

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-282/81-23; 50-306/81-25

Docket Nos. 50-282; 50-306

Licenses No. DPR-42; DPR-60

Licensee: Northern States Power Company  
414 Nicollet Mall  
Minneapolis, MN 55401

Facility Name: Prairie Island Nuclear Plant, Units 1 and 2

Inspection At: Prairie Island Site, Red Wing, MN

Inspection Conducted: December 7-9, 1981

Inspectors: *J.P. Patterson*  
J. P. Patterson

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*January 14, 1982*

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Inspection Summary

Inspection on December 7-9, 1981 (Reports No. 50-282/81-23 and 50-306/81-25)

Areas Inspected: Routine announced inspection and observation of an emergency exercise involving an integrated response from the States of Wisconsin and Minnesota and various local counties from both states. Areas observed included: Command and Control of the Control Room; Technical Support Center; Operation Support Center; Emergency Operations Facility; and post accident sampling and surveys. The inspection involved 118 inspector-hours onsite by five NRC inspectors.

Results: No items of noncompliance or deviations were identified, however, specific problems regarding scenario development and implementation were identified and problems noted relevant to functioning and training of exercise controllers. These are identified in Appendix A to the report.

## DETAILS

### 1. Persons Contacted

#### NRC Observers and Areas Observed

W. Axelson, Technical Support Center (TSC)  
D. Higby, NRC Consultant, Operational Support Center (OSC)  
M. Lindell, NRC Consultant, (OSC)  
M. Oestmann, Offsite Monitoring Team  
B. Pickett, NRC Consultant, Offsite Monitoring Team  
B. Burgess, Resident Inspector - Control Room  
C. Feierabend, Senior Resident Inspector - Control Room  
J. Strasma, Public Affairs Office, Region III, Media Information Facility (MIF)

#### Northern States Power

L. Eliason, General Manager, Nuclear Plants - Emergency Manager, EOF  
F. Tierney, Plant Manager - Emergency Director, TSC  
E. Watzl, Plant Superintendent, Engineering and Radiation Protection  
J. Brokaw, Plant Superintendent, Operations and Maintenance  
D. Schuelke, Superintendent Radiation Protection  
D. Mendele, Superintendent Operations Engineering  
W. Frederick, Senior Consultant, Regulatory Liaison

#### Drill Controllers

<u>Name</u>	<u>Assignment</u>
J. A. Gonyeau	Lead Controller/TSC
T. Amundsen	Control Room
T. Harlan	Control Room/SS/Rover
B. Clark	System Dispatcher/HQEC
A. Ward	HQEC
G. Hudson	EOF
L. O. Mayer	EOF
R. Stenroos	TSC
T. Harlan	OSC/Rover
D. Wagenmann	OSC/Maintenance
B. Schmitt	Monticello Offsite Monitoring
M. Gant	Monticello Offsite Monitoring
D. Allred	Monticello Offsite Monitoring
J. Joachim	OSC/Offsite Monitoring/In-Plant Monitoring
H. Lafuente	OSC/Offsite Monitoring/In-Plant Monitoring
D. Ludwig/J. Lemmerman	OSC/In-Plant Monitoring
J. Lemmerman	OSC/In-Plant Monitoring

The above personnel attended the exit interview on December 9, 1981.

2. General

An exercise of the licensee's Northern States Power Corporate Nuclear Emergency Plan and the Prairie Island Nuclear Generating Plant Emergency Plan was conducted on December 8, 1981, testing the integrated responses of the licensee, State and local organizations to a simulated emergency. The exercise tested the licensee's response to a large release of gas activity to the coolant and a steam generator tube failure. Attachment 1 describes the scenario. The exercise was integrated with a test of the State of Minnesota, State of Wisconsin, Pierce County, Wisconsin and Dakota and Goodhue Counties, Minnesota.

3. General Observations

a. Procedures

This exercise was conducted in accordance with 10 CFR 50, Appendix E requirements using the licensee's Emergency Plans and the Emergency Plan Implementing Procedures used by the site and the Corporate Personnel.

b. Coordination

The response was coordinated, orderly and timely. If the event had been real, the actions taken by the licensee would have been sufficient to permit the State and local authorities to take appropriate protective actions.

c. Observers

Licensee observers monitored and critiqued this exercise along with eight NRC observers and a number of Federal Emergency Management Agency (FEMA) observers. FEMA observed and will report on the responses of the local governments.

d. Critique

The licensee held a critique on December 9, 1981, the day after the exercise. The NRC and the licensee identified the deficiencies as discussed in the exit interview.

4. Specific Deficiencies Noted

The major deficiencies are included in Appendix A. Other deficiencies are listed under Specific Observations, Section 5.

