U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/88012(DRS)

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, Minnesota

Inspection Conducted: June 28-July 1 and July 11-14, 1988

Inspector: Ronald N. Gardner for Rolf A. Westberg 7/29/88
Date

Approved By: Ronald N. Gardner, Chief
Plant Systems Section Ronald N. Gardner 7/29/88
Date

Inspection Summary

Inspection on June 28-July 1 and July 11-14, 1988 (Report No. 50-263/88012(DRS))
Areas Inspected: Routine announced inspection of licensee action on previously identified inspection items (92702), licensee event reports (92700), and licensee compliance with ATWS Rule, 10 CFR 50.62, per Temporary Instruction 2500/20 (25020), (SIMS Number MPA-A-20).
Results: No violations or deviations were identified. One previously identified violation was closed. Temporary Instruction TI 2500/20 was closed. Based on the inspection, the inspector reached the following conclusions:

- The corrective actions taken in response to violation No. 263/87009-01 were both positive and extensive. The breaker/fuse coordination study which resulted puts the licensee ahead in a normally grey area.
- The Quality Assurance applied to the ATWS mitigating systems generally exceeded the guidance given in Generic Letter 85-06.
- Plant personnel, control room operators, and supervisors appeared to be well trained and knowledgeable in ATWS systems.

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DETAILS

1. Personnel Contacted

Northern States Power Company (NSP)

T. Parker, Licensing Engineer
*M. Hammer, Acting Superintendent, Tech Engineering
G. Ohmstead, System Engineer
J. Nystrom, Senior Production Engineer
M. Clarity, Assistant to the Plant Manager
R. McGillic, Training
R. Dennis, Site Superintendent (SRO)
R. Carlson, Plant Equipment Operator (RO)
*W. Shamla, Plant Manager
*S. Engelke, Lead Production Engineer
*S. Hammer, Acting Superintendent, Operations
*B. Day, Acting General Superintendent, Engineering and Rad Protection
*D. Nevinski, General Superintendent, Operations

U. S. Nuclear Regulatory Commission (USNRC)

C. Vanderniet, Resident Inspector

*Indicates those attending the exit meeting on July 14, 1988. Other personnel were contacted as a matter of routine during the inspection.

2. License Action on Previous Inspection Findings

(Closed) Violation (263/87009-01): Activities involving the review and performance of electrical coordination studies to determine the effects of changes to the electrical power system on other portions of the system were not prescribed by electrical design change control procedures. As a result, when the electrical distribution system was modified by replacing trip devices in load center breakers for essential buses with devices having ground fault protection, the potential for loss of an essential bus due to a fault in a non-safety-related component was created.

a. Documents Reviewed

(1) Impell Report No. 90-0910-0108, "Monticello Electrical Coordination Study," Revision A, dated November 25, 1987.

(2) Modification No. 87 M051, Part B, "Correction of Fuse/Breaker Miscoordination, Part B Fuse Replacement," Revision 0.

(3) Review of Representative Sample of Modification's 50.59 Evaluations, dated June 30, 1988.

(4) Memorandum S. Engelke to W. Shamla, "Breaker/Fuse Coordination Task Force Action Items and Resolutions," dated March 31, 1988.

(5) Memorandum S. Northard to W. Shamla, "Circuit Coordinations Considerations in the Modification Process," dated September 25, 1987.

(6) Memorandum S. Engelke to File, "Review of 1986 Refueling Outage Modifications for Breaker/Fuse Coordination Concerns," dated July 13, 1988.

(7) Procedures

(a) N1AWI 5.1.3, "Design Inputs," Revision 3;
(b) N1AWI 5.1.12, "Plant Design Change Review Package Preparation, Review, and Approval," Revision 2.

b. Inspection Results

The inspector verified that the corrective actions proposed by the licensee in their November 4, 1988 answer to the violation were completed. The inspector read the reports and memorandums, reviewed a sample of the fuse replacements from Modification No. 57 M051, Part B, and verified that the procedures had been revised as required. The results of this inspection were acceptable. This violation is considered closed.

3. Licensee Event Report (LER) Review

(Closed) LER (263/87013-00): Ground Fault Causes Loss of ESF Equipment Due to Breaker/Fuse Miscoordination.

