

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-282/83-03(DRMS); 50-306/83-02(DRMS)

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: January 31 - February 4, 1983

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

2/28/83

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2/28/83

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W. L. Axelson, Chief  
Emergency Preparedness Section

2/28/83

Inspection Summary:

Inspection on January 31 through February 4, 1983 (Report No. 50-284/83-03(DRMS); 50-306/83-02(DRMS))

Areas Inspected: Routine, announced followup inspection of the Prairie Island Nuclear Plant to review action taken in response to the Confirmation of Action Letter from Mr. J. G. Keppler, Region III, to Mr. D. E. Gilberts, Northern States Power Company dated December 17, 1981, and identified as Appendix A items. Also addressed were the Emergency Preparedness Appraisal Improvement Items - Appendix B and Open Items - Appendix D. Also Inspection Module No. 82205, Shift Staffing and Augmentation was inspected. The inspection involved 124 inspector-hours on site by 2 NRC inspectors and 2 NRC consultants.

Results: No items of noncompliance or deviations were identified.

## DETAILS

### 1. Persons Contacted

- \*E. Watzl, Plant Manager
- \*R. Lindsey, Plant Superintendent, Operations and Maintenance
- \*D. Mendele, Plant Superintendent, Engineering and Radiation Protection
- \*D. Schuelke, Superintendent, Radiation Protection
- R. Stenroos - Principal Producing Engineer
- J. Maki, Communications Engineer
- A. Johnson, Radiation Protection Supervisor
- J. Sorensen, Assistant Production Engineer
- D. Ludwig, Radiation Protection Specialist
- D. Larimer, Radiation/Chemistry Supervisor
- G. Kolle, Lead Health Physics Instructor

\*Denotes those present at the exit interview.

### 2. Review of Confirmation of Action Letter Items (Letter from J. G. Keppler to D. E. Gilberts, December 17, 1981.

#### a. (282/81-20-18 and 306/81-22-18) Closed - Emergency Equipment and Facilities

Deficiency: A primary meteorological measurements system which complies with RG 1.23 Rev. 1 criteria shall be installed and made operational. This program shall include a 60 meter tower with measurements at two levels, 10 and 60 meters. Hard copy data shall be made available. A formalized approved preventative maintenance program of surveillance, calibration and data reduction shall be initiated.

Licensee Action: The licensee installed a 60 meter meteorological tower located approximately 400 meters northwest of the plant. The tower supplies the following information to the Technical Support Center (TSC):

- . Wind direction (10 and 60 meters)
- . Wind speed (10 and 60 meters)
- . Temperature
- .  $\Delta T$  between the 10 and 60 meter temperature indications
- . Precipitation

Barometric pressure is also available in the Control Room. Two independent transmitters provide data to two digital terminals in the TSC. Data is recorded every 15 minutes. Redundant power is supplied to the tower instruments and transmitters by DC batteries.

A backup meteorological tower is located just north of the Emergency Operations Facility (EOF) which is less than one mile southwest of the plant. This tower provides wind speed and direction readouts in the EOF. Meteorological data is also available from the National Weather Service (NWS), the National Oceanic and Atmospheric Administration (NOAA), KCUE radio station, Red Wing Cable TV, Red Wing Energy Education Center and Lock and Dam No. 3. NWS and NOAA can be interrogated from the TSC.

The preventative maintenance program is outlined in Procedure No. STP-1677. This procedure is implemented monthly at which time hard copy data records are microfilmed and stored. Maintenance records from September through December 1982 were examined by the inspector and found to be adequate. Spare circuit boards, vanes, transmitters and other components are maintained. Inspection, service and calibration procedures are provided in Procedure No. SCP-1676. This procedure requires calibration on a semi-annual basis. However, since the preventative maintenance procedure includes a thorough calibration check monthly, the full calibration frequency will be changed to annual in SCP-1676. The inspection and calibration log for the September to December 1982 period was examined by the inspector and found to be adequate.

b. (282/81-20-19 and 306/81-22-19) Closed - Prompt Public Notification

Deficiency: Licensee was asked to submit documentation to the NRC to technically support the prompt public notification system to assure it meets the design objectives of Appendix 3 of NUREG-0654. Also, they were requested to state when the system would be fully operational.

