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10 CFR Part 50  
Section 50.63(c)(d)

U S Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT  
Docket Nos. 50-282 License Nos. DPR-42  
50-306 DPR-60

Reply to Questions on Design Report for the  
Station Blackout/Electrical Safeguards Upgrade Project  
(TAC Nos. M80659/80660)

- References: 1) Letter from Thomas M Parker, Northern States Power Company, to U S Nuclear Regulatory Commission dated November 27, 1990 titled "Design Report for the Station Blackout/Electrical Safeguards Upgrade Project"
- 2) Letter from Armando Masciantonio, U S Nuclear Regulatory Commission, dated November 29, 1991 titled "Request for Additional Information-Station Blackout/Electrical Safeguards Upgrade Project (TAC Nos. M80659/80660)"
- 3) Letter from Thomas M Parker, Northern States Power Company, to U S Nuclear Regulatory Commission dated December 23, 1991 titled "Design Report for the Station Blackout/Electrical Safeguards Upgrade Project," Revision 1

On November 27, 1990 we submitted for NRC Staff review the design report (Reference 1) for our project to add two safeguards emergency diesel generators, to upgrade the safeguards electrical distribution system, and to upgrade the #121 cooling water pump to become a swing safeguards pump. On November 29, 1991 the NRC Staff requested additional information (Reference 2).

On December 23, 1991 we submitted for NRC Staff review Revision 1 of the design report (Reference 3). This revision contains most of the responses to NRC's November 29, 1991 request for additional information. In the attachment to this letter we are providing the remaining responses and a cross reference to responses contained in the design report revision.

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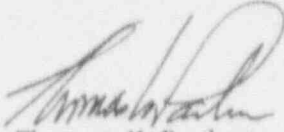
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Northern States Power Company

January 8, 1992

Page 2 of 2

Please contact us if you have any questions related to these responses.

A handwritten signature in dark ink, appearing to read 'Thomas M. Parker', is written over a horizontal line.

Thomas M Parker

Manager

Nuclear Support Services

c: Regional Administrator - Region III, NRC

Senior Resident Inspector, NRC

NRR Project Manager, NRC

J E Silberg

Attachment: Response to Request for Additional Information

NORTHERN STATES POWER COMPANY  
PRAIRIE ISLAND NUCLEAR GENERATING PLANT  
STATION BLACKOUT/ELECTRICAL SAFEGUARDS UPGRADE PROJECT  
RESPONSE TO NOVEMBER 29, 1991 REQUEST FOR ADDITIONAL INFORMATION  
(TAC NOS. M80659/80660)

References:

1. "Design Report for the Station Blackout/Electrical Safeguards Upgrade Project," Northern States Power Company, November 27, 1990.
2. "Design Report for the Station Blackout/Electrical Safeguards Upgrade Project," Northern States Power Company, December 23, 1991.

QUESTION 1:

With respect to all emergency diesel engine auxiliary support systems, i.e., the fuel oil and transfer system, the cooling system, the air starting system, the lubrication system, and the combustion air intake and exhaust system:

- a. Provide information regarding the quality assurance requirements to which the system components are designed, manufactured, and inspected.
- b. Provide information regarding the design provisions for isolating the safety related portions of the system from the non-safety related portions in the case of emergency operation.
- c. Provide information regarding the extent of compliance of the system to the recommendations of NUREG/CR-C660, "Enhancement of On-Site Emergency Diesel Generator Reliability."
- d. Provide information regarding the protection of the safety related portions of the system from internally generated missiles, pipe whip, and jet impingement forces associated with pipe breaks.
- e. Provide information regarding compliance of the system to Regulatory Guide 1.9, Position C.7, as it relates to the system protective interlocks.

RESPONSE TO QUESTION 1.a:

The response to question 1.a is provided in Design Report Revision 1, Sections 1.7, 3.3.8, 3.4.2.1, 3.4.2.4 and 3.4.2.6.1.

RESPONSE TO QUESTION 1.b:

Isolation capability for each of the emergency diesel engine auxiliary support systems is described below:

#### Fuel Oil and Transfer System

Isolation between the non-safety related fuel oil receiving tank and the safety related fuel oil storage tanks is provided by a normally closed safety related manual valve.