The corrective actions and actions to prevent recurrence were the same as those reviewed by the inspector to close the violation in Paragraph 2 above. Therefore, this LER is considered closed.

4. Temporary Instruction (TI) 2500/20 (SIMS Number MPA-A-20) (Closed)

10 CFR 50.62, "The ATWS Rule," requires three systems to mitigate the consequences of an ATWS event. They are Reactor Pump Trip (RPT), Alternate Rod Insertion (ARI), and Standby Liquid Control System (SLCS) with a minimum flow capacity and boron content equivalent in control capacity to 86 gallons per minute of 13 weight percent sodium pentaborate solution.

The modifications that installed the RPT were completed and made operational in 1978. Its design was reviewed and approved by the NRC staff in a Safety Evaluation Report (SER) dated February 23, 1977. The modifications that installed the ARI were completed and made operational in 1980. Its design was reviewed and approved by the NRC staff in an SER dated December 21, 1987. The modification to the SLCS, which increased pump flow and the boron concentration, was completed during the 1987 outage. The NRC staff approved these changes in the SER related to Amendment No. 56 to the Facility Operating License No. DPR-22.

At the time of this inspection, all design, procurement, and installation of ATWS mitigating systems was complete. The Monticello Appendix B Quality Assurance Program was applied to all phases of the design, procurement and construction of the ARI system. The Appendix B program was also applied to the SLCS modifications since the SLCS is a safety-related system.

Since the RPT and ARI were installed prior to the ATWS rule (six years and four years respectively), since the ARI was designed and constructed under an Appendix B program, and since the SLCS is a safety-related system, this inspection concentrated on confirmation of completed work and personnel qualifications and training for the ATWS systems.

a. Documents Reviewed

(1) Letters - D. Musolf to Director of Nuclear Reactor Research

(a) Schedule for Compliance with 10 CFR 50.62, "ATWS Rule," dated October 1, 1985.

(b) Alternate Rod Injection System Documentation, dated August 3, 1987.

(c) Request for Exemption from the requirements of 10 CFR 50.62, Paragraph (c)(4), dated August 18, 1987.

(d) Alternate Rod Injection System Supplemental Documentation, dated October 23, 1987.

(e) Alternate Rod Injection System Supplemental Documentation, dated November 9, 1987.

(2) Safety Evaluation Reports

(a) Safety Evaluation Supporting Installation of Recirculating Pump Trip Modification.

(b) Safety Evaluation of Topical Report No. NEDE-31096-P, dated October 21, 1986.

(c) Safety Evaluation Relating to Alternate Injection and Recirculating Pump Trip Systems, dated December 21, 1987.

(d) Safety Evaluation Related to Amendment No. 56 to Facility Operating License No. DPR-12-22, dated December 11, 1987.

(3) Procedures

(a) 4AWI-02.01.04, "P&ID Q-List Extension of Safety-Related Structures, Systems and Components (Color Coded P&ID's)," Revision 1.

(b) 4ACD-2.1, "Quality Assurance Program Boundary," Revision 6.

(c) C.5.1-2001, "Level Restoration," Revision 0.

(d) C.5-2001, "Level Restoration," Revision 1.

(e) C.5-1101, "RPV Level Control," Revision 1.

(f) C.5.1-1001, "RPV Level Control," Revision 0.

(g) C.5-2007, "Level/Power Control," Revision 2.

(h) C.5.1-2007, "Level/Power Control," Revision 1.

(i) Calibration #0279/0283, "ATWS Reactor Level and Pressure Transmitter," Revision 0.

(j) Test #0278/0280/0282/0284, "ATWS - Recirc, MFP, and Main Turbine Trips ATWS Reactor Pressure and Level Trip Unit Test and Calibrations," Revision 6.

(k) Test #0278a/0282a Cal #0280a/0284a, "ATWS - Recirc Trips for Reactor Pressure and Level Trip Unit Test and Calibration," Revision 0.

(l) Procedure #1227, "ATWS System RPT and ARI Functional Test," Revision 2.

(m) Maintenance and Testing Procedure No. MT-PP7-79, "Monticello Nuclear Plant General Electric AKF-2-25 Generator Field Breaker," Revision 1.

(4) Drawings

(a) NX-16162-1-1, "ATWS Elementary Diagram Notes; Reference Drawing Legend," Revision B.

(b) NX-16162-1-3, "Relay Tables," Revision C.