Response: Documentation was submitted to NRC, Region III, on December 16, 1982. The system was fully operational before February 1, 1983. This item was officially closed by inspection of the siren system on January 19-29, 1982 (Report No. 282/82-02; 306/82-02).

c. (282/81-20-20 and 306/81-22-20) Closed - Emergency Plan Implementation Procedures and Interface Procedures

Deficiency: Review and revise, as necessary all plant abnormal operating procedures, emergency instructions, and annunciator procedures which do not contain, as a subsequent operator action, a statement to direct the Reactor Operator or user to notify the Shift

Supervisor to classify the emergency in accordance with the Emergency Plan Implementing Procedure. This review shall also pertain to the new Westinghouse Owners Group, Symptomatic Emergency Operating Procedures, when and if they are adopted by the licensee.

Licensee Action: The inspector reviewed all of the plant abnormal operating procedures, emergency instructions and annunciator procedures. A statement to direct the procedure/instruction user to notify the Shift Supervisor to consider classifying the event per EPIP, F3-2 is included where appropriate. In other cases, the emergency class may be used right in the procedures/instruction when no further actions or judgment is required to determine the emergency class (e.g., natural events).

The Westinghouse Owners Group, Symptomatic Emergency Operating Procedures are still being reviewed by the licensee for adaptation to the Prairie Island Plant.

d. (282/81-20-21 and 306/81-22-21) Closed - Emergency Plan Implementing Procedures and Interface Procedures

Deficiency: Check-off lists for key personnel in the Emergency Response Organization shall be developed and implemented to ensure all tasks are performed in the proper sequence in order to prevent reliance on memory.

Licensee Action: Key Emergency Response Organization (ERO) personnel were identified by the licensee to be the: (1) Emergency Director, (2) Radiological Emergency Coordinator, (3) Technical Support Center Coordinator, and (4) Operational Support Center Coordinator. Check-off lists for each of these ERO personnel have been developed and are found in EPIP F3-4, "Responsibilities During an Alert, Site Area or General Emergency" as attachment A, B, C and D. These checklist forms include a provision for initialling each step as soon as it is completed. The inspector reviewed the checklists and through discussions with the licensee's staff determined that the lists were both used during the plant emergency exercise, and were found to assist in the transition of the Emergency Director's responsibility from the Shift Supervisor to the designated Emergency Director who was the Plant Manager.

e. (282/81-20-22 and 306/81-22-22) Closed - Emergency Plan Implementation Procedures and Interface Procedures

Deficiency: Observable and reliable Emergency Action Levels (EALs) shall be developed and maintained for the following accident conditions and correct, as necessary, those EALs which do not meet the regulatory positions of NUREG-0654:

- . Provide EALs for the containment radiation monitor for a primary coolant leak greater than 50 GPM.
- . Provide EALs for the containment radiation monitor for a loss of 2 of 3 fission product barriers.
- . Provide steam line radiation monitor EALs for a 50 GPM primary to secondary leak with and without fuel damage indication.
- . Provide EALs for 1R-50, 2R-50, 1R-22, and 2R-22 Shield Building Vent Exhaust for an Alert, Site Area, and General Emergency.
- . Change 100 mR/hr to 1000 mR/hr (EALs) for an Alert indicating a severe degradation in control of radioactive materials and remove airborne levels greater than 10 CFR 20 limits as an Alert EAL.
- . Remove loss of both turbine generators as an Unusual Event and keep loss of both diesel generators as the EAL for loss of Onsite AC Power Capability.
- . Provide EALs for R-11/12, R-7 and R-2 for a fuel handling accident at the Alert Level and provide EALs for R-31, R-25, and R-28 at the Site Area level.
- . Correct typographical error for Condition No. 13 from Ci/cc to uCi/cc (primary coolant results).
- . Develop EALs for chlorine, ammonia and hydrazine release onsite including the Control Room, Administration Area, and Auxiliary Building.

