

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report No: 50-263/96012(DRP)

Licensee: Northern States Power Company

Facility: Monticello Nuclear Generating Station

Location: 414 Nicollet Mall
Minneapolis, MN 55401

Dates: November 28, 1996 - January 8, 1997

Inspectors: A. M. Stone; Senior Resident Inspector
J. Lara, Resident Inspector

Approved by: J. Jacobson, Chief, Projects Branch 4
Division of Reactor Projects

EXECUTIVE SUMMARY

Monticello Nuclear Generating Station, Unit 1 NRC Inspection Report 50-263/96012

This inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident inspection.

Operations

- Operations personnel performance during the shutdown and startup activities was acceptable. Good communication and control of evolutions were observed. (Section 02.1)
- Operator error during the performance of surveillance activities caused a dual recirculation pump trip, requiring a manual SCRAM. This occurred during the last inspection period and is considered a Non-Cited Violation. (Section 08.2)
- The licensee's response to the January 7 rapid reactor power reduction due to a decreasing condenser vacuum condition will be reviewed during the next NRC inspection period. (Section 02.2)
- The inspectors concluded that the standby liquid control (SBLC) system was operated and tested in accordance with technical specification (TS) requirements and as described in the Updated Final Safety Analysis Report (UFSAR). (Section 02.3)

Maintenance

- Overall outage planning and performance of maintenance activities were observed to be well performed, included consideration of previously identified material condition issues, and appropriately included probabilistic risk assessment (PRA) and maintenance rule considerations. (Section M1.1)
- The licensee identified a reportable event concerning an unqualified cable splice in the "B" standby gas treatment (SBGT) system. This condition resulted in the plant being outside its design basis. (Section M1.1)
- Material condition of plant equipment was acceptable. The inspectors verified that the existing conditions did not violate technical specifications (TS). The operators interviewed were knowledgeable of the conditions. (Section M2.1)
- Minor discrepancies were noted in post-maintenance testing. An inspection follow-up item was opened to track the results of a planned quality control (QC) audit of the post-maintenance test (PMT) process. (Section M3.1)

- QC inspection activities were observed to be performed in accordance with work documents and inspection results were properly documented. (Section M7.1)

Plant Support

- Corrective actions to a previously NRC-identified non-cited violation resulted in the licensee's identification of additional examples of improper radiological postings. (Section R1.1)
- The licensee identified a reportable event concerning fitness for duty. (Section S6.1)

Summary of Plant Status

The unit operated at power for the period. However, "D" main steam line safety relief valve tailpipe temperature continued to be higher than expected. This condition was initially observed during this inspection period on November 10, 1996. The operators anticipated that the tailpipe temperature would approach a 200°F procedure limit and on December 6, decided to manually shut down the reactor. This issue is discussed in section 02.1. On December 6, reactor shutdown completed and the plant resumed operation at 100 percent power. On January 7, 1997, plant operators performed a rapid depressure of the condenser vacuum condition. This was done to prevent cold temperature effects on personnel. This condition is discussed in Section 02.3.

01 Conduct of Inspection

01.1 General Comments (71707)

Using Inspection Procedure 71707, the following reviews of ongoing plant operations were acceptable; specific details are detailed in the sections.

02 Operational Status of Facilities and Equipment

02.1 Response to Increasing "D" Safety Relief Valve Tailpipe Temperature

a. Inspection Scope (71707 and 93702)

As discussed in Inspection Report 50-2609-07, operations personnel noted the tailpipe temperature for the "D" safety relief valve (SRV) was higher than expected. The increased temperature trend was observed after the November 1996 forced outage. The temperature was again observed to increase and the temperature would likely approach the SRV procedure limit on December 6, decided to shut down the reactor for SRV repair. The inspector evaluated the problem to be an equipment problem. The following documents were reviewed:

- Technical Specification B.3.3.B. "Relief Valve Leaking"
- Abnormal procedure C.4-B.3.3.B. "Relief Valve Leaking"
- Operations Manual B.3.3. "Reactor Pressure Relief"

- Operations Manual C.1. "Startup Procedure"
- Operations Manual C.3. "Shutdown Procedure"
- Generation Quality Services Observation Report 1996458. "Plant Shutdown and Startup Activities in the Control Room"

b. Observations and Findings

The inspectors observed portions of the shutdown and startup activities. Good communication and control of evolutions were observed. Specific observations included:

