

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60137

DEC 16 1975

Northern States Power Company  
ATTN: Mr. Leo Wachter  
Vice President  
Power Production and  
System Operation  
414 Nicollet Mall  
Minneapolis, Minnesota 55401

Docket No. 50-263  
Docket No. 50-306  
Docket No. 50-282

Gentlemen:

This is to acknowledge your letters dated December 5, 1975, in response to IE Bulletin 75-04B. Based upon the second paragraph of your letters and a telecon with Mr. G. H. Neils of your office on December 11, 1975, by Mr. Jordan of this office, we are forwarding your letters to our Headquarters in accordance with your request for exemption from disclosure under the provisions of Title 10, Section 2.790. No public distribution of the enclosures will be made until the evaluation of the possible proprietary nature has been completed.

If you have any further questions or comments regarding this matter, please contact us.

Sincerely yours,

James G. Keppler  
Regional Director

cc: F. P. Tierney, Jr.  
Plant Manager

bcc w/ltrs dtd 12/5/75:  
PDR  
Local PDR  
NSIC  
TIC

*JGK PG*

# NSP

NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

December 5, 1975

Mr J G Keppler  
Director, Region III  
Office of Inspection & Enforcement  
United States Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Dear Mr Keppler:

306  
PRAIRIE ISLAND NUCLEAR GENERATING PLANT  
DOCKET NOS. 50-253, 50-282; LICENSE NOS. DPR-42, DPR-60

In response to IE Bulletin 75-04B, reports of fire protection inspections conducted by non NRC groups since March 22, 1975 are submitted along with our position with respect to the recommendations resulting from these inspections. Also included in this response is a description of the numerous fire protection inspections and equipment checks conducted on a scheduled basis by Northern States Power Company personnel. This description is included to give a complete picture of the fire protection practices in effect at our Prairie Island Plant.

We believe that your request for such inspection reports is most inappropriate in that it solicits judgments from an organization not competent to evaluate nuclear hazards, and whose principal interest is loss claim limitation and profitability of the insurance carrier without regard to costs to the insured. This places the NRC in the position of intruding into and requiring disclosure of commercial material relating to insurance premium rate economics. The requested information is nevertheless provided here with our reliance on NRC prudence in the use and disclosure thereof.

I. Inspections by Non NSP Groups

- A. Nuclear Energy Liability Property Insurance Association inspection report dated September 3, 25, 1975 (Attachment #1).

Response to New Recommendations

75-2 Valve was repaired and operable on October 14, 1975.

75-3 Replacement of the strainer parts and other necessary work to make the screen wash pump function as intended in the fire system was completed on October 31, 1975.

NORTHERN STATES POWER COMPANY

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75-4 We conclude that the implementation of this recommendation would provide no more assurance that the plant is in a more "fire safe" configuration than is now provided by existing administrative procedures, tests, inspections, and reports. It would serve no purpose, but to consume more administrative time and generate more paper. The recommendation is rejected.

75-5 For many years it has been the policy of NSP to fight turbine fires with hose stations equipped with fog nozzles and portable equipment. This position was taken because of the potential for accidentally activating any fixed spray system and the destruction that would result from spraying cold water on a hot turbine. When Prairie Island was constructed, fixed spray protection was installed at the continued urging of our fire insurance carrier. We still believe that the probability of accidentally actuating this system is far greater than the probability of experiencing a turbine fire. Accidental actuation is an ever greater probability if the system actuates automatically. Such an accident could be as costly to NSP as a turbine fire in terms of equipment damage and loss of generation. The recommendation to provide automatic spray systems on the turbine generator was rejected for the reasons given here.

Response to Old Recommendations

75-1 This area is not a safety related area and is completely separated from the plant.

69-27 Examination of the pump revealed that maintenance was needed. This work is in process and is being expedited.