Licensee Action: In the licensee's written response dated January 15, 1982, two changes in the EALs were

noted which were previously agreed upon in a telephone discussion with Mr. W. L. Axelson of NRC's Region III. The air ejector discharge monitor will now indicate a 50 gpm leak, and an EAL will be established for the air ejector monitor. The radiation monitor EALs for a fuel handling accident in the spent fuel building will be for 1R-22, 2R-22, 1R-50, 2R-50, and R-5 instead of R-31, R-25 and R-28.

The inspector reviewed the revised and new EALs, and the other changes made by the licensee. The revised and new EALs are documented in EPIP F3-2, which was approved on August 26, 1982. The prescribed EALs and other modifications were made according to the corrective action response indicated above.

f. (282/81-20-23 and 306/81-22-23) Closed - Emergency Plan Implementing Procedures and Interface Procedures

Deficiency: Emergency Plan Implementing Procedure (F3-4) shall be revised to include the following conditions:

The Shift Supervisor of the unaffected unit shall initially (within the first hour) ensure that onsite and inplant radiation surveys will be conducted as necessary and he shall direct radiochemistry personnel to take appropriate samples as necessary.

The Shift Supervisor of the unaffected unit shall make initial recommendations to offsite agencies for any General Emergency which shall include:  
(1) activation of the public notification system, and (2) recommendations for sheltering of the public within a two mile radius of the plant.

Licensee Action: The inspector reviewed the revisions to EPIP F3-4 and determined that the Shift Supervisor of the unaffected unit would, (1) within the first hour, ensure that the applicable surveys and samples were conducted, (2) activate the public notification system (3) make offsite recommendations for sheltering of the public within the two and five mile radii from the plant, and (4) provide other offsite recommendations as necessary. The Shift Supervisor have been trained on this revised procedure which was successfully utilized in the October 14, 1982, Emergency Exercise .

g. (282/81-20-24 and 306/81-22-24) Closed - Training of Reactor Operators In Implant Radiological Survey Techniques

Deficiency: Dedicated 24 hour per day coverage for implant surveys during an emergency shall be provided. This position/expertise shall be in addition to the existing onshift Radiation Protection Specialist. Training shall be provided for this position with particular attention to emergency implant radiation surveys.

Licensee Action: The inspectors reviewed EPIP F3-14.1 entitled "Onsite Radiological Monitoring". The inspectors also conducted interviews and walkthrough demonstrations with 9 of the 36 station reactor operators. The licensee has 6 shifts of reactor operators, one of which is in training or requalification training at all times. A review of the training records revealed that 47 individuals had successfully completed the training for onsite radiation surveys.

Typical training sessions include radiation protection, chlorine leak detection, respiratory protection, etc. Training sessions include both classroom lectures and "hands on" exercises with pertinent equipment and procedures. For radiation protection, the reactor operators receive training on the Teletector and RO-2A survey instruments, the Radico and RAS-1 air samplers, and the RM-14 count rate meter. Annual retraining is also provided on all applicable EPIP procedures.

The inspectors presented accident scenarios to the reactor operators who were interviewed. In each case they demonstrated adequate knowledge of emergency procedures, emergency equipment locations, selection and use of protective clothing and respiratory protection equipment, selection and use of survey instruments and air samplers, and interpretation and reporting of survey results.

Based on the above findings, this portion of the licensee's program is adequate.

3. Review of Appraisal Improvement Items, Appendix B - Letter of January 15, 1982

There were 28 (Appendix B) items which the NRC Emergency Preparedness Team felt should be considered for improvement by the licensee. In reference to Item No. 5, the licensee after reconsidering has decided not to establish a near-site press briefing for use during emergencies. A room at the State Capitol in St. Paul will continue to serve as the

JPIC. Item No. 14 and Item No. 24 have been changed as requested and verified by the NRC during an earlier inspection.

Training on the dose assessment computer (Item No. 4) was verified by the inspectors by examining training records as well as actual interviews and walkthroughs with three Radiation Protection Specialist (RPS) personnel. This improvement item was considered to be accomplished satisfactorily by the licensee.

All other 24 items have been examined and reviewed by the inspection team, and the suggested improvements have been made.