5. Specific Observations

a. Control Room

The resident inspector observed control room operations throughout the course of the drill. Observations included verification that the Shift Supervisor and Control Room operators understood their responsibilities, that appropriate procedures were followed in a

timely manner, that the Shift Technical Advisor was present and understood his responsibilities, that the Emergency Plan was addressed when appropriate and that EAL's were implemented as required, that communications were accurate and were passed to the appropriate personnel in a timely manner, and that accurate logs were maintained to provide a record of events as they occurred.

One of the inspector's suggestion was to assure that PA announcements are made when an emergency declaration is made, both upgrading or downgrading. This may require a review of an EOP or abnormal operating procedure to assure that this is in a procedure.

b. Technical Support Center (TSC)

Activation of the TSC was orderly and timely. Command and control functions performed at the TSC were very good. Monitoring of the TSC for radiological habitability was implemented using a portable particulate, iodine, and noble gas monitor. The noise level due to operation of this unit was excessive, resulting in decreased effectiveness of communications within the TSC. This unit should be relocated away from the TSC operations group, or other means of area monitoring should be examined.

Interface between the Emergency Director (ED) and other key TSC staff was excellent. The licensee's Operation Committee was present in the TSC in order to make safety reviews. This concept worked well. Concurrence was sought by the ED prior to implementation of major decisions such as emergency classification, protective measures, and emergency maintenance of equipment.

At 0917, the ED declared a Site Area Emergency based on a S/G tube rupture with fuel damage indication. This was the correct action. A site evacuation was ordered and site accountability began. It took 42 minutes to account for all site personnel instead of the 30 minute design criteria. The inspector asked the licensee to examine this problem and, if possible, streamline the accountability to meet the 30 minute criteria. Sometime between 0930 and 0935, the Radiation Emergency Coordinator (REC) and Emergency Director became aware that the affected S/G safety relief valve was leaking radioactive steam to the atmosphere. This degradation in the reactor safety coupled with the S/G tube rupture required immediate accident assessment relevant to protection of the public. Accordingly, the ED asked the REC for recommendations. At the same time, the REC's dose assessment computer failed. This required manual dose calculations which is not timely. As a result, the REC using his professional judgement recommended a 2 mile precautionary evacuation around the plant and 5 miles in the downwind three affected sectors. This was the proper recommendation.

However, the REC failed to followup on his recommendations and failed to technically justify to offsite public health authorities the reasoning for their recommendations. The inspectors determined this to be the most significant problem identified during the exercise and requested the licensee to correct the problem.

The inspector's reviews of the licensee's records of the exercise indicated that better records management is necessary to ensure the ED is provided all needed information. The REC's log did not provide technical justification for the recommended protective measures implemented during the exercise. The radiation protection status board was not always updated.

Inplant radiological monitoring and post-accident sampling (PAS) were adequately managed, from the TSC. Some problem areas were noted, however, the inspector anticipated these as a result of Emergency Preparedness Implementation Appraisal. PAS was not prioritized to ensure all necessary samples were taken. During the exercise only an unpressurized primary coolant sample was ordered. Pressurized samples should also have been ordered as well as hydrogen and oxygen. Boron analysis was not requested by the TSC. S/G secondary samples, however, were requested as well as air ejector exhaust. This was proper.

During the time of the evacuation, a D/G maintenance team was simulating maintenance which was necessary for reactor plant safety. However, some of the maintenance team members evacuated while others remained to continue to simulate repair actions. The TSC staff did not assess the radiological problem to the maintenance team to determine if they should evacuate or remain on duty.

The inspector suggested that the TSC working space should be re-evaluated. The operations group, ED, maintenance and administrative support were all located at a small table. The working areas should be redesigned. The REC area should be moved further from the ED working area.

c. Emergency Operations Facility (EOF)

The EOF was activated in a timely manner in accordance with the Emergency Plan with the EOF Coordinator being in charge. Security was well maintained through badging and posting of a guard at the entrance to the EOF. Dosimeters were issued to all entering the EOF. Adequate briefings of the EOF staff regarding updated plant conditions were held several times by the EOF Coordinator and continued by the Emergency Manager when he took over. Good command control were exercised by both individuals. Messages were transmitted, documented and distributed on a timely basis. Key messages were also posted manually on a flip chart.

The Emergency Manager utilized his Technical Support Manager and his engineering staff assistants to analyze data and help to project the consequences of the emergency conditions. Radiation Protection Support Communicators dispatched field monitoring teams offsite for radiation measurements. Their assistants plotted the radiation readings on wall mounted EPZ maps. The continuous radio contacts with the field teams proved to be a somewhat disruptive noise factor to the EOF staff and particularly to the Emergency Manager during his briefings. This condition should not be present when the new nearsite EOF is completed.