B. Nuclear Energy Liability Property Insurance Association inspection report dated November 5, 1975 (Attachment #2).

Response to Recommendations

1. At the insistence of the insurance carrier a fixed pipe water spray system was originally included in the design despite significant reservations on our part. Subsequently this system was disconnected and disabled at the insistence of NRC. Subsequently a fixed CO<sub>2</sub> system was installed for this area. The CO<sub>2</sub> system with fire detection alarms, the use of Kerite EPR cable having fire retardant properties, limited cable tray fill, use of cable tray covers and cable tray separation in our judgment provides adequate fire protection. The recommendation for a water spray system is rejected.
2. Cable trays are abundant in every area of the plant and the potential for fire in these trays was addressed and dealt with in some detail during plant design and construction.
  - a. Fire retardant coverings were specified on electrical cables with special attention given to those serving safeguard equipment.

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- b. Cable tray fill was monitored to assure that electrical losses from cables do not cause overheating in the trays.
- c. Power cables and control cables were routed in separate trays.
- d. Cable tray separation providing adequate ventilation was a criteria throughout the plant while separation of the trays for redundant safeguards systems were designed to satisfy single failure criteria. Section 8 of the Prairie Island FSAR describes the design in this area.
- e. Horizontal trays are covered in areas where sparks from above could cause a fire and vertical trays are sealed using fire retardant material at each floor elevation.
- f. Fire alarm systems are installed in potential fire areas throughout the plant for warning of fire and sufficient portable extinguishers spotted throughout the plant for fighting any fires that may start.

With the precautions already taken as listed above, the recommendation was rejected as being too costly for the added increment of protection it would provide.

- 3. Sensitivity settings of the detectors can be measured and adjusted per manufacturers recommendations. This has been done on detectors requiring maintenance. A program will be considered to test a portion of the detectors in each zone on a periodic basis. We reject the recommendation for testing 100% of the detectors on the interval suggested. Implementation of such a testing program is neither justified nor feasible; all detector maintenance requirements to date have been associated with drift to the alarm condition. Our experience with the large number of detectors indicates over 160 man days were consumed in testing less than 10% of the total installed.
- 4. This system is operated on automatic when the room is not inhabited, such as at night and over weekends. It will continue to be operated in manual during normal working hours because the room is then occupied by plant staff and we have concerns for personnel safety.
- 5. The computer room has no raised floor; it is protected by the same CO<sub>2</sub> system that serves the cable spreading room since it is located in the center of the cable spreading room.
- 6. This recommendation is rejected. The value of a solid stream nozzle in the cable spreading room is questionable. The danger of getting a solid stream nozzle on a hose used near electrical equipment could result in injury to personnel.

NORTHERN STATES POWER COMPANY

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Cable Trays

7. Rejected. See response to recommendation 2 above.

Training

8. Such a plan is in effect in the Prairie Island emergency plan.
9. This training is presented periodically by personnel from the General Office as part of the plant retraining program.
10. The annual review of the Prairie Island emergency plan provides this recommended familiarization for key people of the fire department. Additional familiarization is not considered necessary in that any fire fighting crew entering the plant would be escorted in keeping with our radiation safety procedures.
11. Inspections addressing this concern are conducted by the plant operating staff and will be described later in this report. We judge this coverage to be adequate and intend no special inspection to respond to this recommendation.
- 12 & 13. The Prairie Island Emergency Plan addresses response to situations which are diverse and of varying severity up to and including the worst condition that is envisioned as possible. We believe the plan as designed already addresses these concerns.
14. Completed during plant preoperational testing.

Fire Detectors

15. Fire doors are provided in the turbine room roof which open automatically to respond to this need. The recommendation is rejected.
16. This recommendation will provide no significant protection improvement and would require a major redesign of the plant. It is rejected for economic reasons.

Cable Penetrations

17. This concern was addressed and NRC was informed by action taken by our response to IE Bulletin 75-04A, dated June 23, 1975. No further action is planned.
18. Noted and agree.
19. This statement is true.

NORTHERN STATES POWER COMPANY

Mr J G Keppler

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20. Breathing apparatus as recommended will be made available to control room personnel.