Isolation between the non-safety related fuel oil recirculation pump and filter and the safety related fuel oil storage tanks is provided by safety related manual valves.

Isolation between the non-safety related fuel oil cleanup filters and the safety related fuel oil transfer pumps is provided by normally closed safety related manual valves.

All non-safety related instruments (indicators, switches, etc.), vents, and drains can be isolated by a safety related manual valve.

#### Cooling Water System

All non-safety related instruments (indicators, switches, etc.), vents, and drains can be isolated by a safety related manual valve.

#### Starting Air System

Isolation between the non-safety related air compressors and dryers and the safety related air receiver skid is provided by double safety related check valves and a manual valve at the air receiver inlet.

All non-safety related instruments (indicators, switches, etc.), blowdowns, vents, and drains can be isolated by a safety related manual valve.

#### Lube Oil System

Isolation between the non-safety related lube oil makeup tank and the engine is provided by normally closed safety related manual valves.

All non-safety related instruments (indicators, switches, etc.), vents, and drains can be isolated by a safety related manual valve.

#### Combustion Air Intake and Exhaust System

All non-safety related instruments (indicators, switches, etc.) can be isolated by a safety related manual valve.

#### RESPONSE TO QUESTION 1.c:

Prairie Island is not committing to compliance with NUREG/CR 0660 (or NUREG/CR 5078) concerning reliability and maintenance of D5/D6 diesel generators. Therefore the reference to NUREG/CR 0660 has been deleted from Design Report Section 4.6. Prairie Island is monitoring industry progress with regard to

development of guidance for implementing NUMARC 87-00, Appendix D, and resolving Generic Issue B56. Prairie Island intends to implement final industry guidance. Further, Prairie Island's present operating procedures and practices have successfully maintained D1/D2 within Appendix D's reliability target of .975, and it is anticipated that actions for D5/D6 would provide similar results.

RESPONSE TO QUESTION 1.d:

The response to Question 1.d is provided in Design Report Revision 1, Sections 4.3.1.11 and 4.3.2.2.3.b.

RESPONSE TO QUESTION 1.e:

The response to Question 1.e is provided in Design Report Revision 1, Section 3.3.10.2.

QUESTION 2

With respect to the fuel oil storage and transfer system:

- a. Provide the appropriate assurance that the design of the system conforms to the provisions of ANSI-195 regarding fuel quality. In addition, provide the commitment that the fuel quality and tests will conform with the guidelines of Regulatory Guide 1.137, positions C.2.a through C.2.h.
- b. Provide information regarding the availability of sources of fuel oil including the means of transporting and recharging the fuel storage tank.
- c. Provide the specific measures used to minimize the creation of turbulence of the sediments at the bottom of the fuel oil storage tank.
- d. Provide information regarding the design provisions for removing accumulated water from the day tank, the receiving tank, and the fuel storage tanks.

RESPONSE TO QUESTION 2.a:

Part 1: The project design complies with ANSI N195-1976, with the following exceptions:

Subsection 6.3: There are no duplex (or simplex) fuel strainers on the engine preceding the fuel filters (to preclude clogging). However, there are fuel oil strainers in the transfer lines to the day tanks, and the on-engine filters are duplex so that routing can be switched in case of clogging (see Design Report Revision 1, Section 3.3.2.1).

Subsection 7.3: There is no illumination, heating or ventilation

provisions in the fuel oil storage tank vault. However, the vault is adequately insulated and instrumentation is provided for monitoring vault temperatures, as discussed in Design Report Revision 1, Section 3.4.2.2. The vaults are not intended to accommodate habitation by plant personnel; special provisions will be made for illumination and ventilation during isolated periods when the vaults need to be accessed.

Subsection 7.4: There are exceptions to piping system compliance with ASME Section III, as discussed in Design Report Revision 1. Fulfillment of ASME Section XI will parallel the existing Prairie Island in-service inspection plan.

Subsection 7.5: There are no strainers in the fill lines for the fuel oil receiving tank. However, received fuel oil will be circulated through filters prior to being transferred to the fuel oil storage tanks, as discussed in Design Report Revision 1, Section 3.4.

