



Northern States Power Company

Prairie Island Nuclear Generating Plant

1717 Wakonade Dr. East  
Welch, Minnesota 55089

June 25, 1997

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

**Response to Request for Review of Preliminary Accident  
Sequence Precursor Analysis of Operational Event at Prairie Island**

By letter dated May 28, 1997, the NRC Staff requested Northern States Power to review and comment on a preliminary Accident Sequence Precursor analysis of a two-unit loss of offsite power event that occurred at Prairie Island on June 29, 1996. We have reviewed the preliminary Accident Sequence Precursor analysis, and our comments are provided as Attachment 1.

In this letter we have made no new Nuclear Regulatory Commission commitments. Please contact Gene Eckholt (612-388-1121) if you have any questions related to our comments on the preliminary Accident Sequence Precursor analysis.

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NORTHERN STATES POWER COMPANY

c: Regional Administrator - Region III, NRC  
Senior Resident Inspector, NRC  
NRR Project Manager, NRC  
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- Attachments: 1. Comments on NRC Preliminary Accident Sequence Precursor  
Analysis of Prairie Island Two-Unit Loss of Offsite Power Event.
2. Prairie Island Nuclear Generating Plant Procedure 1ECA-0.0, Rev 11,  
"Loss of All Safeguards AC Power".

## ATTACHMENT 1

### Comments on NRC Preliminary Accident Sequence Precursor Analysis of Prairie Island Two-Unit Loss of Offsite Power Event

In response to a May 28, 1997 request from the NRC Staff, the NRC Accident Sequence Precursor (ASP) analysis of the June 29, 1996 two-unit loss of offsite power (LOOP) event at the Prairie Island Nuclear Generating Plant was reviewed and comments are provided below. The review focused on the accuracy of the event description, plant configuration, operation and procedures used, and PRA modeling of conditional core damage probability of the event.

All areas appear to be accurate except for the PRA modeling credit given for the cross-tie capability of the emergency AC power buses between units. If offsite power is lost (to one or both units) and the emergency diesel generators that supply the 4kV safeguards buses for that unit are unavailable or fail, then power from the emergency diesel generators from the opposite unit can be supplied to the blacked-out unit via a bus tie arrangement. The bus ties between buses 15 and 25 (Train A 4kV) and between buses 16 and 26 (Train B 4kV) are shown on Figure 3.2-14 of the PINGP IPE report (Reference 1). Each diesel generator can supply the train-related safe shutdown loads of both units. The operator is directed to perform this action (called manual voltage restoration) in Steps 8 and 9 of the emergency procedures for loss of all AC power (Reference 2). A copy of this procedure is provided as Attachment 2.

On June 11, 1997, a conference call was held between Randy Best, NSP, Beth Wetzel, NRC - NRR Project Manager for Prairie Island and Pat O'Reilly, NRC - AEOD. Mr. O'Reilly indicated that the NRC PRA models were not detailed enough to model the cross-tie capability of the opposite unit's 4kV buses and potential availability of the opposite unit's emergency diesel generators. However, he did indicate that it would be possible to give credit in the analysis for the operator action to perform the required cross tie. The cross-tie action must be performed successfully in order to successfully provide power to the blacked-out unit from the non-blackout unit. Also, since it involves human error, failure of this action is a dominant way to fail the power recovery. The Prairie Island IPE used a human error probability (HEP) of 0.0032 for this action, and is described in Table 3.3-3 of Reference 1. Additional information regarding the cross-tie capability and the general process used in determining post-initiator HEPs for the IPE was provided in Reference 3, Attachment 2, pp. 2, 34, and 49-61. Mr. O'Reilly also indicated that acknowledgment of the NRC's modeling limitations and their impact on the calculated CCDF, would be included in the ASP report for this event.

Based on this review, it is recommended that the ASP analysis be re-performed, with credit for the AC cross-tie capability being modeled as the operator HEP for performing the cross-tie per the emergency procedures. Also, it is requested that the report acknowledge the limitations of the NRC models in the areas of systems that can be cross-tied across units, since accurate modeling of these capabilities would lower the conditional core damage probability calculated for this event.

**References:**

- 1) NSPLMI-94001, Rev. 0, "PINGP Individual Plant Examination (IPE)".
- 2) PINGP Procedure 1ECA-0.0, Rev. 11, "Loss of All Safeguards AC Power".
- 3) Letter dated 2/27/96, NSP to USNRC, "Response to Request for Additional Information Related to the Prairie Island Individual Examination Report (TAC Nos. M74454 and M74455)".

## ATTACHMENT 2

### **Prairie Island Nuclear Generating Plant Procedure 1ECA-0.0, Rev 11 "Loss of All Safeguards AC Power"**