Offsite communications with the Minnesota and Wisconsin EOC's were maintained continuously with updating of radiation dose information and other data as relayed by the Offsite Communicators. The emergency teams worked well together and appeared to be well coordinated. When the TSC informed the Emergency Manager of the completion of the exercise, he asked for confirmatory radiation measurement data to prove that the accident had deescalated. This information was needed to inform the State agencies that they could postpone further actions in their areas.

d. Media Information Facility (MIF)

The licensee provided a news center at its corporate headquarters Minneapolis. The facility has sufficient space for news media and the licensee has plans for providing necessary telephone service and other equipment. Corporate management and technical representatives from the company's headquarter's emergency center were available for news briefings. The news center was not staffed by the licensee at all times, as it should have been, although there was only minimal attendance by area news media.

The State of Minnesota did not have a representative at the licensee news center, and there was no coordination of information between the licensee news center and the state's news center in the State Capitol in St. Paul. There was also no coordination with the State of Wisconsin, which also participated in the exercise. The licensee did have a representative at the Minnesota news center, but the information presented there was not up-to-date. The licensee representative also failed to correct an erroneous description of the accident in the State's news releases.

The operation of two separate news centers by the licensee and State of Minnesota with no coordination between them is regarded as a serious shortcoming in the dissemination of information. The Federal Emergency Management Agency in observing the State news center made a similar observation.

e. Operational Support Center (OSC)

The OSC was activated promptly with appropriate personnel reporting to the area, equipment lockers opened and records management functions initiated. Dosimeters were not issued until over an hour after the Site Emergency was declared. This should have been done as soon as the OSC was activated. Procedure F3-7 should include a task to issue dosimeters to all OSC staff personnel. Lack of clear identification of key OSC staff was an obvious deficiency. This tended to inhibit rapid dissemination of information on emergency conditions. There was no mechanism for keeping the entire OSC staff up-to-date on plant conditions as the emergency involved. A status board such as the one in the TSC would have been helpful. A survey team returning from the field had no means of determining the current plant status.

Direction from the OSC Coordinator was not particularly strong. Also, the noise factor and lack of separate office space for the Coordinator tended to detract from his effectiveness. His support staff was quite capable and performed responsibly. Supervision and direction of the OSC staff should be re-examined, however.

The teams responsible for performing post-accident sampling of primary coolant and the air-ejector exhaust were well trained and equipped for their assigned tasks. Some difficulties were encountered when the drill controllers were unable to provide critical data on sample radiation levels to the teams, but this was more of a problem with the scenario than with the team's competence.

The inspectors determined that the licensee was adequately prepared to cope with the condition of the drill, but was unable to fully demonstrate his level of preparedness because of inadequacies in the scenario.

f. Environmental Monitoring Teams

The environmental monitoring teams were assembled in a timely manner, checked out survey monitoring equipment and were dispatched. The team's training did not appear to be adequate as the Radiation Protection Specialist did not attempt to take survey readings. The survey equipment was still in the rear of the station wagon for the first hour or so after the team was dispatched. The survey equipment used did not have a probe to hang out the window. As a result the team was unaware of whether or not they were in or out of the plume, or whether the plume was overhead.

Directions received from the EOF for taking monitoring and sample measurements were not clear. Time was lost at the beginning when the team took several background measurements at several locations away from the plume. During the monitoring the majority of the measurements taken were close to the edge of the plume, seven to eight miles downwind of the plant.

Communications between the team and the EOF were not always good. Messages had to be repeated on several occasions. The last half hour the team was offsite, communications failed almost completely. The team was never informed by the EOF on the status of the releases and meteorological conditions. Such information could prevent a sudden increase in personnel exposure from the plume.

The vehicle used by the team was in poor condition. The team had a good map available for sampling locations. Although the readings were not demonstrated, beta and gamma measurements were simulated at many locations as requested by the EOF. The team members did demonstrate taking a gas sample and an air sample.



Offsite radioiodine analysis was demonstrated, but the concentration levels given were  $10^5$  times too high because of misinformation provided in the scenario. Later on the team member corrected his levels. The team attempted to analyze the samples at the same location where the samples were collected without realizing the effect of high background on the results. As a result of these problems the inspector felt that this particular offsite monitoring team, Team No. 1, did not adequately demonstrate its emergency function.

The second environmental monitoring team, Team No. 2, utilized their equipment and took actual radiation measurements, rather than simulate the measurements. Their actions indicated that they had sufficient training to perform their tasks while in the plume area.

The inspectors had a general observation that the field teams and the inplant teams were not kept informed regarding the hazards of releases, composition of release, etc.

#### 6. Exit Interview

The inspectors held an exit interview at the conclusion of the licensee's critique with representatives denoted in Paragraph 1. The licensee agreed to address the inspector's concerns stated in Paragraph 4.

Attachment: Exercise Scenario