Redundant Circuits

21. These concerns were adequately addressed in the design of Prairie Island as detailed in section 8 of its FSAR. During construction, inspections assured that the design criteria were implemented. We do not believe it is necessary to reevaluate that work at this time. The recommendation is rejected.

Watchman Service

22. Watchman are not fire inspectors, but are contracted to provide industrial security. Plant operator activities fulfill the needs of this recommendation inside the plant facilities.

Miscellaneous

23. Response to recommendation No. 3 of this inspection report provides our comments on this recommendation.

II. Inspections & Surveillance Tests Performed By Plant Staff

A. Fire protection check test #1050 (Monthly)

A test to assure that the fire pumps start to maintain proper operating pressures on the fire protection system header.

B. Fire Protection System Diesel Operation Test #1525 (Weekly)

A test to assure proper operation of the diesel driven fire pump engine.

C. Inspection of Plant Hose Stations & Portable Fire Extinguishers (Monthly, Test #1542).

A check to assure that this equipment is in operable condition.

D. Valve Check (Semi Annual, Test #1576).

A test to assure that the isolation valves that serve each fire header and each hose station are operable.

E. Transformer Deluge System Test (Semi Annual)

A test to demonstrate that the deluge system function properly.

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F. 150% Flow Test (Annual, Test #1568)

A test to assure that the various fire protection system headers are clear and capable of delivering water flow sufficient for the needs of the fire equipment served.

G. Cardox System Test

A test to demonstrate that the cardox system serving the cable spreading room activates and functions properly.

H. Several one time inspections were conducted at the request of NRC, in IE Bulletin 75-04A. Recommendations implemented as a result of these inspections are documented in our response to IE Bulletin 75-04A, dated June 23, 1975 and in monthly update reports for that bulletin dated July 1975, August 1975, September 1975, October 1975, and November 1975.

Yours very truly,

*LJW by L.H. Neils*

L J Wachter, Vice President  
Power Production & System Operation

LJW/ma

cc: R S Boyd  
G Charnoff

NUCLEAR ENERGY LIABILITY PROPERTY INSURANCE ASSOCIATION



PROPERTY DAMAGE  
INSPECTION REPORT  
Conferred with

The Exchange, Loft A, Bldg. 3, Suite 323  
Farmington Ave., Farmington, Conn. 06032

CONFIDENTIAL  
This report should be made available only to authorized persons.

Property of NORTHERN STATES POWER COMPANY UNITS 1&2  
PRAIRIE ISLAND NUCLEAR GENERATING PLANT  
RED WING, GOODHUE COUNTY,  
MINNESOTA 55066

File No. N-154 (75-5)  
Key File No.  
By P.A. Schuman  
Date Sept. 3, 25, 1975 Hrs. 30

Mr. D. Brown, Fire Prot.

..... SPRINKLERS: Are nearly adequate.	..... IMPAIRMENT NOTIFICATION: RED TAGS USED? NO
..... VALVES: Are sealed.	..... WELDING & CUTTING: Good TAGS USED? NO
..... WATERFLOW ALARMS: Proprietary to Control Room	..... ELECTRICAL EQUIPMENT: Good
..... SUPERVISORY COVERS: Waterflow, Smoke Detectors, Valves, CO <sub>2</sub> system, AFA Turbine & Trans.	..... MAINTENANCE: Good
..... PLANT OPERATION: Continuous	..... CLEANLINESS: Good
..... WATCHMAN SERVICE: Is Partly satisfactory	..... SMOKING: Is controlled.
..... ROUNDS: Hourly in idle areas outside only	..... NATURE OF RISK: Nuclear Power Plant
..... PORTABLE FIRE EQUIPMENT: Is adequate.	..... PRODUCT: Electrical Power
..... RECORDED SELF-INSPECTIONS: Good - Weekly	..... CONSTRUCTION: Reinf. Conc. w. metal panel walls upper sto. turb. & Rx bldg. Whises. metal on st.
..... PRIVATE FIRE BRIGADE: Minimal - Being improved	..... NUCLEAR CONTAINMENT: Steel
..... PUBLIC FIRE DEPT: Good - Paid, but 13 mi. distant.	..... SPECIAL HAZARDS: Nuclear Reactor, Turbine bils, cable trays, hydrogen, parts storage - Well cared for.
..... WATER SUPPLIES: Good	..... AREA MONITORING RECORDS: Good
..... PLANT EMERGENCY ORGANIZATION: Minimal - adequate	..... RADIOISOTOPE HANDLING: Good
..... RADIOACTIVE WASTE HANDLING: Good	..... REACTOR TYPE: Pressurized Water
..... CRITICALITY CONTROL: Good	..... THERMAL POWER RATING: 1650 MWt each unit