- De-inerting and inerting the drywell space was conducted in accordance with procedures, TS, and as described in the UFSAR.
- The shutdown and approach to criticality were conducted in a controlled manner. Nuclear engineers provided technical guidance to the operators and shift management. Activities which could distract the operators were minimized.
- Problems noted during shutdown and startup were promptly identified and prioritized for resolution. For example, the shift manager initiated a Condition Report (CR) to address why the High Energy Line Break barrier check was not incorporated into the restart checklist.

Generation Quality Services (GQS) personnel were present in the control room during the shutdown and startup of the unit. The inspectors reviewed the GQS observation report and had no concerns.

c. Conclusions

Operations personnel performance during the shutdown and startup activities was acceptable. Good communication and control of evolutions were observed.

02.2 Rapid Power Reduction (93702)

On January 7, 1997, system engineering personnel conducted a test which required the turbine building railway doors to be opened for about 2 hours. Extreme cold temperatures in the turbine building resulted in erratic hotwell level indication and an inoperative off-gas system pressure control valve. Control room operators noted a decreasing condenser vacuum condition and performed a rapid reactor power reduction. This event is considered an Unresolved Item (50-263/96012-01) pending review of the root cause and corrective actions.

02.3 Standby Liquid Control System Review

a. Inspection Scope (71707)

During this inspection period, the inspectors performed a review of the SBLC system. The purpose of this review was to verify various operational and design features including the following:

- Operation of the system in accordance with applicable TS requirements
- Operation of the system in accordance with UFSAR description
- System alignment in accordance with plant requirements
- Surveillance procedures met the TS requirements for surveillance testing

The inspectors reviewed the following documents:

- Technical Specifications 3.4 and 4.4
- Design Bases Document: Standby Liquid Control Section 4.0
- Test 0085, "SBLC System Operability Test"
- Test 0086, "SBLC Refueling Tests"
- Test 0089, "Boron Concentration - Standby Liquid Control System"
- Test 0451, "SBLC Pump Flow Rate Comparison to ATWS Design Basis"
- UFSAR Sections 6.6 and relevant portions of 14.8
- Portions of SBLC system work orders (WO) completed since 1994

b. Observations and Findings

The inspectors verified that periodic surveillance testing was accomplished in accordance with TS. Explosive valve testing and replacements were performed each outage on alternating trains as required. Concerns regarding test control were discussed in Inspection Report 50-263/96008.

The material condition of the system was acceptable. Outstanding work orders did not impact system operability. The inspectors reviewed previous surveillance tests and confirmed that acceptance criteria were met. The boron concentration and current tank level were within specifications. Valves and electrical equipment were verified to be in the correct positions.

The inspectors also verified that the SBLC system operation was as described in the UFSAR. The system was an engineered safety feature and was included in the quality assurance program. However, the licensee described the SBLC system as non-safety related in their Design Basis Document. The classification of SBLC as non-safety related will be reviewed in conjunction with the inspection follow-up item discussed in Inspection Report 50-263/96009.

c. Conclusions

The inspectors concluded that the SBLC system was operated and tested in accordance with TS requirements and as described in the UFSAR.

08 Miscellaneous Operations Issues

- 08.1 (Closed) Violation (50-263/94014-01): Failure to provide measures for the material control of spare 4160V circuit breakers to protect them from environmental conditions in accordance with equipment Level B storage requirements.

The licensee responded to the violation in a letter dated March 24, 1995, and described corrective actions. Permanent enclosures were built in the turbine building 911-foot elevation to provide for long-term storage of spare circuit breakers. Access to the circuit breakers was limited to authorized personnel. The inspectors verified acceptable implementation of the corrective actions. This item is closed.

