

U. S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

RO Inspection Report No. 050-263/72-03

Subject: Northern States Power Company
Monticello Nuclear Generating Plant
Monticello, Minnesota

License No. DPR-22
Priority: N/A
Category: C

Type of Licensee: BWR (GE) 540 Mwe
Type of Inspection: Routine, unannounced
Dates of Inspection: May 8 and 9, 1972
Date of Previous Inspection: April 21, 1972

Principal Inspector: *Karl V. Seyffrit*
K. V. Seyffrit 6/9/72
(Date)
Accompanying Inspectors: *Karl V. Seyffrit*
for F. A. Dreher 6/12/72
(Date)
Philip H. Johnson
for W. Ogg 6/12/72
(Date)

Other Accompanying Personnel: None

Reviewed By: *Karl V. Seyffrit*
Gaston Fiorelli, Chief 6/12/72
Reactor Operations Branch (Date)

Proprietary Information: None

SECTION I

Enforcement Action: None

Licensee Action on Previously Identified Enforcement Matters

A letter was issued to the licensee on May 9, 1972, informing him of one item of noncompliance noted during the previous inspection.

Unresolved Items: None

Status of Previously Reported Unresolved Items

- A. Fire protection for the HPCI turbine oil system is considered adequate. Item resolved. (Paragraph 11)
- B. Inspection of vane type flow switches by the licensee is pending.
- C. Inspection of reactor building to torus vacuum breaker valve seats by the licensee is pending.
- D. The limitorque valves installed at Monticello are not from the same series as those which recently encountered failures at another facility. Item resolved. (Paragraph 10)
- E. The particular type of GE CR-120 relays which encountered failures at another facility are not in use at the Monticello plant. Item resolved. (Paragraph 7)

Unusual Occurrences

- A. A high temperature switch used to detect HPCI steam line leaks was determined to be out of calibration on April 3, 1972. (Paragraph 15)
- B. On March 28, 1972, the service water pressure controller in the B loop of the RHR service water system was discovered to be operating improperly. (Paragraph 14)

Persons Contacted

Monticello Plant Operating Staff

- C. Larson, Plant Manager
- M. Clarity, Superintendent - Plant Engineering and Radiation Protection
- W. Anderson, Superintendent - Operations and Maintenance

G. Jacobson, Plant Engineer, Technical
W. Nimmo, Maintenance Supervisor
W. Sparrow, Operations Supervisor
R. Mielke, Shift Supervisor
L. Nolan, Quality Engineer
R. Jacobson, Chemist

Northern States Power (Minneapolis Office)

B. Clark, Supervisor - Environmental Engineering
W. Jokela, Manager - Quality Assurance
A. Gray, Quality Assurance Engineer
F. Fahlen, Senior Construction Superintendent
M. Opstad, Nuclear Engineer

Northern States Power (Onsite Construction Group)

B. Coke, Construction Superintendent
J. Meier, Quality Assurance Inspector

Midwestern Contractors, Incorporated

D. Carpenter, Project Superintendent
S. Swanson, QC Engineer

Oscar Roberts Concrete Mix Plant

D. Wilcox, Plant Supervisor

Shakipoe Sand and Gravel Company

J. Haverly, Pit Supervisor

Management Interview

At the conclusion of the inspection, Mr. Dreher, Region III Reactor Construction Branch, conducted an interview with the following Northern States Power Company (NSP) representatives concerning radwaste facility construction:

C. E. Larson, Plant Manager
W. V. Jokela, Manager - Quality Assurance
J. C. Meier, Quality Assurance Inspector
A. G. Gray, Quality Assurance Engineer
F. H. Fahlen, Senior Construction Superintendent
M. P. Opstad, Nuclear Engineer
B. W. Coke, Construction Superintendent

SECTION I

Enforcement Action: None

Licensee Action on Previously Identified Enforcement Matters

A letter was issued to the licensee on May 9, 1972, informing him of one item of noncompliance noted during the previous inspection.

