

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-282/82-18(DEPOS); 50-306/82-18(DEPOS)

Docket No. 50-282; 50-306

License 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: October 13-15 and November 9, 1982

Inspectors: *J. P. Patterson*
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R. M. Lickus
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Nov. 24, 1982

Nov. 29, 1982

Approved By: *W. L. Axelson*
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Nov. 24, 1982

C. J. Paperiello
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Support Branch

Dec 1, 1982

Inspection Summary:

Inspection on October 13-15 and November 9, 1982 (Report Nos. 50-282/82-18 (DEPOS); and 50-306/82-18(DEPOS))

Areas Inspected: Routine, announced inspection and observation of an emergency exercise involving an integrated response (small scale only) from the States of Minnesota and Wisconsin and full scale participation from the local counties in both states. Areas observed included: Command and Control of the Control Room; Technical Support Center; Operations Support Center; Emergency Operations Facility, Joint Public Information Center; Post Accident Sampling and Offsite Radiation Monitoring Teams. The inspection involved 130 inspector-hours on site by three NRC inspectors and four NRC consultants. Results: No items of noncompliance or deviations were identified, however, two significant problems regarding timely classification of a General Emergency based on degraded reactor conditions and a possible overexposure (simulated) to a plant employee due to inadequate access control, were identified. These are identified in the Appendix to the letter transmitting this report.

DETAILS

1. Persons Contacted

NRC Observers and Areas Observed

- G. Bethke, NRC Consultant, Control Room (CR)
- P. Brown, NRC Consultant, Technical Support Center (TSC)
- G. Carbaugh, NRC Consultant, Operational Support Center (OSC)
- J. Kenoyer, NRC Consultant, Offsite Monitoring Team
- J. Patterson, Emergency Operations Facility (EOF)
- R. Lickus, Emergency Operations Facility (EOF)
- R. Marabito, Public Affairs Office, Region III - Joint Public Information Center (JPIC)

The NRC Senior Resident Inspector's main responsibility during the exercise was to monitor and advise in Unit 2 operation. He did some observations on a partial basis in the CR and TSC.

Licensee Personnel

- G. Goering, Superintendent, Nuclear Technical Services Emergency Manager, FOF
- *E. Watzl, Plant Manager, Emergency Director, TSC
- C. Harmsen, Site Recovery Manager
- D. Schuelke, Superintendent Radiation Protection, Radiological Emergency Coordinator (REC)
- D. Mendele, Plant Superintendent Engineering and Radiation Protection, TSC
- W. Frederick, Senior Consultant, Regulatory Liaison, EOC Observer
- E. Ward, Manager, Nuclear Environmental Systems

Drill Controllers and Participants

<u>Name</u>	<u>Assignment</u>
J. Gonyeau	Lead Controller/TSC
T. Amundsen	CR Controller
M. Balk	CR
R. Holtke	CR, Shift Supervisor
M. Agen	CR, Controller
R. Stenroos	TSC Controller
J. Lyons	TSC
R. Hansen	TSC
A. Johnson	TSC
J. Hoffman	TSC
M. Klee	TSC
W. Phillips	OSC Controller
J. Oelkers	OSC Controller
W. Gaugher	OSC Coordinator
G. Gore	Shift Emergency Communicator, TSC

M. Sellman	EOF Controller
J. Goldsmith	EOF
D. Althaus	EOF
G. Hudson	EOF
T. Gatten	Rad/Chem Coordinator
L. Finholm	EOF Communicator
T. Bushee	JPIC

All personnel listed above with the exception noted (*) attended the exit interview on October '5, 1982.