- 08.2 (Closed) Licensee Event Report (50-263/96011, Revision 0): Jumper Placement Error During Surveillance Procedure Causes Dual Recirculation Pump Trip, Requiring A Manual Scram. As discussed in Inspection Report 50-263/96011, an operator and system engineer failed to follow surveillance procedure 1448 when they inadvertently placed a jumper across the incorrect relay. Preventative actions included discussing the event with operations and engineering staff, revising the surveillance procedure, and increasing labeling efforts in this and similar relay cabinets. Failure to follow procedure constituted a licensee-identified violation and is being treated as a Non-Cited Violation, consistent with Section VII of the NRC Enforcement Policy (50-263/96012-02). This LER is closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62703)

The inspectors observed all or portions of the following work activities:

- Test 0133, "Daily Jet Pump Operability Check"
- Test 0255-07-1A-1, "Main Steam Isolation Valve (MSIV) Exercise"
- WO 9602175, "Pressurizing Valve for FT-2-110C"
- WO 9602474, "Replace Charcoal Adsorbers and Perform System PM"
- WO 9602701, "Repair/Replace Power Supply to SJAE Instruments"
- WO 9602702, "Repair/Replace Power Supply to SJAE Instruments"
- WO 9602920, "Re-support Raceways and Electrical Equipment"
- WO 9603069, "Torque #11 DG Air Start Tank U-bolts"

- WO 9603095, "Replace Unqualified Splice in B SBT"
- WO 9603129, "Repair RHR Valve Intermittent Annunciator"
- WO 9603177, "Troubleshoot Division 1 SPOTMOS Indication Failure"

b. Observations and Findings

The inspectors found the work performed under these activities to be professional and thorough. All work observed was performed with the work package present and in active use. The inspectors frequently observed supervisors and system engineers monitoring job progress, and quality control personnel were present whenever required by procedure. When applicable, appropriate radiation control measures were in place. The inspectors also verified that redundant equipment remained operable during the maintenance activities and that operations personnel documented entries into applicable TS limiting condition for operations (LCO).

WO 9603095, Replace Unqualified Splice in "B" SBT

On December 16, 1996, the licensee notified the NRC pursuant to 10 CFR 50.72, of a condition where the "B" SBT system was inoperable due to an unqualified cable splice. The unqualified splice placed the plant in a condition outside the design basis. This condition was identified during on-line maintenance. Preliminary reviews indicated that the splice was installed in the "B" heater power cable and had existed for an undetermined time. The inspectors observed the removal of the unqualified cable splice and subsequent termination of the affected power cable directly on a terminal stud. No deficiencies were identified during the rework of the cable splice.

c. Conclusions

Overall outage planning and performance of maintenance activities were observed to be well performed. Immediate corrective actions associated with maintenance-related condition reports were determined acceptable.

M1.2 Forced Outage Maintenance Work Activities

a. Inspection Scope (62703)

As discussed in section 02.1, the licensee performed a reactor shutdown to repair a leaking SRV. The inspectors reviewed the planning of maintenance activities to be performed during the forced outage.

b. Observations and Findings

Prior to the forced outage, the licensee maintained a ready backlog list of work activities which required plant shutdown. The licensee used this ready backlog list during the planning of work activities to be performed during this forced outage. The planning of outage and routine maintenance activities also included consideration of previously identified material condition issues, and appropriately included PRA and

maintenance rule considerations. The inspectors observed the performance of WO 9602084, "Repair/Replace C Inboard MSIV Limit Switch" and WO 9601906, "IRM 13 Reading Downscale" during the outage. Adequate radiation protection controls were also observed during work activities in the drywell.

c. Conclusions

The planning and implementation work activities performed during the forced outage adequately considered maintenance rule and PRA impact.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Current Material Conditions and Impact on Operations Personnel

a. Inspection Scope (71707 and 62703)

The inspectors conducted control room and plant inspections and interviewed operations personnel to assess the material condition of plant equipment.

b. Observations and Findings

During inspections in the plant and control room, the inspectors noted the following degraded conditions:

- Discharge canal sample pump losing prime. This condition resulted in several unexpected TS LCOs. Operators were able to restart the pump within a short time period.
- Hydrogen water chemistry system concerns. This condition also resulted in several unexpected TS LCOs and additional operator actions to restore the system to normal. Engineering personnel continued efforts to resolve this issue since its placement on the "Operator Workaround" list in 1995.

The inspectors also noted that the licensee resolved some previously discussed material condition concerns during the December forced outage as discussed in M1.2.

c. Conclusions

The inspectors verified that the above conditions did not violate TS. The operators interviewed were knowledgeable of the conditions. The inspectors verified that work orders were initiated to repair the degraded equipment.