4. Review of Appraisal Open Items, Appendix D - Letter from J. G. Keppler to D. E. Gilberts, December 17, 1981.

a. (50-282/81-20-10 and 50-306/81-22-10) Closed - Completion of the Technical Support Center (TSC) by October 1982

The TSC has been completed prior to October 1982. The enlarged (approximately 150 square feet) TSC was utilized in the recent annual Emergency Exercise conducted on October 14, 1982. Since the Region III Appraisal, 32 more Radio Alert units have been added in homes of NSP emergency response personnel. These radios are activated from the TSC. Also in the TSC is a telephone call-in program which when activated with one button will dial the employee's home phone. A larger table has been added for use by key emergency management personnel, as suggested by the Appraisal Team.

A data acquisition computer has been added to include input of certain reactor operating parameters and their measurements, which can be transferred from the Control Room and outlying reactor locations. One Cathode Ray Tube (CRT) unit is available for display of these reactor parameters. Another CRT on the same table can take up to four groups of measurement data and plot the data as a graphic display. Such real-time data should be helpful in trending and analyzing current reactor data. This data retrieval system is now completely operational.

A card reader has been installed to account for essential personnel in the TSC in the event evacuation of plant personnel is recommended. Five emergency lights have been installed in the TSC. Two independent transmitters from the meteorological tower provide data to two digital terminals in the TSC. Data is recorded every 15 minutes. The NWS and the NOAA have lines into the TSC for current weather information besides the meteorological tower.

The final review of this facility will be addressed in a separate report pursuant to SECY 82-111b.



- b. (50-282/81-20-11 and 50-306/81-22-11) Closed - Completion of the near-site EOF by October 1982.

The permanent EOF which is part of a new training facility was completed in late summer of 1982. This facility is located approximately 1/2 mile northeast of the facility. The licensee's Headquarters Emergency Center (HEC) serves as the backup EOF. The new EOF was operational and in full use during the October 14, 1982, annual Emergency Exercise for Prairie Island.

The EOF has adequate internal and external telephone communication equipment installed including a three-way telephone hookup to converse with offsite agencies in an emergency. The backup meteorological tower supplies wind speed and direction readouts to the EOF. Status boards, teleprinters, Emergency Planning Zone maps, and radio-telephone communications for the offsite radiation monitoring teams are provided in the EOF. This EOF serves as the location for receipt and analysis of all field monitoring data and coordination of sample media.

The final review of this facility will be addressed in a separate report pursuant to SECY 82-111b.

- c. (282/81-20-12 and 306/81-22-12) Closed - Relocation and additional shielding of primary coolant sample lines in the primary coolant sample hood must be completed by January 1, 1982.

The addition of shielding and relocation of the primary coolant sample lines were observed by the inspector to be adequate. The sampling lines were entirely rerouted. Shielding of 1" to 2" was installed. The rerouting and shielding has minimized personnel exposure to an adequate level. This change was accomplished prior to the required date.

- d. (282/81-20-13 and 306/81-22-13) Closed - Installation of a purging system for the containment air sampling lines must be completed by February 1, 1982.

The inspector reviewed the installation of the nitrogen purging system and the implementing procedures to follow to provide representative containment air sampling. These were reviewed with the Systems Engineer. The inspector considered the installation satisfactory. This installation was completed by the licensee prior to the required date.

- e. (282/81-20-14 and 306/81-20-14) Open - Secondary side steam relief radiation monitors must be installed by January 1, 1982.

These monitors have been installed by the required date. The inspector noted that one of the three monitors was inoperable. The licensee has ordered a GM tube to repair the faulty monitor. Use of the monitors is prescribed by EPIP F3-20 for emergency situations. These secondary side steam relief radiation monitors have readouts in a bus room about 12 seconds away in walking time from the Control Room.

- f. (282/81-20-15 and 306/81-22-15) Closed - Installation of the high range ( $10^8$  R/hr) containment radiation dome monitors must be completed by January 1, 1982.

The inspector observed that the high range containment monitors were installed and operational by the required date. This item was also addressed in No. 15 of Appendix B items.

- g. (282/81-20-16 and 306/81-22-16) Closed - Training of Reactor Operators in basic inplant radiological survey techniques to provide dedicated backshift radiation protection must be implemented by July 1, 1982.