Unresolved Items: None

Status of Previously Reported Unresolved Items

- A. Fire protection for the HPCI turbine system is considered adequate. Item resolved. (Paragraph 11)
- B. Inspection of vane type flow switches by the licensee is pending.
- C. Inspection of reactor building to torus vacuum breaker valve seats by the licensee is pending.
- D. The limit torque valves installed at Monticello are not from the same series as those which recently encountered failures at another facility. Item resolved. (Paragraph 10)
- E. The particular type of GE CR-120 relays which encountered failures at another facility are not in use at the Monticello plant. Item resolved. (Paragraph 7)

Unusual Occurrences

- A. A high temperature switch used to detect HPCI steam line leaks was determined to be out of calibration on April 3, 1972. (Paragraph 15)
- B. On March 28, 1972, the service water pressure controller in the B loop of the RHR service water system was discovered to be operating improperly. (Paragraph 14)

Persons Contacted

Monticello Plant Operating Staff

- C. Larson, Plant Manager
- M. Clarity, Superintendent - Plant Engineering and Radiation Protection
- W. Anderson, Superintendent - Operations and Maintenance

Mr. Dreher discussed the aspects of facility construction which had been reviewed. He noted that revolution counters were not installed on the concrete mix trucks, to which Mr. Coke responded that counters would be installed. He also stated that the off-gas storage tanks had not been inspected since their arrival onsite. Mr. Coke replied that of inspecting and resealing the tanks or filling them with nitrogen be discussed with NSP engineering. (Paragraph 16)

Following the interview with construction management personnel Seyffert, Johnson, and Ogg conducted an interview with Messrs. Clarity, Jacobson, and Sparrow concerning plant operation aspects of the inspection. The following matters were highlighted by the principal inspector:

- A. He expressed his understanding that the licensee intended to install a second MSIV reset switch during the outage to begin on May 11. Mr. Larson concurred with this understanding. (Paragraph 12)
- B. He stated that the inspection had included a review of the replacement of 22 Barksdale AC pressure switches with the required DC switches. (Paragraph 13)
- C. He stated that the factors surrounding the calibration problem associated with HPCI high temperature switch setpoint had been reviewed and that he understood the licensee intended to check the calibration of switches upon their removal from the system to determine an as-found setpoint. (Paragraph 15)
- D. With reference to the service water pressure controller maloperation, the inspector expressed his concern with the failure to operationally test the component after maintenance. Mr. Larson stated that this had been recognized by his staff and corrective measures had been taken. (Paragraph 14)
- E. The inspector stated that the licensee's report^{1/} on the failure of the HPCI outboard steam isolation valve to close did not appear to have given sufficient attention to all the factors involved, particularly the failure of the gears to engage. Mr. Larson responded that the plant had been operating since the problem was encountered, and that it would be investigated further during the forthcoming shutdown. The inspector stated that the matter would be reviewed in more detail during the next inspection.

1/ NSP ltr to DRL, subject: Reporting of Occurrences, dtd 4-25-72

- F. The inspector stated that the licensee's followup report^{2/} on main steam line flow element performance had given satisfactory comparison of the observed characteristics with the ASME calculated performance for a Venturi with a discharge coefficient of 1.0. It did not, however, explain the difference between this calculated performance and the original characteristic curve provided by the vendor. Mr. Larson responded that the basic curve supplied by the vendor had been in error in that it had not been corrected for characteristic pressure of the steam.
- G. The inspector stated that a review had been conducted of efforts being expended on the formulation of the Quality Assurance Program, and that progress to date appeared to be slow. However, the content appears appropriate for the areas covered. (Paragraph 9)
- H. The inspector stated that background readings had been taken at several TLD (thermoluminescent dosimeter) locations, and that all had been consistent with general area background levels except for the one at the Maple Lake Substation where natural radioactivity in gravel recently deposited there gave a reading three times normal background.
- I. The inspector stated that, based upon his review of selected systems, he understood that the instrument calibration program was currently being transposed to a new and improved format. He suggested that care be taken to ensure that all instruments are included since several local reading instruments had been observed during a tour of certain systems which had been last calibrated in 1969 or 1970.
- J. The inspector referred to difficulties encountered with indicators on testable check valves, and stated that either the indication should be corrected to provide indication of satisfactory testing of the valves or the procedures should be changed, after a proper review, to provide an alternate indication of satisfactory test. (Paragraph 8)

2/ NSP ltr to D&L, subject: Performance Report for Main Steam Line Flow Elements, dtd 4-25-72

SECTION II

Additional Subjects Inspected, Not Identified in Section I, Where No Deficiencies or Unresolved Items Were Found

1. General

At the time of the inspection, the Monticello Plant was operating at essentially full rated power. Plant shutdown was scheduled for May 11 to permit operator examinations by the Operator Licensing Branch of the Directorate of Licensing.

