

**NORTHERN STATES POWER COMPANY**

MINNEAPOLIS, MINNESOTA 55401

October 26, 1979

Director of Nuclear Reactor Regulation  
U S Nuclear Regulatory Commission  
Washington, DC 20555

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

Adequacy of Station Electric Distribution Systems Voltages

In a letter dated August 8, 1979 from William Gammill, Acting Assistant Director for Operating Reactors Projects, Division of Operating Reactors, USNRC, we were requested to review the acceptability of the station electric distribution systems with regard to both (1) potential overloading due to transfers of loads, and (2) potential starting transient problems. The recent event at the Arkansas Nuclear One site prompted this request.

In our letter dated September 20, 1976 we submitted the results of an analysis of safeguards bus voltages under worst case conditions. This analysis indicated that under maximum transformer load with the minimum expected grid voltage the essential 4 kV bus voltage would be no lower than 3.82 kV. The setpoint for the undervoltage protection devices installed as required by the NRC's June 3, 1977 letter was chosen to be  $\geq 88\%$  (3.66 kV). This setting provides the minimum acceptable voltage on the safeguards busses.

A preliminary analysis of motor starting capability under transient conditions was provided to the NRC in our letter dated September 12, 1979. This was an analysis of the worst case 480V bus. We believe there will be no difficulty in starting safety related motors under all conditions of expected grid voltage and bus loading. A detailed analysis of transformer loading and bus voltage under all potential grid and loading conditions is now in progress.

Eased on the above considerations we believe the worst case combination of steady-state and transient loading at Prairie Island will not cause spurious operation of the undervoltage protection or unacceptably extend acceleration times for our emergency loads.

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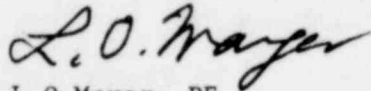
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In addition, our review to date indicates there is no potential for violation of GDC-17 of Appendix A to 10 CFR Part 50, due to system deficiencies. A review of the potential for transformer overloading and the detailed voltage analysis required by Mr Gammill's August 8, 1979 letter have not been completed, however. These analyses, with tests to verify the results, cannot be completed in less than six months. We are proceeding with this work and will forward the results to the Commission Staff when they are available.

Please contact us if you have any questions related to the information we have provided or our schedule for completing the analyses requested in Mr Gammill's August 8, 1979 letter.



L O Mayer, PE  
Manager of Nuclear Support Services

LOM/DMM/jh

cc J G Keppler  
G Charnoff

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