M3 Maintenance Procedures and Documentation

M3.1 Minor Discrepancies Noted in Post-Maintenance Testing

a. Inspection Scope (62703 and 40500)

The inspectors reviewed the following:

- WO 9602885, "Possible Failing Diaphragm"
- WO 9601886, "MS-37-2 Leaking Past Seat"
- Test 0112, "Safety Relief Valves Operability Checks"

b. Observations and Findings

During the forced outage, the licensee replaced the "D" SRV under WO 9602885. The post-maintenance testing included specific steps of test 0112. Prior to performing the PMT, the inspectors noted that step 20 was inadvertently excluded from the test. Step 20 required that the operator verify that the SRV was closed, the annunciator was reset, and the temperature recorder indicated a decreasing trend once the valve was closed. The shift supervisor initiated a temporary procedure change to include step 20. The step 20 requirements reflected basic operator response; therefore, the inspectors believed the actions would have been accomplished. This discrepancy was a minor omission.

The inspectors also reviewed the PMT requirements for WO 9601886. Maintenance personnel removed and reinstalled sealant and a drain end cap downstream of a leaking valve, MS-37-2. The PMT required verification of no leakage past MS-37-2. The inspectors noted that since no work was performed on the leaking valve, the PMT did not reflect the work performed. The licensee revised the PMT accordingly.

c. Conclusion

As discussed in previous inspection reports, quality control personnel performed an audit on the PMT process in late 1995. The examples discussed above were of minor significance compared to the previous audit results. A follow-up Quality Control audit was initiated prior to the end of this period to review the licensee's corrective actions. Review of the follow-up audit findings is considered an Inspection Follow-up Item (50-263/96012-03).

M7 Quality Assurance in Maintenance Activities

M7.1 Quality Control Inspections of Work Activities

a. Inspection Scope (62703)

The inspectors performed reviews of Quality Control (QC) activities.

b. Observations and Findings

Inspection of maintenance and QC work activities indicated that QC inspections were properly performed and documented on work documents. The work documents accurately reflected the status of work activities and the results of QC inspections. This inspection effort was performed following a previous NRC identification of QC inspections not being properly documented.

The inspectors also reviewed condition reports (CR) 96002513 and 96002580 related to incorrectly sized wear rings due to an out-of-tolerance micrometer. The licensee identified that the micrometer was previously used during the rebuilding of a spare RHRSW pump assembly. A hold tag was immediately placed on the assembly until the assessment of the out-of-calibration micrometer was completed. The inspectors noted that the hold tag placed on the spare RHRSW pump assembly did not specify the reason for the hold. This information was later added.

c. Conclusions

QC inspection activities were observed to be performed in accordance with work documents and inspection results were properly documented.

III. Engineering

E1 Conduct of Engineering

Engineering support to plant operations and maintenance organizations was observed during the course of plant work activities. Observations were made in the areas of CRs, plant surveillances, maintenance work orders, and plant scheduling. No problems were noted. However, an unreviewed safety question and concerns with safety evaluations were identified during an NRC Region III Safety System Operational Performance Inspection as documented in Inspection Report 50-263/96009.

E2 Engineering Support of Facilities and Equipment

E2.1 Results of UFSAR Review

While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the UFSAR that related to the areas inspected. The inspectors verified that the UFSAR wording was consistent with the observed plant practices, procedures, and parameters.

E7 Quality Assurance in Engineering Activities

E7.1 Routine Engineering Issues Meeting

On December 6, 1996, the inspectors and the NRR project manager met with the Superintendent of Engineering and others to discuss outstanding

engineering issues. Topics included status of the rerate project, current equipment concerns, modifications proposed for the 1998 refueling outage, and review of two generic letters.

E8 Miscellaneous Engineering Issues

- E8.1 (Closed) Inspection Follow-up Item (50-263/94013-02): Unexpected check valves discovered in flexible air hoses for the alternate nitrogen system following a system modification. The licensee identified small check valves on the outlet flexible hose adapters of the bottles which were not shown on system drawings. Of the eight bottles examined, one of the hoses was installed such that the check valve was reversed. The licensee concluded that the Train A alternate nitrogen system, which contained the reversed hose, was only supplied with three bottles instead of four. However, the system leak rate was below the design leak rate; therefore, the system was operable. The licensee initiated Nonconformance Report N94-347 to document the condition and develop corrective actions.