2. Reactor Coolant System

- a. Review of Equipment Operator's Log, January through April 1972.
- b. Verification of proper heatup and cooldown rates (per Technical Specification 3.6.A.1), January through April 1972.
- c. Required sampling for gross beta activity and monthly isotopic analyses (Technical Specifications 4.6.C.1), January through April 1972.
- d. Completion of required reactor coolant chemistry analyses (Technical Specifications 4.6.C.2 and 4.6.C.3(a)), January through April 1972.
- e. Daily determination of reactor coolant system leakage (Technical Specifications 4.6.D), January through April 1972.
- f. Daily check of jet pump performance (Technical Specifications 4.6.G), January through April 1972.
- g. Verification of proper calibration of seven reactor coolant system instruments selected at random. Review of licensee's calibration program.
- h. Reactor coolant system maintenance records.
- i. Maintenance program for related electrical systems.
- j. Tour of accessible portions of reactor coolant systems.

3. Reactor Auxiliary Systems

Review of the following items for reactor core isolation cooling (RCIC) system, reactor water cleanup system, and reactor building closed cooling water system:

- a. Surveillance testing records during past 12 months to verify completion of RCIC system surveillance requirements (Technical Specifications 4.5.F.1).
- b. Maintenance records since commencement of plant operation.
- c. Verification of proper calibration of 14 instruments selected at random. Review of calibration program.
- d. Electrical preventive maintenance for associated components.
- e. Tour of accessible portions of the systems in company with the Superintendent - Operation and Maintenance.

4. Log Review

Control room Equipment Operator's Log, January through April 1972.

5. Repairs to IAR Transformer

- a. Discussion with Plant Manager of the failure of IAR transformer (reserve offsite power supply) including temporary repairs to faulty cable and plans for permanent corrective action.
- b. Compliance with Technical Specifications 3.9 requirements for power supplies during plant startup and operation.

6. Radwaste

- a. Status of construction.
- b. Concrete placement.
 - (1) Review of QC system.
 - (2) Follow-up record review.
 - (3) Follow-up observations of work.
Structures (off-gas tank).

- (1) Review of QC system.
- (2) Follow-up record review.

Details of Subjects Discussed in Section I

7. GE CR-120 Relays

As stated in a previous report,^{3/} failures were recently experienced with GE CR-120 relays at another facility. Licensee personnel stated during this inspection that the particular relay involved was a DC relay with an associated time delay function and that no relays of this type are in use at the Monticello plant.

8. Testable Check Valves

During review of surveillance testing of motor operated valves in the reactor core isolation cooling (RCIC) system, it was noted that a testable check valve in the discharge line to the reactor had failed to indicate proper operation during several surveillance tests. Discussion with plant personnel indicated that this problem was not unique to the RCIC system, but had also been encountered in the HPCI, LPCI, and core spray systems. The valve is essentially a swing-check valve with a device attached for testing the valve to ensure that the disc is free and operable. The device consists of a pneumatic cylinder attached to an arm which penetrates the valve body. Rotation of the arm by the pneumatic cylinder causes the check valve disc to lift, and a protrusion on the disc actuates an external reed switch on top of the valve by interacting with a magnetic field. Licensee personnel stated that difficulties had been encountered with the indicating mechanisms on most of the testable check valves although proper operation of the check valve and actuator had always been evidenced by a separate indicator. Licensee personnel stated that consideration was being given to deletion of this step from surveillance tests or modification to provide reliance on indication other than the reed switch.

9. Quality Assurance Program

Discussions with licensee personnel indicated that the Quality Assurance Program manual is approaching readiness for publication. Several meetings have been held with the Nuclear Service consultants who are preparing the manual for NSP, and considerable discussion has taken place between the corporate office and site personnel. NSP expects to have the manual available for RO review by May 23, 1972.

^{3/} Inspection Rpt No. 050-263/72-01

10. Limitorque Valves

A discussion was held with Mr. Anderson, Superintendent - Operation and Maintenance, concerning the recent failure at another facility of a middle support bearing for the worm gear shaft in a limitorque valve. Mr. Anderson stated that although discussions with the vendor were continuing to determine whether similar failures might occur at Monticello, limitorque representatives stated that the valves installed in the Monticello plant are of a different series and should not experience the same problems.

11. HPCI Fire Protection

Discussions with Mr. Jacobson, Plant Engineer, Technical, indicated that fire insurance representatives had inspected the Monticello plant and had raised no questions concerning the fire protection capabilities for the HPCI turbine oil system. The licensee has no plans to install a sprinkler system, and indications are that it is not required by electrical insurance inspectors.

