

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-263  
License No: DPR-22

Report No: 50-263/99011(DRS)

Licensee: Northern States Power Corporation

Facility: Monticello Nuclear Power Station

Location: 2807 West Highway 75  
Monticello, MN 55362

Dates: June 21-24, 1999

Inspectors: J. Foster, Sr. Emergency Preparedness Analyst  
T. Ploski, Emergency Preparedness Coordinator  
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S. Ray, Senior Resident Inspector, Prairie Island

Approved by: Gary L. Shear, Chief, Plant Support Branch  
Division of Reactor Safety

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## EXECUTIVE SUMMARY

### Monticello Nuclear Generating Station NRC Inspection Report 50-263/99011(DRS)

This inspection consisted of evaluating the licensee's performance during an exercise of the Emergency Plan. It was conducted by three regional inspectors and a Senior Resident Inspector from the Prairie Island site. No violations of NRC requirements were identified.

#### Plant Support

- Overall licensee performance during the 1999 Emergency Plan exercise was very good. (Section P4.1.c).
- Performance in the Simulator Control Room was very good. (Section P4.1.c)
- The Technical Support Center staff's overall performance was very effective. (Section P4.1.c)
- Overall performance of Operations Support Center management and staff was effective. (Section P4.1.c)
- Performance in the Emergency Operations Facility was very good. (Section P4.1.c)
- Self-critiques following termination of the exercise were generally good. Licensee critique findings were consistent with the NRC evaluation team's findings. (Section P4.1.c)

## Report Details

### IV. Plant Support

#### **P3 Emergency Preparedness Procedures and Documentation**

##### **P3.1 Review of Exercise Objectives and Scenario (82302)**

The inspectors reviewed the 1999 exercise's objectives and scenario and determined that the exercise would acceptably test major elements of the licensee's emergency plan. The scenario provided a very challenging framework to support demonstration of the licensee's capabilities to implement its emergency plan. The scenario included security events, a radiological release and several equipment failures.

#### **P4 Staff Knowledge and Performance in Emergency Preparedness**

##### **P4.1 1999 Evaluated Biennial Emergency Preparedness Exercise**

###### **a. Inspection Scope (82301)**

Appendix E to 10 CFR Part 50 requires that power reactor licensees conduct biennial exercises that involve participation by offsite authorities. On June 22, 1999, the licensee conducted a biennial exercise involving full participation by State of Minnesota, Sherburne County, and Wright County responders. This exercise was conducted to test major portions of the licensee's onsite and offsite emergency response capabilities. Onsite and offsite emergency response organizations and emergency response facilities were activated.

The inspectors evaluated performance in the following emergency response facilities:

- Simulator Control Room (SCR)
- Technical Support Center (TSC)
- Operations Support Center (OSC)
- Emergency Operations Facility (EOF)

The inspectors assessed the licensee's recognition of abnormal plant conditions, classification of emergency conditions, notification of offsite agencies, development of protective action recommendations, command-and-control, the transfer of emergency responsibilities between facilities, communications, and the overall implementation of the emergency plan. In addition, the inspectors attended the post-exercise critiques in each of the above facilities to evaluate the licensee's initial self-assessment of exercise performance. A subsequent exercise controller critique was also attended.

###### **b. Emergency Response Facility Observations and Findings**

###### **b.1 Simulator Control Room**

Overall licensee performance in the Simulator Control Room (SCR) was very good. Operators were well aware of plant events, and responded appropriately to the scenario



displayed by the simulator. Periodic briefings kept shift personnel aware of ongoing activities and concerns. Procedures were extensively and effectively utilized, including Emergency Operating Procedures and Emergency Plan Implementing Procedures and checklists.

When information as to the first scenario bomb threat was received, information was well coordinated with the plant security force, and the credibility of the threat was properly verified prior to the declaration of an Unusual Event. The correct Emergency Action Level guide was utilized for the declaration, and notifications were rapidly and efficiently made, well within regulatory timeframes. Completion of the notification paperwork was enhanced by procedure 5790-102-8 (rev. 0), "NUE Guideline", which provides removable labels to place on notification paperwork where the classification and reason for the classification are required. The lead Reactor Operator and the Shift Supervisor held a proactive discussion regarding which systems might be affected by an explosion in the general area of the suspected bomb's location. A plant public address announcement advised plant staff of the event declaration and the cause of the declaration.

An Alert was subsequently declared when it was verified that an explosive device was apparently located as described in the bomb threat. Again, the notification paperwork was rapidly completed.