If there are any questions concerning the recommendations on this report or you have alternate solutions for them, please contact us.

RECENT  
CHANGES  
AND  
COMMENTS

A special survey of the plant has been conducted to determine the need for improved protection in cable areas. Recommendations resulting from this visit will be submitted through Marsh & McLennan by the Farmington Office of NEL-PIA.

Testing conducted at this inspection revealed several areas of concern, these are covered in Recommendations 75-2 through 75-5. They should be resolved promptly, as the plant's fire protection cannot be considered adequate until they are resolved.

Recommendations Nos. 69-23 and 74-1 have been completed and removed from the report.

WATER SUPPLIES					TEST RESULTS						
					G.P.M.	Flow Location	Static	Resid.	Pres. Location	Tested:	
Pumping supply below.					1070	Hydt. #8 (w. of Turb. Bldg.)	140	125	Hydt. #7 (W. of Reactor Building)	9/3/75 PAS	
Fire Dept. Conn. No.					1160	Hydt. #10 (E. of Whises.)	140	120	Hydt. #9 (E. of Whises.)	"	
FIRE PUMP CAPACITY G.P.M.	HEAD RATING	DRIVE	AUTO. MAN.	SUCTION SOURCE	Shutoff Pres.	G.P.M.	Disc. Pres.	R.P.M.	SUCT. PRES. S.I.P.	Cond.	Tested:
2000	125	Elec.	Auto	Canal from	146	3180	92		0	Good	9/4/75 PAS
2000	125	Diesel	"	Sturgeon Bay	152	3550	95	1800+50	0	"	"
2000*	125	Elec.	"	(Backwater of	136	3000	80		0	"	"

..... domestic pump available (cont. best Ser. 60)

NEW RECOMMENDATIONS

- 75-2 Repair or replace preaction valve number PA-6. This valve failed to actuate automatically during testing, despite considerable heating of the HAD's. This system protects one of the Unit 2 Reactor Building penetrations. (Preliminary checks failed to reveal problem; will contact manufacturer)
- 75-3 Expedite the repairs to the mounting of the Screen Wash Pump's strainer, so it can be placed in automatic operation. Without automatic operation of this pump, and without automatic operation of the jockey pump, the fire header pressure cannot be maintained high enough to prevent the electric fire pump from operating due to the low pressure. It is not acceptable to turn off the electric fire pump to prevent it from operating on the low pressure.
- 75-4 The Minneapolis office of the Factory Insurance Association must be informed of all fire protection system impairments of whatever duration. This includes the removing from service of any fire pump, any section of fire header, and any fire sprinkler system, as well as the carbon dioxide system.
- 75-5 The manual arrangement of the fire protection for the turbine bearings is not acceptable. If the present detection system is not dependable, then products of combustion detectors or rate-of-rise detectors should be installed.