The reversed flexible hose was corrected. Additionally, the licensee initiated WOs (94-05841 and 94-05972) to remove the hose insert which contained the internal check valves. The flexible hoses were then re-installed without the check valves. The flexible hoses with internal check valves (model PF-92CV) were also removed from the warehouse and new hoses without valves have been procured (model PF-92). The inspectors performed an inspection of the flexible hoses in the warehouse and verified that the inventory consisted of model PF-92 hoses. This item is closed.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 General Comments (71750)

The inspectors conducted frequent reviews of the radiological protection area. In general, plant personnel followed good radiological worker practices. The inspectors reviewed several condition reports which described improper radiological postings. Discussions with the radiation protection supervisor indicated that the reports were generated as a result of their corrective actions to a Non-Cited Violation discussed in Inspection Report 50-263/96011.

F8 Miscellaneous Fire Protection Issues

- F8.1 (Closed) Unresolved Item (50-263/96007-05): Licensee identified concerns with fire brigade mask fit requirements. In August 1996, the licensee determined that mask fit qualifications for three individuals expired in June 1996. Mask fits and other required requalification information were maintained on a computer database; however, this information was not readily available to supervisors. The individuals

were successfully retested with no significant changes in mask fit. Therefore, they could have responded to an event if necessary. Also, the licensee reviewed shift coverage and determined that fire brigade requirements would have been met without these individuals. This issue was documented in CR 96001857 and is considered closed.

S6 Security Organization and Administration

S6.1 Routine Meeting with Security Management (71750)

On January 9, 1997, the inspectors met with the corporate security supervisor, the site security superintendent, and others to discuss the licensee's quarterly self-assessment report. Topics included training initiatives, recent quality assurance audits, and other departmental changes.

The security supervisor also discussed a recent reportable event concerning fitness for duty. The licensee identified in December 1996 that one individual's access should have been revoked in August 1996. The root cause and corrective actions will be evaluated during review of LER 50-263/96-012.

V. Management Meetings

X1 Exit Meeting Summary

On January 10, 1997, the inspectors presented the inspection results to members of licensee management. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

E. Watzl, Vice President Nuclear
W. Hill, Plant Manager
M. Hammer, General Superintendent Maintenance
K. Jepson, Superintendent, Chemistry & Environmental Protection
L. Nolan, General Superintendent Safety Assessment
M. Onnen, General Superintendent Operations
E. Reilly, Superintendent Plant Scheduling
C. Schibonski, General Superintendent Engineering
W. Shamla, Manager Quality Services
J. Windschill, General Superintendent, Radiation Protection
L. Wilkerson, Superintendent Security
B. Day, Training Manager

INSPECTION PROCEDURES USED

IP 40500: Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
IP 62703: Maintenance Observations
IP 71707: Plant Operations
IP 71750: Plant Support
IP 93702: Prompt Onsite Response to Events at Operating Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-263/96012-01 URI Test caused freezing conditions in turbine building resulting in inoperable equipment
50-263/96012-02 NCV Licensee-identified failure to follow surveillance procedure resulting in manual scram.
50-263/96012-03 IFI Follow Quality Services audit regarding post-maintenance testing

Closed

50-263/94013-02 IFI Unexpected check valves discovered in flexible air hoses
50-263/94014-01 VIO Failure to protect spare 4160V circuit breakers
50-263/96007-05 URI Fire brigade mask fit requirements
50-263/96011 LER Jumper placement error causes dual recirculation pump trip

LIST OF ACRONYMS USED

ATWS	Anticipated Transient Without Scram
CFR	Code of Federal Regulations
CR	Condition Report
GQS	Generation Quality Services
IFI	Inspection Follow-up Item
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PM	Preventive Maintenance
PMT	Post-Maintenance Test
PRA	Probabilistic Risk Assessment
QC	Quality Control
RHRSW	Residual Heat Removal Service Water
SBLC	Standby Liquid Control
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VIO	Violation
WO	Work Order