The Shift Manager, on discovery of a wire which suggested sabotage of a control rod drive mechanism, indicated that he would order evacuation of the turbine building and shutdown of the reactor. This would have been a prudent decision. Suggestion of sabotage of the control rod drive was not intended to be a part of the scenario, and shutdown of the reactor was properly precluded by a controller, to preserve the scenario timeline.

Control Room and Technical Support Center personnel became aware that the Safety Parameter Display System (SPDS) was, at one point, only displaying one half of the actual reactor power. This information was not passed on to the Emergency Operations Facility (EOF), and minor confusion resulted when the system resumed displaying actual reactor power (reactor power appeared to double within a short time span).

## b.2 Technical Support Center

The Technical Support Center (TSC) staff's overall performance was very effective. The TSC was staffed in a timely and orderly manner. The Emergency Director (ED) accepted command and control of accident response within 11 minutes of the Alert declaration. The ED rapidly established control over TSC activities and conducted his initial briefing of the TSC staff within two minutes of assuming authority. The TSC staff's performance throughout the event was professional and calm. Communications were clear and teamwork was effective. Noise levels in the TSC were generally low.

The initial briefing defined plant status and provided guidance to the TSC staff. Subsequent periodic briefings were concise and informed the staff of current status. The ED gave adequate notifications to the staff of upcoming briefings. The TSC staff

members were well prepared for briefings and presented their information in a very efficient manner. The ED requested that phone calls be discontinued during the briefings, which contributed to their effectiveness.

The turnover of responsibilities for offsite communications, offsite assessment, and protective action recommendations to responders in the EOF was conducted in an especially controlled manner and was extremely effective. The ED gave adequate time for his staff to prepare for the turnover and directed them to insure that no offsite notifications activities were ongoing at the time of turnover.

The ED was clearly in charge of the facility. The ED made effective use of the TSC staff to provide information, projections, and suggestions. He evaluated their inputs and then made rapid decisions which were then plainly communicated. The ED properly recommended to the Emergency Manager in the EOF that the Site Area and General Emergency classifications be declared.

Status boards were detailed and generally well maintained throughout the exercise. The Emergency Work Status board clearly displayed inplant response teams, tasks, and team status. The inspectors noted that the priority column on the Emergency Work Status board indicated team priority on only five of the 20 teams. However, team priorities for plant activities were appropriately established and adjusted as scenario conditions changed.

Security officers completed plant personnel accountability and reported the results to the ED within 22 minutes, which was within the required time of 30 minutes. Also, TSC personnel accountability, issuance of Self Reading Dosimeters and potassium Iodide, (KI) decision making was effectively conducted.

Positioning of the "Cordon Guard" during the bomb event was questionable. The individual was not positioned safely nor did he take any cover for blast protection in the event the bomb went off, even though appropriate cover was within a short distance. The Federal Bureau of Investigation provided real time response to the site after notification of the bomb event and discussed the situation by telephone with the ED.

Late in the exercise, the ED was proactive in conducting a pre-recovery discussion to get personnel focused on recovery. The ED listed five actions that the plant would have to complete prior to the onset of recovery.

### **b.3 Operations Support Center and Emergency Response Teams**

The overall performance of Operations Support Center (OSC) personnel was effective. The OSC was fully staffed and operational within 30 minutes after the Alert declaration. The TSC's staff was promptly notified when OSC personnel were ready to accept assignments.

The OSC's staff and equipment assets were successfully managed. The OSC Coordinator, Maintenance Supervisor, their assistant, and two communicators demonstrated good teamwork and generally good use of status boards when monitoring plant status and tracking the progress of missions assigned to inplant teams.



A status board did not indicate the priority assigned to some inplant teams' mission. On one occasion, a team having an apparently higher priority task was appropriately briefed before another team that was otherwise ready to perform a task that seemed less urgent in nature. The teams' deployment times and results were promptly communicated to TSC staff.

Personnel chosen for inplant team assignments were acceptably briefed prior to dispatch and were debriefed upon return to the OSC. Work Order forms created by TSC staff were used in the briefings. During pre-deployment briefings, team members were asked whether they were qualified to use respiratory protection equipment should that become necessary. Briefings included relevant radiological conditions, which was provided by Radiological Emergency Coordinators (RECs). The RECs made good use of a computer to acquire data from the plant's area radiation monitors.