2. Licensee Action on Previously Identified Exercise Deficiencies (Report No. 50-282/81-23 and 50-306/81-25)

- a. (282/81-23-01 and 306/81-25-01) Closed. Evaluation of the scenario content by the inspection team confirmed that an adequate technical review of the scenario data had been made by the licensee. Also radiological monitoring data provided to the field monitoring teams was accurate, realistic and closer to expected conditions in the scenario than that provided in the December 1981 exercise.
- b. (282/81-23-02 and 306/81-23-02) Closed. The sequence of scenario events were better coordinated to allow the participants to implement onsite actions and make protective measures recommendations with the offsite agency controllers within the times referred in the scenario.
- c. (282/81-23-03 and 306/81-23-03) Closed. Scenario development and approval followed the provisions of FEMA Memorandum Guidance No. 17. The complete scenario package was received 15 days prior to the exercise rather than the 20 days recommended by the FEMA Memorandum Guidance No. 17; Region III did not receive the scenario until one day prior to the exercise last year.
- d. (282/81-23-04 and 306/81-23-04) Closed. Controllers were provided proper instruction and guidance relevant to their responsibilities and authorities during the exercise. This was observed by the NRC at the pre-exercise Controller's meeting. Further, the NRC observers felt the Controllers in all areas served their roles as prescribed and did an adequate job.
- e. (282/81-23-05 and 306/81-23-05) Closed. Record keeping was adequately managed in the TSC during the exercise. Follow-up notifications to offsite agencies from the TSC were made on a timely basis with radiological data supplied to justify the recommended protective actions. This information was documented in a log kept by a support person to the Emergency Director in the TSC.
- f. (282/81-23-06 and 306/81-23-06) Closed. During this exercise the inspectors observed that proper onsite public address (PA) messages were given. The information provided was brief, but direct, and the correct accident classification was given. It was observed,

however, that reception of the plant paging system in the TSC was not always clear. Extraneous noises seemed to interfere. When the PA volume was turned down to compensate for the noise level, the messages were difficult to hear.

3. Other Items Identified by Inspection Team From Previous Exercise

- a. (282/81-23-07; 306/81-23-07) Closed. The TSC working space has been expanded and key functions have been separated in distance, as opposed to the previous exercise when several support groups plus the Emergency Director (ED) were all at one small table. The Radiation Emergency Coordinator has been moved away from the ED working area.
- b. (282/81-23-08; 306/81-23-08) Closed. Emergency Plan Implementation Procedure (EPIP) F3-7 has been revised to include an assignment to issue dosimeters to all OSC staff personnel.
- c. (282/81-23-09; 306/81-23-09) Closed. A status board has been implemented in the OSC and was used for recording key information as emergency events progressed.
- e. (282/81-23-10; 306/81-23-10) Closed. During this exercise, the NRC Observer concluded that there was good supervision and direction of the OSC Staff through the OSC Coordinator.
- f. (282-81-23-11; 306/81-23-11) Closed. Vehicles used for the environmental monitoring teams were in good working condition and large enough to contain field team members plus radiological equipment as required. This was demonstrated during this exercise to the NRC observer's satisfaction.

4. 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 October 14, 1982, testing the integrated responses of the licensee, State and local organizations to a simulated emergency. The exercise tested the licensee's response to a fire, an outage of both diesel generators and a reactor coolant system leak. Attachment 1 describes the scenario. The exercise was integrated with small scale participation (communications equipment only) by the States of Minnesota and State Wisconsin. The local counties of Pierce County, Wisconsin and Dakota and Goodhue Counties, Minnesota participated on a full scale basis.

5. 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. The Federal Emergency Management Agency (FEMA) observed and will report on the responses of the local governments which will be provided in a separate report.

d. Critique

The licensee held a critique on October 15, 1982, the day after the exercise. The NRC critique was held after the licensee's critique, and the deficiencies were reviewed with the licensee. In addition, a public critique was held later that day in Red Wing, Minnesota. This was a joint NRC/FEMA critique where both onsite and offsite findings were presented.

6. Specific Weaknesses Noted

The major weaknesses are included in the Appendix. Other minor weaknesses are listed under Specific Observations, Section 7.

7. Specific Observations

a. Control Room

Initial reactor conditions were given to the Control Room operators about 0755 according to the NRC Observer. From the initial phone contact with NRC, at about 0830, the Shift Supervisor had difficulty hearing the NRC replies. The Emergency Notification System (ENS) telephone was a continuing problem. Later into the exercise communication was switched to a commercial telephone line. Region III is initiating a request for maintenance on this phone and other dedicated NRC emergency phones.

The two major items of concern, as described in Appendix A, occurred in the Control Room. One item resulted in a General Emergency not being declared until about 30 minutes after degraded reactor conditions would so indicate. The other item related to inadequate access control which allowed an equipment operator to access high radiation area without a Health Physics Technician to provide radiation monitoring. His movements should have been coordinated through the Operating Support Center (OSC).

