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U S Nuclear Regulatory Commission
Attn: Document Control Desk
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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. 68588 and 68589)

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 Upgrade Project"
2) Letter from Armando Masciantonio, U S Nuclear Regulatory Commission, dated March 1, 1991 titled "Request for Additional Information - Station Blackout/Electrical Safeguards Upgrade Project (TAC Nos. 68588/68589)

On November 27, 1990 we submitted for NRC Staff review the design report (Reference 1) for our project to add two additional safeguards emergency diesel generators, to upgrade the safeguards electrical distribution system, and to upgrade #121 Cooling Water Pump to become a swing safeguards pump. On March 1, 1991 the NRC Staff requested additional information (Reference 2). We are providing the answers to those questions in the attachment to this letter.

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

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

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RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Inquiry 1:

Is the new D5/D6 building independent from its existing neighboring buildings? Is its foundation isolated from the existing foundations? Is the building structure connected in any way with the old structures? If so, what is minimum clearance between two buildings and why?

Response 1:

The new D5/D6 building is designed to be structurally independent from the auxiliary building to its east side and to the turbine building on the north side. The loads of the new building are not passed on to the wall foundations of the auxiliary and turbine buildings. The foundation for the new building is independent.

The new D5/D6 building structure and its foundation are not connected structurally to the existing plant buildings. However, the new building is architecturally (soft connection) connected to the turbine building and the aux building. In other words metal flashing is used to stitch the new and the existing buildings to keep rain, snow, wind and dust out. The access between the new D5/D6 building and the Turbine building through stair exits at ground level, mezzanine level and at the operating floor levels is provided.

Electric cables, cable trays, and piping for station air, demineralized water, fire protection, etc; connect the new building with the aux building.

A 1/2 inch clear distance between the D5/D6 building and the Turbine building, and 2" clear distance between the D5/D6 building and the Aux building were designed to permit maximum out of phase displacements of the buildings due to wind or seismic events.

The south side of the existing turbine building has insulated metal siding. The siding was designed for wind loads. The siding on this face will not be required for wind protection after the D5/D6 building construction is complete. The girt framing and the insulated metal siding of the turbine building are very flexible in comparison with the newly designed concrete D5/D6 building. The new building is designed to resist tornado winds, seismic forces, and other loads.

Inquiry 2:

Provide the design ground motion for the seismic design of the new D5/D6 building. This includes horizontal and vertical response spectra for both OBE and SSE at the foundation level.

Response 2:

The new D5/D6 building is designed using Regulatory Guide 1.60 "Design Response Spectra for the seismic Design of Nuclear Power Plants" with Zero Period Acceleration (ZPA) of 0.06g for the Operating Basis earthquake (OBE), and ZPA of 0.12g for the Safe Shutdown earthquake (SSE) in two horizontal directions and the vertical direction. The seismic design of the building used Regulatory Guide 1.92 "Combining Modal Responses and Spatial Components in Seismic Response Analysis" for the combination of displacements, accelerations, forces, etc., due to the three dimensional earthquake.

These Regulatory Guide 1.60 spectra were applied at the building foundation level.

Inquiry 3:

Provide information in regards to the roof design relative to the drainage of rain water. Are there parapets or curbs built around the roof that would cause water ponding in case of probable maximum precipitation (PMP)? Has the problem of PMP as stated in the NRC Generic Letter 89-22 been considered? Are the roof slabs designed to support the weight of the ponded water?

Response 3:

The new D5/D6 building has four separate roof slabs: 1) a roof slab at elevation 766' above the building radiator module, 2) a roof slab at elevation 766' above the diesel engine room ventilation dampers, 3) a roof above the stairs leading to the building roof at elevation 766'; and 4) main roof slab at elevation 755' above the rest of the building.

The main roof slab at elevation 755' is insulated, and is sloped to collect roof drainage at four locations. The roof drains are sized for 3 inches per hour of precipitation. The roof drains of the new building are connected to the existing plant drains. The roof slab does not have curbs. There will be no ponding on the roof slab except for a very shallow trough created for the roof drainage. Because of the flat roof construction, and lack of parapet and curbs, the water will run off the roof from the sides if the intensity of precipitation should exceed the design intensity or if the roof drains should get plugged.

The remaining roof slabs are also insulated. They are also gently sloped to discharge roof drains on to the main building roof at elevation 755'. No roof drains are provided for them. The water from the main roof (at elevation 755') will be collected by the four roof drains and discharged to the plant drainage system.

Only the finished roof slab above the radiator module has curbs on three exterior sides. The roof is also sloped eastward to drain on to the main roof and has no curb on this side.

The building structure is designed for the loads and load combinations in accordance with the Standard Review Plan 3.8.4 "Other Seismic Category I Structures." The concrete roof slabs of the D5/D6 building are 18 inches thick including metal decking designed to resist tornado wind and tornado missiles (Regulatory Guide 1.76 "Design Basis Tornado for Nuclear Power Plants" and Standard Review Plan 3.5.3 "Barrier Design Procedures"), and 50 pounds per square foot live loads and 50 pounds per square foot snow loads.

The design of the D5/D6 building roof complies with the requirements of the Generic Letter 89-22.