Team members were prudently advised to report any conditions that would have been unanticipated based on their pre-deployment briefings. Teams were accompanied by Radiation Protection Specialists (RPS) when appropriate after plant conditions degraded. Several teams, which were dispatched earlier in the exercise and did not include a RPS, were prudently told to obtain a survey instrument at the main access control point in case conditions would deteriorate during their mission. Personnel at the main access control point performed operability tests of the survey instruments before issuing them to team members.

Personnel within the OSC were given briefings at a reasonable frequency on scenario events and on simulated radiological conditions. Announcements made on the public address system were also audible in the OSC.

Habitability monitoring was acceptable and included use of a portable area radiation monitor. Scenario radiation levels in the OSC did not reach the relevant procedure's radiological criteria for relocating the OSC. Personnel assigned to the OSC were accounted for in a timely manner following the Site Area Emergency declaration. The method used for maintaining the accountability of deployed inplant teams was acceptable. Relatively late in the exercise, participants properly determined whether issuance of potassium iodide to the licensee's emergency workers was warranted.

The inspectors accompanied several inplant teams. A team promptly left the Turbine Building when a building evacuation was ordered. Teams dispatched to assess equipment in the upper and lower four kilovolt switchgear rooms acceptably communicated how they would perform in their equipment inspection tasks. They promptly reported the results of their equipment assessments by telephone to OSC personnel before returning to the OSC.

Relatively late in the exercise, an operator and an RPS were assigned as a team tasked to try to restore a power supply in a switchgear room. Their deployment was appropriately delayed due to simulated adverse thermal conditions. When conditions were reported to have improved, the team was allowed to begin their mission. Team members acceptably demonstrated their abilities to obtain and correctly don suitable protective clothing. The exercise was terminated before this team reached the job site.

#### b.4 Emergency Operations Facility

Overall performance of the Emergency Operations Facility (EOF) staff was very good. The facility was efficiently activated and assigned personnel performed their duties effectively throughout the exercise. Use of the Main Emergency Response tagboard aided in efficient assignment of response positions. The Emergency Manager (EM) prudently requested that the facility be "swept" for explosive devices due to the bomb threats involved in the scenario. Transfer of command and control of the overall incident response from the TSC to the EOF was smoothly accomplished. Awareness of facility habitability was well maintained, and the criteria for facility relocation were reviewed when low radiation levels were indicated.

Procedures and associated checklists were observed to be extensively used. Status boards were generally well maintained, with few exceptions. Periodic and as-needed briefings kept the EOF staff aware of current status and concerns. Guidance was available in procedure 5790-801-2 (Rev. 2), "Emergency Manager Status Update Checklist," as to the subjects to be considered in each full briefing, but some briefings did not include all response activities. This did not affect overall understanding of response activities. The facility lacked a public address system, but this did not significantly diminish the audibility of briefings.

The Technical Support group maintained an excellent awareness of plant status and ongoing events. The Operational Status board keeper would announce when parameters of interest were changing. The Technical Support group performed analyses of various actions to mitigate the accident, such as implementation of an alternate procedure for boron injection into the reactor coolant system. When a bomb was reported to be in the steam chase, they reviewed which systems were present in the area and had the potential to be destroyed.

Control of, and communication with offsite field monitoring teams was well demonstrated. Two response teams reported from the Prairie Island site and were properly integrated into the offsite monitoring efforts. Radio communications were audible, and the teams positions were competently tracked. No equipment problems were evident. Field team data was quickly posted on a status board in the dose assessment room, but was not always posted on the "Radiation Protection Status" board in the EOF in a timely manner.

Event classifications at the Site Area Emergency and General Emergency level were appropriately declared by the EM after discussion with the Emergency Director in the TSC. Protective Action Recommendations were developed per the applicable procedure, and revised as conditions warranted. Telephonic notifications were made in a timely manner; some difficulties were occasionally experienced in faxing notifications and update notifications to the State of Minnesota when State Emergency Operations Facility telephone lines or facsimile machines were busy. This had no discernable effect on the overall effectiveness of communication with the State of Minnesota.

Dose assessment was performed utilizing the Meteorological Interactive Dose Assessment System (MIDAS) computer program, with results reported to the Radiation Protection Support Supervisor (RPSS). Results were also transmitted to State of Minnesota personnel by Followup Notifications automatically generated by the program.



The scenario provided for an unmonitored release path through the turbine bay, which caused some confusion as to the dose projections. The MIDAS system polls the plant computer for monitored release data, but default assumptions are utilized for unmonitored releases until actual data or conversion factors can be determined.