RECOMMENDATIONS CONTINUED FROM PREVIOUS REPORT

- 75-1 Provide sprinklers for the three Warehouses. (Work order issued, no work done)
- 69-27 (Revised 9/75) Expedite the repair of the jockey pump. The substitute arrangements making use of the screen wash pump pressure through restrictions and the cooling water pressure are not sufficient in summer to maintain proper pressure on the fire lines. Since this is the job of the jockey pump, it should be repaired and put into service. (No work on this planned)

# nel-pia

NUCLEAR ENERGY LIABILITY PROPERTY INSURANCE ASSOCIATION

BURT C. PROOM, CPCU  
General Manager

November 5, 1975

Mr. C. L. Quinn  
Marsh & McLennan, Inc.  
Northwestern Bank Building  
Minneapolis, Minnesota 55402

Dear Mr. Quinn:

NORTHERN STATES POWER COMPANY  
PRAIRIE ISLAND NUCLEAR GENERATING PLANT  
RED WING, MINNESOTA  
NEL-PIA FILE NO. N-154

A special visit has been made to the above facility by our field staff in accordance with NEL-PIA Information Bulletin of May, 1975. The visit was conducted to discuss fire protection and prevention with specific reference to your clients cable systems in view of the T.V.A. Brown's Ferry Station fire.

The following recommendations are submitted as a result of this visit and will appear on the NEL-PIA Report following the next regular inspection. Please review these items with your client at your earliest convenience. If further information or clarification is required, do not hesitate to contact us.

## Recommendations

### GENERAL

### FIRE PROTECTION

1. A standard installation of open head, directional water spray sprinklers controlled by an automatic deluge valve and products of combustion actuated detectors should be provided in the Cable Spreading Room. The deluge valve should be located outside of the room and connected to the station's annunciator system.
2. In conjunction with the recommended sprinklers for the Cable Spreading Room similar protection should be provided over the cable trays in the Auxiliary Building and elsewhere throughout the plant where stacked levels of cables are located.

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Mr. C. L. Quinn  
November 5, 1975

3. An investigation into the sensitivity setting of the ionization detectors with the products of combustion generated by the burning cable should be made to insure that the detectors will in fact operate during the incipient stages of a fire.
4. The CO2 low pressure system protecting the cable spreading room should be tripped by means of the ionization detection system presently installed and not manually according to present practices. The 140°F thermostat trip should be retained as back up for the ionized field detectors in the event they fail to discharge the CO2.
5. Provide an approved automatic Halon or carbon dioxide system under the raised floor of the Computer Room. This system should be activated by ionization smoke detectors designed to detect products of combustion from this type of burning insulation and to sound an alarm in the Control Room.
6. First aid fire hose stations on the turbine floor which could be used for fighting a fire in the cable spreading room should be equipped with combination fog-solid stream nozzles instead of the present nozzles which provide fog only.

#### CABLE TRAYS

7. Approved noncombustible fire breaks should be located in each cable tray and spaced at maximum intervals of 10 feet horizontally and 10 ft. vertically.

#### TRAINING

8. Establish and maintain a complete preplanning for emergency program.
9. This program should include the providing, equipping and training of a plant fire brigade to be used in the event of an emergency.
10. Familiarize the public fire department with the plant layout, operations and protection facilities on a yearly basis so the municipal fire department personnel will have adequate knowledge of the location of hazards, and best methods of fighting a fire in this critical plant.
11. Conduct thorough and recorded self-inspections of the plant and fire protection to eliminate as far as possible all sources of ignition and minimize the spread of fire in critical areas containing combustible contents such as lubricating oil, cable insulation, etc.

Mr. C. L. Quinn  
November 5, 1975

12. A summary of the Preplanning Program would include the following:
  - a) Impairment to fire protection such as defective equipment, shut-off valves, electrical service, etc.
  - b) Self-inspection and deficiency correction.
  - c) Fire fighting procedures and plans of action.
  - d) Coordination of plans with the local fire department.
  - e) Salvage procedures related to fire and windstorm losses.
  - f) Coordination with various outside agencies.
  - g) Welding and hot work supervision.
13. The emergency organization of people trained in the use of fire protection equipment should be trained for proper reaction to the worst conceivable emergency situation under the most unfavorable condition that might exist at any given time.
14. It is understood that a check will be made of the municipal fire department equipment to determine that all threads on hoses, nozzles, etc. are compatible with those used in the plant site.