Other activities observed which need improvement include:

The Shift Supervisor (SS) of the unaffected unit (Unit 2) did not inform the Unit 1 SS after the Plant Manager announced that he was taking over as Emergency Director. The Plant Manager took over about 0935 after reviewing and signing a check list on present plant conditions. As a result of this, about 12-15 minutes later an inquiry to the Unit 1 SS (via Controller) left him assuming he was still directing the activities of the CR operators.

Control Room communicator when reporting the Alert emergency could not identify if the reactor coolant system leak was in Unit 1 or Unit 2.

Throughout the exercise the (CR to TSC) Communicator had to obtain data from various panels and relay this to the TSC. However, he had to relocate to the SS office, plug in his phone and talk to the TSC. This whole process was very inefficient. Further, during the first 1 1/2 hours a poor log was kept of key communications between the Control Room and TSC. The content and timeliness of this log improved by 1115.

No overt attempt was observed to confirm if a leakage path out of containment existed around 1102. Radiation monitors of stack effluents were not being checked. Area radiation monitors in the vicinity of the purge system ducting were not being evaluated.

Positive Comments

Control Room operators used appropriate procedures during the emergency.

Good coordination and discussion between CR and TSC personnel relevant to overruling Technical Specifications to mitigate accident consequences. As a result it was decided to leave Unit 2 on line at 25% power to provide an additional AC power source.

Announcements by Public Address for emergency declarations were clear and concise, both for upgrading and downgrading the event.

Accountability of all non-essential plant personnel was accomplished in 23 minutes.

Emergency Action Levels (EALs) were assessed and implemented with dispatch and the Emergency Plan was followed by the SS and his staff.

b. Technical Support Center (TSC)

At 0937 the TSC was fully staffed following the Alert emergency at 0930 and announcement for all onsite emergency personnel to

report to duty at either TSC, OSC or EOF was implemented. Activation of the TSC was timely and orderly. Observations which include areas for improvement were:

- . Not all available parameters were utilized to assess the seriousness of the accident. With two of three fission product barriers breached, the TSC personnel hesitated before declaring a General Emergency, while speculating on the potential for a discharge path.
- . More controllers in strategic locations would have helped better coordinate the exercise. When the simulated overexposure occurred as described earlier, the operator responding checked cooling fan breakers, No. 12 and No. 14, which were simulated to be open. With no controller present at the breakers, a loss of realism occurred when no report of personnel overexposure was made and the breakers were reported to be in the shut position contrary to the scenario.
- . The Emergency Director spent too much time on the telephone. At times decisions were delayed and important reports detained due to telephone calls. A communicator should have been assigned this task, or the ED logkeeper near him should have handled more of the calls.
- . Status report briefing to the TSC personnel by the ED were too brief and sporadic. A more concise and thorough status of plant conditions and release pathway should have been made. Several participants were confused on how the release path was established as well as on other major plant conditions.
- . A comprehensive status board listing important events in chronological order would have been helpful in keeping all TSC personnel informed. This would also enable supporting staff to provide meaningful recommendations to the ED.
- . The Engineering Support Team should have evaluated the breaker trips on No. 12 and No. 14 Fan Coil Units. They had no logical answer to this occurrence.

Positive Observations

- . The inspector observed that the TSC support staff in communicating with the ED had an excellent engineering discussion on a proposed plan to block the purge line after pressure in the containment was reduced to zero. The idea was to blank flange the line to provide blockage in the event pressure increased again.
- . Assessment of core damage based on containment radiation levels was made early in scenario by Radiation Emergency Coordinator (REC). This evaluation resulted in timely notification to the ED.

. Good utilization of technical support personnel in analyzing power needs resulted in the decision to keep Unit 2 operating.

c. Operational Support Center (OSC)

Within about 10 minutes after the Alert emergency, the OSC was activated with designated personnel. Equipment lockers were utilized and record management functions were started. Dosimeters were issued to all present. Accountability for all radiation monitoring teams as well as maintenance teams was well maintained.

Plant status was being listed on a status board. This seemed to suffice for relevant time spans of emergency activity. The NRC observer noted that the Radiation Protection Specialists (RPSs) exhibited an adequate level of knowledge of dose control and awareness of dose rates. Post accident sampling observed included a reactor coolant sample and a containment air sample. Techniques demonstrated by the RPSs were acceptable.