12. Main Steam Isolation Valve (MSIV) Reset Switch

To reduce the possibility of a single short defeating the action of the MSIV's, the licensee has decided to install a second switch in the MSIV reset circuit. The wiring will be altered such that one switch will reset the inboard and the other switch will reset the outboard MSIV's. This change was to be made during a brief outage for operator licensing examinations expected to commence on May 11.

13. Replacement of Barksdale AC Pressure Switches

The licensee encountered difficulties in the stability of setpoints of pressure switches associated with the core spray and LPCI systems during September 1971. Although Regulatory^{4/} and licensee^{5/} reports discussed what was believed to be the resolution of the problem, subsequent difficulties led to the discovery by the licensee that AC pressure switches were being improperly used in a DC application as described in a followup report^{6/} to DRL. A review of the replacement of these switches, 22 in number, was made during this inspection. Following replacement, each instrument was functionally tested using the installed circuitry. A detailed procedure for replacement had been prepared to document the actions performed.

^{4/} Inquiry Rpt No. 050-263/71-17

^{5/} NSP ltr to DRL, subject: Failure of ECCS Pump Start Permissive Switches to Trip Within the Specified Settings, dtd 9-24-71

^{6/} NSP ltr to DRL, subject: Failure of ECCS Pump Start Permissive Switch and Relay, dtd 12-20-71

14. Service Water Pressure Controller

On March 28, 1972, the B loop of the residual heat removal (RHR) service water system was started for a test. The system includes a pressure controller which is designed to maintain the service water pressure in the heat exchanger above the pressure of the primary coolant in the shell side. At this time, the valve was observed to open when it should have closed. Although the initial diagnosis indicated that the controller had been wired incorrectly, further investigation showed that the electronic-to-pneumatic transducer had been calibrated as a direct instead of reverse acting instrument. As stated in RO^{7/} and licensee^{8/} reports, required functional testing of the system after calibration of the controller was inadvertently omitted. The cause of the miscalibration was traced to incorrect calibration records which showed the instrument to be direct acting. This difficulty did not negate the ability of the B loop to perform its required containment cooling function had it been required to do so.

The licensee has issued a memo to remind all personnel of the necessity for and means of implementing the requirements for functional testing. In addition, the calibration record for the particular instrument has been corrected.

15. HPCI Steam Line High Area Temperature Switch

During routine surveillance testing on April 3, 1972, one of the high temperature switches used to sense increased temperature resulting from steam leakage failed to trip at the required setpoint of 200°F. As stated in Regulatory^{9/} and licensee^{8/} reports, two sets of these switches are maintained by the licensee. When the three-month calibration is due, a set of switches is calibrated, installed, and functionally tested. The switches removed from service are then stored until the next calibration. Because of this practice it was not possible to determine whether the switch which failed to trip as required had been improperly calibrated while in service or whether its calibration may have been disturbed while in storage. It should be noted that the failure of a single switch would not defeat the high temperature isolation function in this system since the redundant switch and the one-of-two twice logic would have been available. In any event, the procedures have now been changed to

7/ Inquiry Rpt No. 50-263/72-04

8/ NSP ltr to DRL, subject: Reporting of Occurrences, dtd 4-25-72

9/ Inquiry Rpt No. 50-263/72-05

require an immediate check of the calibration of the switches when removed at the three-month interval so that any setpoint drift during the in-service period will be readily identified. The nominal setpoints have also been reduced to the range 185 - 190°F to allow for possible upward setpoint drift during this period.

16. Radwaste Facility Construction

During the inspection, it was noted that the concrete being used in the construction of the radwaste facility is being transported from Osseo, Minnesota, 28 miles from the plant. Since transport times ranged from 40 to 55 minutes, the inspector stated that revolution counters should be used on concrete mix trucks to provide an indication of the amount of agitation experienced by the concrete during transport. Discussions with licensee construction personnel also revealed that the off-gas storage tanks have not been checked since their arrival on site to verify that the tanks have remained sealed and that the desiccant is still effective. The inspector pointed out that tanks exposed to significant temperatures tend to collect moisture and that it was good insurance to make periodic examinations to assure that the moisture absorbing capability of the desiccant was being maintained. The licensee's construction management agreed to (a) install revolution counters on the mix trucks and (b) discuss with NSP engineering the matter of inspecting the off-gas tanks.