#### FIRE DETECTION

15. The exhaust fans situated in the roof of the Turbine Building which are now operated manually should be converted to full automatic operation by means of ionized field smoke detectors.
16. The present means of evacuating smoke and hot gases from a fire in the Cable Spreading Room is inadequate and should be revised as follows:
  - a) Additional fans should be installed to provide emergency smoke and heat venting from the Control Room and the Cable Spreading Room with sufficient capacity to exhaust smoke and gases resulting from a fire with no recirculation back into the room.
  - b) These fans should be installed as separate systems for both of these rooms and be actuated by ionized field type smoke detectors located under the ceilings as well as manual push buttons located in the Control Room panel. Furthermore, the fan exhausting the Cable Spreading Room should be interlocked with the CO2 system so as to shutdown the exhaust ventilation upon actuation of the CO2 system. The manual station in the control room shall be an override so the Cable Spreading Room fan can be reactivated if necessary after it has been stopped by the CO2 discharge.

Mr. C. L. Quinn  
November 5, 1975

- c) The present arrangement of dumping the exhaust from the Cable Spreading Room into the ceiling area of the Control Room should be abandoned and the discharge from both areas should be led directly to the outside and terminating above the roof level so smoke will not be drawn into the rooms through the intakes which are located along the outside wall of the structure.
- d) The present arrangement of shutting down the exhaust fan for the Cable Spreading Room by closing a damper located high inside the room should be abandoned and if a damper is used to prevent exhaust from the room during CO2 discharge it should be located outside the room so as to be readily accessible during a fire.

#### CABLE PENETRATIONS

- 17. All fire wall and floor openings through which electrical cables or conduits penetrate should be protected against the passage of flame and smoke by devices and constructions approved by NEL-PIA.
- 18. Temporary wall and floor openings should be sufficiently sealed with a noncombustible material at the end of each working day to insure the fire integrity of the floor.
- 19. It is understood that open flames are never used to check the installation, gas tightness and integrity of penetration seals.

#### SELF-CONTAINED BREATHING APPARATUS

- 20. At present one Scott Air-Pak and two Minox self-contained breathing units are kept in the Control Room and it is recommended that an additional unit be installed in this room for the use by the fourth man stationed in this area. It is understood that sufficient reserved air is maintained on the premises to maintain the six breathing units on the premises for at least one hour of continued operation.

#### REDUNDANT CIRCUITS

- 21. Original installation specifications state that a distance of 36 inches will be maintained between the redundant circuits in the Cable Spreading Room in relation to primary Class IE circuits. It is recommended that a further check be made to determine that the redundant circuits will not be jeopardized by burning Class IE cables in this room. If such is the case, the redundant circuits should be removed a sufficient distance within shielded trays so there will be no possibility of fire communicating from other burning cables to these critical circuits.

The cable systems for Units 1 and 2 should be separated in the Cable Spreading Room by a three (3) hour fire barrier wall.

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Mr. C. L. Quinn  
November 5, 1975

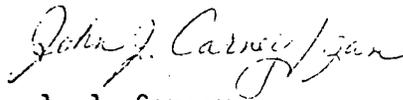
WATCHMAN SERVICE

22. At present the watchman tours the exterior of the building only and it is recommended that nights and weekends when total personnel is limited to less than ten men on the site, the watchman tours be expanded to include areas within the plant where combustibles are located thus creating a fire hazard.

MISCELLANEOUS

23. Ionization type smoke detectors throughout the building have been tested once since installation and it is recommended that a maintenance and testing program be set up so that at least 1/3 of the detectors are tested yearly thus completing the testing program every three years and using smoke devices suitable for these detectors as recommended by the manufacturer. It is insufficient to test one detector on a circuit, as part of this program all units should be tested once every three years.

Sincerely,



J. J. Carney  
Engineering Manager - Property

JJC/jam