As a result of the above, dose projections by the MIDAS system were significantly higher than field team readings, which led to some uncertainty on the part of the RPSS as to the cause of the differences. Discussion with licensee personnel indicated that the MIDAS procedure would be evaluated for clarification of use of the system for calculating dose projections from unmonitored releases, and whether additional training of the individuals assigned to RPSS positions on the MIDAS system was warranted. The results of the licensee's evaluation of the unmonitored release provisions of the MIDAS procedure and need for additional RPSS training was an Inspection Followup Item (IFI) (50-263/99011-01).

b.5 Scenario and Exercise Control

The inspectors assessed how challenging the scenario was to the licensee and evaluated overall control of the exercise. The scenario was very challenging and exercised the majority of the licensee's emergency response capabilities.

The inspectors identified no controller performance concerns related to the four inplant teams that were accompanied. Controllers ensured that team members asked appropriate questions before providing them with information sought, such as current radiological conditions.

b.6 Licensee Self-Critiques

The inspectors attended the licensee's self-critiques in the SCR, TSC, OSC, and EOF which occurred immediately after the exercise. Exercise controllers solicited verbal and written inputs from the participants in addition to providing the participants with the controllers' initial assessments of personnel performance. The subsequent controller critique discussed the performance in each facility in considerable depth and detail. The inspectors concluded that these initial self-critiques were thorough and in close agreement with the majority of the inspectors' observations.

c. Summary of Conclusions

Evaluation of the license's exercise performance was as follows:

- Overall licensee performance during the 1999 exercise was very good.
- Performance in the Simulator Control Room was very good.
- The Technical Support Center staff's performance was very effective.
- Overall performance of OSC management and staff was effective.
- Performance in the Emergency Operations Facility was very good.



- Self-critiques following termination of the exercise were effective. The critiques included inputs from controllers and exercise participants. Licensee critique findings were consistent with the NRC evaluation team's findings.

#### **P8 Miscellaneous EP Issues**

- P8.1 (Open) Inspection Followup Item No. 50-263/97016-01: Lack of sufficient indicators in Emergency Classification Guideline 28.B for determining the loss of the fuel clad fission product barrier. Discussion indicated that procedure A.2-101, "Classification of Emergencies", was under revision. A team of Licensee personnel was evaluating whether a site specific value for the containment high range monitor would be acceptable as an indication of severe loss of fuel cladding. This item will remain open.
- P8.2 (Closed) Inspection Followup Item No. 50-263/97016-02: Field monitoring team communication, equipment handling and map problems. During this exercise, communications with field monitoring teams was well performed, and equipment and map problems were not evident. This item is closed.

### **V. Management Meetings**

#### **X.1 Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on June 24, 1999. The inspection team leader stated that overall exercise performance was very good, a single Inspection Followup Item had been identified, and the licensee critiques were effective. The licensee acknowledged the preliminary 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

B. Day, Plant Manager  
M. Hammer, Site General Manager  
T. LaPlant, Superintendent, EP & General Training  
B. Leyk, Emergency Planner/Instructor  
M. Offerdahl, Emergency Planner  
G. Holthaus, Emergency Planner/Instructor

### NRC

S. Ray, Senior Resident Inspector, Prairie Island

## INSPECTION PROCEDURES USED

IP 82301	Evaluation of Exercises for Power Reactors
IP 82302	Review of Exercise Objectives and Scenarios for Power Reactors

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

50-263/99011-01	IFI	Evaluation of unmonitored release provisions of the MIDAS dose assessment procedure and need for additional RPSS training.
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### Closed

50-263/97016-02	IFI	Field monitoring team communication, equipment handling and map problems.
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### Discussed

50-263/97016-01	IFI	Lack of sufficient indicators in Emergency Classification Guideline 28.B for determining the loss of the fuel clad fission product barrier.
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## LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
DPR	Demonstration Power Reactor
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EAL	Emergency Action Level
ED	Emergency Director
EM	Emergency Manager
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
EP	Emergency Preparedness
IFI	Inspection Follow up Item
IP	Inspection Procedure
KI	Potassium Iodide
MIDAS	Meteorological Information and Dispersion System
MN	Minnesota
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NUE	Notification of Unusual Event
OSC	Operations Support Center
PA	Public Address
PAR	Protective Action Recommendation
PDR	NRC Public Document Room
PRR	Public Reading Room
RPS	Radiation Protection Specialists
RPSS	Radiation Protection Support Supervisor
REC	Radiological Emergency Coordinators
SM	Shift Manager
SCR	Simulator Main Control Room
SPDS	Safety Parameter Display System
SRI	Senior Resident Inspector
TSC	Technical Support Center