The Rad/Chem Coordinator anticipated the need for a containment air sample following the LOCA and Safety Injection (SI) Actuation (about 1030). He suspended preparations for coolant sampling and kept two RPSs in protective clothing ready to take containment air samples. This was good response on his part.

Items which should be considered for improvement included:

- . OSC Coordinator was given initial plant status from the Controller rather than from the CR. This occurred 10 minutes after the OSC was announced as activated.
- . Containment air sample analysis should have been fully exercised rather than having the final results supplied. Transport of the sample to an alternate counting location and actual counting should have taken place. Activity levels of sample would not have posed significant analytical problems.
- . The "hot" sample sink did not drain to Residual Heat Removal (RHR) sump as it was so designed due to flow restriction in the drain line.
- . Another scenario related item concerns plant survey data on Page V (9-10) of scenario. One example was, Point B on the Auxiliary Building sketch for 755' level lists B=39 mR/hr while on the other side of the door the level is 3200 mR/hr. This data is unrealistic.

d. Environmental Radiation Monitoring Teams

The offsite environmental teams were assembled in a timely manner at the OSC for dispatching. Survey monitoring equipment was checked by the teams prior to leaving the OSC. However, the air sampler was

not checked for operability. Procedure F3-15 (EPIP) titled "Responsibilities of the Radiation Survey Teams During a Radioactive Airborne Release" does not presently include a statement that the air sampler should be checked for operability before the monitoring team is dispatched.

The teams demonstrated familiarity with their operating procedures. Beta/gamma readings were taken and correction factors were used properly. After information was received from the EOF Communicator that a release had taken place, a team member began monitoring the plume. A radioiodine air sample was taken properly. Procedures were followed, conversion factor used and concentrations in microcuries/cc were recorded properly.

Items which should be considered for improvement include:

- . Although each team member had both a low range dosimeter (0-200 mR) and a high range dosimeter (0 to 1R) the NRC observer felt a high range dosimeter of 0-5R would be advisable. Dose rates in certain plume areas could exceed the 1R/hr level.
 - . The team had some difficulty in locating the specific sampling points to which they were directed. There is no specific identification marking at the sampling locations and not all points are located at cross roads or other easily identified landmarks. Sampling locations should be more easily identified including night time reflectors.
 - . Radio communications were lost for some time between Monticello Team No. 3 and the EOF Communicator. The area between two sampling points, H-3 and K-3 had no reception. Also, there was poor reception while the team was moving out from Section J-9 towards the 10 mile limit. The licensee does have a microwave tower with an antenna on top to act as a booster from a plant repeater for radio reception in the hilly area adjoining the plant site. More effort must be made by the licensee to minimize the size of the areas of poor or no radio reception. Also these areas should be clearly marked on the EPZ sector maps and any other guide maps used by the offsite monitoring teams. The licensee is aware of this problem and has been working to resolve this problem.
 - . Monitoring team members did not always take beta-gamma (i.e., window open vs. window closed) readings while attempting to locate the plume. The EOF Communicator had to remind them of this.
- e. Emergency Operations Facility (EOF)

A public address announcement of an ALERT at about 0933 started the activation of the EOF. The EOF Coordinator took charge exercising

good command and control. All segments of the facility were made ready by the participants who assumed their duty stations with dispatch and efficiency. Participants were issued dosimeters and tape-on labels for exercise identification. Adequate security was established, and a sign-in log was established. Habitability monitors were activated early and maintained throughout the exercise.

Transfer of command from the EOF Coordinator to the Emergency Manager (EM) took place smoothly with update of plant conditions and other information at about 1020. The two major support and accident assessment groups, Technical Assessment and Radiological Assessment, overall functioned well and kept the EM informed. The functions of managing the offsite emergency response including directing radiation monitoring teams was performed adequately. Communication with state and local governments, providing protective action recommendations and consulting with the NRC Region III office were handled adequately.

The Emergency Plan and related Emergency Plan Implementing Procedures (EPIPs) were used routinely through the exercise. Information flow was good. Messages were written on preprinted forms and distributed to the proper individuals in a timely manner. Headsets were used by all communicators except the person using the ENS phone. This was an improvement from the previous exercise when radio contacts with field teams resulted in a disruptive noise condition.