Subsection 7.5: There are no provisions for detecting and removing accumulated water from "each [F.O.] tank". See response to item 2.d, below.

Part 2: Prairie Island practices will comply with Reg Guide 1.137, parts C.2.a. through g. (C.2.h does not apply), with the exception of C.2.a. Prairie Island does not fulfill the requirement of Appendix B of ANSI N195 with regard to testing fuel oil for insolubles per ASTM D2274. Industry problems with this test are identified in NRC Information Bulletin 91-46.

Note: Design Report Revision 1, Section 3.5 references Reg Guide 1.137 and ANSI N-195 (and Standard Review Plan 9.5.4 which references Reg Guide 1.137) without discussing the above exceptions. These exceptions will be noted in the next revision to the Design Report.

RESPONSE TO QUESTION 2.b:

Fuel oil sources for Prairie Island are the following:

Amoco; Sauk Rapids, Minnesota  
Koch Refinery; Rosemount, Minnesota  
Ashland Oil; South St. Paul, Minnesota

The fuel oil is transported by truck. It is normally delivered within 48 hours, however for urgent cases it can be delivered within 24 hours.

RESPONSE TO QUESTION 2.c:

The response to Question 2.c is provided in Design Report Revision 1, Section 3.4.2.1.a.

RESPONSE TO QUESTION 2.d:

The main provision for detecting and removing accumulated water from fuel oil



is the bell shaped appendage on the bottom of the fuel oil storage tank, as discussed in Design Report Revision 1, Section 3.4.2.1.a. This appendage will be used for periodic checking of possible water contamination (Prairie Island Technical Specification 4.6.A.1.c.) and any necessary draining. Each of the day tanks and the receiving tank have drain lines on the bottom of the tanks, which can be used for removing water; but principal controls for water contamination are through the fuel oil storage tanks.

QUESTION 3

With respect to the diesel air starting system:

- a. Given that the air starting system is a high-energy system, provide a high-energy line break analysis for the system. In addition, provide assurance that the piping and components pressurized to high-energy pressures during standby, starting, and/or operation will be adequately restrained to prevent damage to other diesel generator piping, components, and equipment from pipe whip.
- b. Verify that the air system cranking capacity of cranking a cold diesel engine five times without recharging the receiver was determined in accordance with guidance contained in Standard Review Plan (SRP) 9.5.6, Section II, Item 4.g.
- c. Provide information regarding the design provision of alarms which would alert the operating personnel of a pressure drop in the air receiver, in accordance with guidance in SRP 9.5.6, Section II, Item 4.h.
- d. Provide information regarding the measures to be taken in the air starting system design to preclude the fouling of the air start valve or filter with moisture, oil, and rust carry over.

RESPONSE TO QUESTION 3.a:

The response to Question 3.a is provided in Design Report Revision 1, Sections 4.3.1.11 and 4.3.2.2.3.b.

RESPONSE TO QUESTION 3.b:

The response to Question 3.b is provided in Design Report Revision 1, Section 3.3.3.1.

RESPONSE TO QUESTION 3.c:

The response to Question 3.c is provided in Design Report Revision 1, Section 3.3.3.1.

RESPONSE TO QUESTION 3.d:

The response to Question 3.d is provided in Design Report Revision 1, Section 3.3.3.1.

QUESTION 4

With respect to the diesel engine lubrication system:

- a. Provide the commitment that the design values for operating pressure, temperature differentials, flow rate, and heat removal rates are in accordance with the manufacturer's recommendations.

RESPONSE TO QUESTION 4.a:

The response to Question 4.a is provided in Design Report Revision 1, Section 3.3.4.1.

QUESTION 5

With respect to fire protection:

- a. Provide information regarding floor drainage provided for fire fighting water in the diesel generator area.
- b. Will local manual venting be provided?

RESPONSE TO QUESTION 5.a:

The response to Question 5.a is provided in Design Report Revision 1, Section 4.5.2.2.

RESPONSE TO QUESTION 5.b:

The response to Question 5.b is provided in Design Report Revision 1, Section 4.5.3.2, item 11.