(c) NX-16162-1-4, "Power Supply Division 1," Revision D.

(d) NX-16162-1-5, "Power Supply Division 2," Revision D.

(e) NX-16162-1-6, "Trip Unit Connections Division 1," Revision C.

(f) NX-16162-1-7, "Trip Unit Connections Division 2," Revision C.

(g) NX-16162-1-8, "Interface Relay Connections," Revision B.

(h) NX-16162-1-9, "Trip Coil Connections," Revision C.

(i) NX-16162-1-10, "Card File Relays," Revision C.

(j) NX-16162-1-11, "Interface Relays - Annunciator Loops," Revision B.

(5) Training Department Lesson Plans

(a) M9451S-031, "Plant Protection System Failures Simulator Session 30," Revision 0.

(b) M8107L-071, "Anticipated Transient Without Scram (ATWS)," Revision 2.

(c) M9111L-007, "Introduction to Emergency Operating Procedures," Revision 1.

(d) M9111L-009, "RPV Control," Revision 0.

(e) M9111L-012, "EOP Contingency Control Procedures," Revision 0.

b. Inspection Results

The inspector verified the following aspects of the Monticello ATWS mitigating systems.

(1) The licensee's design for the RPT and ARI, as endorsed through the NRR SERs were implemented acceptably. The systems were designed, installed, and tested in accordance with established procedures. Performance to date has been satisfactory.

(2) Operating procedures have been generated or suitably revised to include ATWS mitigating systems. Through a review of training department lesson plans and a selective sample of training records for reactor operators (ROs) and senior reactor operators (SROs), the inspector verified that they had been trained on the procedures and operation of the ATWS systems.

(3) Surveillance procedures for ARI/RPT calibrations and functional tests were implemented. The inspector reviewed the ARI/RPT logic diagrams and the surveillance procedures and verified that the surveillances completely tested the logic.

(4) The RPT/ARI trip units are calibrated once every three months and tested monthly. The functional tests are accomplished while the unit is at power by only testing one train at a time thereby maintaining ATWS mitigating capability during the test. The ATWS system functional test which tests the logic and acuation of the MG set field breakers and vents the SCRAM air header is performed once-per-cycle with the unit shut down.

(5) The inspector verified that there was no permanently installed means for bypassing the systems during maintenance and testing with continuous indication of the bypass status in the control room. This was not considered to be a deficiency since the staff position in the SER related to the BWR owners group's topical report No. NEDE-31096-P was that maintenance bypasses were not required.

(6) Review of the ATWS schematic control diagrams verified that once the RPT/ARI system was initiated it would seal in to assure that the system would complete its action (all rods inserted). Subsequent return to normal operation would be accomplished with reset switches which release the seal-in function.

(7) Manual initiation of the ARI/RPT system was verified by observation of the manual initiation switches on the C05 panel benchboard in the control room.

(8) <u>Quality Assurance and Qualifications</u>

(a) The inspector's review of the quality assurance applied to the ATWS mitigating systems indicated that it exceeded the guidance given in Generic Letter 85.06. The following aspects of the quality assurance program were observed:

(1) The SLCS is a safety-related system at Monticello.

(2) The RPT/ARI was designed, procured and installed under the Appendix B program.

(3) The RPT/ARI is defined as a system important to safety and as such portions of this system are functionally considered safety-related and the Appendix B program is applied through the use of color coded P&ID's. For example:

(a) The transmitters which provide level and pressure signals are considered safety-related because their pressure integrity is part of the pressure boundary of the reactor vessel. This is considered Safety Class D in accordance with Regulatory Guide 1.26.

(b) The signal to the trip unit, the trip unit, and the trip unit output are considered functionally electrically safety-related.

(c) The ARI valves are considered functionally safety-related because of pressure integrity.

(d) The signal to the ARI valves is considered functionally electrically safety-related.

(b) One RO on shift was interviewed relative to location of ATWS controls, indicators, and system operations. One Supervisor on shift was interviewed relative to Emergency Operating Procedure ATWS entry conditions, actions to be taken, and system operation. Both appeared knowledgeable and capable of operating the systems.

5. Exit Interview

The inspector met with licensee representatives denoted in Paragraph 1 during and at the conclusion of the inspection on July 14, 1988. The inspector summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.