Items which should be considered for improvement include:

- . The ENS Communicator did not consult the message forms that were provided to him for transmitting data to the NRC. This resulted in misinformation being transmitted concerning a protective action recommendation at one point during the exercise. This communicator should be trained to provide information from written material (message forms or status boards) to reduce the potential for errors.
- . At approximately 1:50 p.m. a protective action recommendation was made to the City of Red Wing relevant to reduced sheltering. This recommendation was implemented without ensuring that the area had been thoroughly surveyed to confirm the radiological conditions. Also when the EOF deescalated the incident from a Site Area to an Alert classification, the decision was made prior to receiving confirmatory radiological readings from the field teams.
- . The EOF did not have adequate space in the operational area for the NRC Site Team to locate. It is expected that about 9 NRC Site Team personnel will locate in the operational area of the EOF and coordinate with licensee personnel.
- . According to current procedures, the TSC Emergency Director is responsible for classifying the incident, and the EOF Emergency Manager (when activated) is responsible for con-

curing in classification changes. Since the EOF should have access to more information than the TSC concerning both onsite and offsite conditions, the licensee must consider placing the responsibility for accident classification with the EOF Emergency Manager (upon activation). The TSC Emergency Director should be responsible for making recommendations to the EOF Emergency Manager.

f. Joint Public Information Center (JPIC)

The JPIC was located in the Hearing Room of the State Capitol Building in St. Paul, Minnesota.

The NRC observer felt that this room could not accommodate large numbers of national media representatives if a serious emergency occurred. Six phone jacks were in the room and media representatives have to pay for their use. Only four press briefings were held and the observer considered the information given as scant.

Only one hard copy release was made. The impression made on the observer was that the licensee representatives were not taking this aspect of the exercise seriously. No member of the press was present, although the State of Minnesota and the State of Wisconsin were represented. Media representatives were invited by the licensee.

The licensee's plans are to utilize their Media Information Facility in the lower level auditorium of their corporate offices as a backup JPIC.

Security was satisfactory and visual aids available were adequate, however, overall performance of this JPIC was judged to be in need of improvement.

8. Exit Interview

The inspectors held an exit interview at the conclusion of the licensee's critique with representatives denoted in Paragraph 1. Licensee management agreed to respond to the items of concern listed in the Appendix to the letter. Also minor weaknesses listed in Paragraph 7 were reviewed with a licensee management representative at the exit interview and by telephone on November 9, 1982. The licensee agreed to address these items.

Attachment: Exercise Scenario Outline

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
EMERGENCY PLAN EVALUATION EXERCISE
SCENARIO OUTLINE (October 14, 1982)

Rev 1

Initial Conditions

The plant is initially at full power. One (#1) diesel generator is out of service. The wind is out of the north (360) at 5 mph.

<u>Time</u>	<u>Comment</u>
0745	Initial conditions are given to the operating crew.
0815	While performing the diesel generator #2 surveillance test, a fire occurs. The second diesel generator must be shut down. A <u>Notification of Unusual Event</u> is to be declared since the plant must be shut down.
0845	Increasing containment airborne activity indicated on IR11 and IR12 by alarm.
0900	Diesel generator fire is out. Reactor Coolant System (RCS) leak rate reported at 10 gpm.
0930	RCS leak rate is 60 gpm. An <u>Alert</u> should be declared.
1000	Radiation monitor alarms indicate possible containment release.
1030	A Large Break Loss of Coolant accident occurs. A <u>Site Area Emergency</u> should be declared. Two fan coil units and containment spray pump #11 are lost.
1045	Containment spray pump #12 breaker malfunction. #12 containment spray pump lost.
1100	Leak through containment purge line starts.
1130	Off-site dose reaches level necessitating <u>General Emergency</u> declaration.
1200-1230	Lunch
1230	Continue exercise. <u>General Emergency</u> level. Release continuing.
1245	#12 containment spray pump breaker replaced. Pressure starts to fall off.
1330	Purge valve repaired. Reduce to <u>Site Area Emergency</u> level.
1400	Containment fan coils returned to service.
1430	Downgrade to <u>Alert</u> based on plant at cold shutdown. Terminate drill. Re-entry starts. Closeout with state agencies.