a letter to all employees and contractors explaining the program. It is also covered in general employee training for new employees.

ADDITIONAL COMMENTS: (Including characteristics which make the program especially effective, if any.)

The licensee has a long history of successfully resolving concerns through normal management chains and thus has seen little use of the employee concern hotline program. The system has had only one call since it was started and that call was not about a technical or safety concern.

The licensee also has an 800 number for a QA Hotline that rings in its corporate offices. That number is also posted prominantly in the plant. That line has been in place for over a year and has had no technical or safety concern calls. The Manager Nuclear Operations Quality Assurance is responsible for that phone line and has a formal procedure for it.

The effectiveness of the licensee in resolving employee concerns through normal channels is further demonstrated by the very low number of allegations to the NRC from the site. There has been only one allegation in several years.

NAME: S. P. Ray / **TITLE:** Senior Res. Insp. / **PHONE #:** (612)295-2066 **DATE COMPLETED:** 8/27/93