



WISCONSIN PUBLIC SERVICE CORPORATION

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April 23, 1993

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
KNPP Transmission Line Study

This letter provides preliminary information which summarizes the results of a stability study of the Kewaunee Nuclear Power Plant (KNPP). Additional information will be provided in an informational LER to be provided during May 1993. In June 1992, WPSC became aware of the potential for certain multiple transmission line contingencies causing the KNPP generator to go unstable and, as a result of the instability, cause all transmission sources into the plant's substation to trip. In order to resolve this issue, WPSC initiated a study to determine whether pre-existing line outages in combination with a transmission line fault could result in credible scenarios by which the KNPP could lose all off-site power. WPSC determined that due to the substation configuration, the study needed to only evaluate scenarios involving 345 KV transmission line outages. Therefore, the study evaluated two scenarios and in each scenario the KNPP was at its inaximum output of 530 MW and the Point Beach Plant was at its maximum output of 990 MW. Each scenario was also evaluated at peak and light load conditions (100% and 40% of peak load) of the surrounding transmission system. The scenarios evaluated were:

- A. Transmission line Q-303, (345 KV line from KNPP to Pt. Beach) open as a pre-existing outage and a close in fault trips R-304 (345 KV line from KNPP to North Appleton substation).
- B. Transnission line L-151, (345 KV line from Pt. Beach to North Appleton substation) open as a pre-existing outage, and a close in fault trips R-304.

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In each scenario, the fault applied was a three phase fault close to the KNPP 345 KV bus and it was cleared by tripping the transmission line. The fault duration was 5 cycles for both scenarios. There were two sets of simulations performed for each scenario. The first set of simulations was done to determine if the system with the pre-existing line outages is stable for the given fault. The second set of simulations was run for those cases that showed the KNPP generator unstable. In these simulations, output from KNPP was redispached and a determination was made of the maximum KNPP generation in which the system remained stable. The results of this study are summarized in the following table.

Scenario	KNPP Stable at Maximum Output of 530 MW?	Loss of Off-Site Transmission Sources to the KNPP Substation?	Backdown Available to Avoid Instability?
A-Peak Load	No	Yes	Yes - 10 MW
A-Light Load	No	Yes	Yes - 20 MW
B-Peak Load	Yes	No	Not Applicable
B-Light Load	No	Yes	Yes - 20 MW

In scenario A, with maximum KNPP generation, the system is unstable at both peak and light load conditions. In order to maintain the Kewaunee generator stable for peak load conditions, a unit backdown of 10 MW is required. In the light load condition, the Kewaunee generator will remain stable if output is reduced by 20 MW.

In scenario B, since the system was stable at peak load, no generation reduction was necessary. At light load conditions, the Kewaunee generation will remain stable if output is reduced by 20 MW.

It is WPSC's intent to operate the KNPP in a manner in which the transmission sources to the plant's substation are considered reliable. To provide this assurance the following interim actions are being initiated by WPSC to address the concerns identified by this study for unplanned transmission line outages. For planned transmission line outages, WPSC will initiate these same actions prior to taking the line out of service. These actions will be in place prior to the KNPP exceeding 500 MW net generation.

- 1) WPSC System Operations will develop a "System Operating Procedure" which will require the KNPP to be notified whenever any of the following transmission lines are out-of-service; R-304, Q-303, or L-151. This notification will direct the plant operators to initiate action to place the plant in a condition that is within the limits established by the stability study. (see above table for established limits)

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- 2) KNPP Plant Operations will initiate a night order which will direct the operators to initiate a unit backdown within one hour in accordance with standard operating practices when notified by WPSC system operating. This backdown will place the plant in a condition that is within the limits established by the stability study. A summary of the stability study will also be included as required reading for the plant operators.

WPSC and WEPCO will continue to discuss the best way of resolving the long term concerns associated with this issue. As part of WPSC's effort to address this issue, an evaluation of the adequacy of the KNPP technical specifications in this area will be made. This evaluation will be completed within 120 days.

Sincerely,



C.A. Schrock

Manager - Nuclear Engineering

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cc - US NRC - Region III

Senior Resident Inspector, US NRC