This item was thoroughly described earlier in this report as the last Appendix A item. Training of the Reactor Operators has been complete. Nine out of 36 were interviewed and performed walk-throughs for the inspectors to demonstrate their capabilities. Training records were also reviewed by the inspectors. The inspectors concluded that these reactor operators have been satisfactorily trained and should be able to provide backshift radiation protection as required.

- h. (282/81-20-17 and 306/81-22-17) Closed - Correction of the portable inplant radio system to make it workable for communicating between the control room and certain areas in the Auxiliary Building.

The wattage on this radio system was first increased to 4 watts and tested for reception before April 1, 1982. A few weaknesses were detected and the system was raised to 12.5 watts. A slotted coaxial cable was then extended vertically to all four levels of the Auxiliary Building for better transmission. A localized antenna was installed on the top of the Auxiliary Building. New tests were conducted at various locations on each level of the building. Excellent reception was received.

The inspector reviewed these test records and found them acceptable. Monthly tests on all radios within the ERFs are being conducted by the licensee. The inspector concluded that this item has been corrected adequately.

5. Shift Staffing and Augmentation (Inspection Procedure 8205)

The licensee has 13 emergency response workers to fulfill the minimum shift staffing as recommended by Table B-1 of NUREG-0654. At the time of the appraisal inspection in November 1981 there was 11. Since then, a fourth Auxiliary Operator (AO) has been added plus an additional Radiation Protection Technician. Training for inplant surveys during an emergency has been provided to the Reactor Operators (RO). Training has been completed as recommended by the Region III Appraisal Team. Interviews of these operators have been conducted as part of this inspection to determine the extent of their training as well as having

them demonstrate their capabilities. The inspectors were satisfied that the operators demonstrated sufficient capability to perform inplant radiation surveys. (Reference Paragraph 2.g.) With the additional staffing plus the inplant radiation survey training which includes operators on all shifts, the inspectors were satisfied that the licensee presently meets the shift staffing guidance as stated in Table B-1 of NUREG-0654.

An administrative system is in place to notify offshift emergency personnel to report to the plant. The Shift Emergency Coordinator (SEC) as delegated by the Emergency Director or Shift Supervisor is responsible for contacting offshift personnel. A Radio Alert System is employed which includes tone alert radio receivers installed in the homes of emergency response personnel. Upon receipt of a notification, it will be the response of the supervisor to contact additional personnel. Call-in procedures were reviewed by the inspectors. Also reviewed were documentation of telephone call-in drills which the licensee conducted to demonstrate that key plant emergency personnel can respond in 30 minutes. These were considered adequate.

The inspectors determined through interviews with several emergency response personnel that they are technically and administratively qualified to meet the functional requirements for staffing. The TSC is headed by an Emergency Director. Communications are the responsibility of the SEC and his supporting staff. Data Analysis is divided into two areas. One relating to radiation measurements and plume dispersion is under the Radiological Emergency Coordinator (REC). The other relating to technical reactor operations is the responsibility of the Systems Engineer.

Engineering staff personnel for the TSC include Core/Thermal, Electrical and Mechanical Engineers. Health Physics capability is provided by the REC. A Radiation/Chemistry Supervisor is also available plus an Operations Group representative who has radiation waste responsibility. Operations interface between the Operations Group, other technical groups and radiological accident assessment is maintained periodically during an emergency event.

The licensee has demonstrated in several emergency exercises and practice drills that the EOF can be staffed in about one hour for a Site Area and General Emergency. A staff representative from onsite is designated as the EOF Coordinator to activate the EOF. He assumes the role of the Emergency Manager until the Corporate management representative arrives from the Minneapolis main office.

Emergency response functions at the EOF include: offsite radiological accident assessment, communications with offsite agencies, NRC, and field monitoring teams; recommending offsite protective measures; and other support services including recovery operations. Technical assessment including trending and evaluation of reactor conditions is done in cooperation with the TSC.

6. Exit Interview

The inspection team met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection. All inspection findings relating to items in Appendix A, B and D of the appraisal findings, Report No. 282/81-20; 306/81-22, were discussed with the licensee. All open items from the appraisal were discussed.