MEMORANDUM FOR: Carl J. Faperiello, Director, Division of Reactor Safety

FROM: Patricia L. Eng, Reactor Inspector, Operational Programs

PRAIRIE ISLAND NUCLEAR GENERATING STATION

SUBJECT:

Reference:

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- 1. Draft NUREG 1109, "Regulatory Analysis for the Resolution
 - of Unresolved Safety Issue A-44, Station Blackout"
- 2. Draft NUREG 1032, "Evaluation of Station Blackout Accidents at Nuclear Power Flants"

VALUE IMPACT ASSESSMENT FOR ADDING A THIRD DIESEL GENERATOR AT

Fer your request. I have performed a rough estimate of the value to be gained by the addition of a third diesel generator at the Prairie Island Nuclear Generating Flant. In addition, data have been acquired regarding the estimated cost for addition of a third diesel generator. Discussions with Messrs. F. W. Baranowsky, A. M. Rubin, A. R. Marchese of NRR and Mr. D. Ericson of Sandia Laboratories indicated that detailed value assessment and cost analyses are not available; however, the following may be used to arrive at ball park figure s for both the value and the cost of the addition of a third diesel generator.

A. Cost of Adding a Third Diesel Generator

Cost estimates performed by Sandia for diesel generator additions at Cooper and Duad Cities' stations have been performed and will be published in NUREG CE 4448 in the near future. These costs, in 1985 dollars are 14.51 and 11.3 million dollars, respectively. The estimates include the construction of a new, seismically qualified building to house the new diesel as well as labor, temporary construction, hardware, and modification and engineering costs. Generic costs based on the Energy Economic Data Base maintained by DOE for addition of a diesel generator to an existing operating plant are estimated to be approximately 16.3 million dollars.

E. Value of Adding a Third Diesel Generator to Frairie Island

The value of adding a new diesel was calculated by comparing the relative cost of a station blackout with a given diesel generator reliability factor for Prairie Island in its current configuration to the relative cost associated with a station blackout event with a third diesel generator installed. The equation used for this assessment is:

$$D \times C \times F \times n \times t = V$$

where:

- D = person rems per event
- C = cost per person rem
- F = event probability per reactor year
- n = number of reactors per site
- t = years remaining until end of plant life
- V = is the estimated value of recovery cost for a given event

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Assumptions made are:

Diesel reliability is assumed to be the industry average of .025 Frairie Island is assumed to be in the average offsite power cluster Station blackout duration is assumed to be 4 hours

Values used were:

B00,000 person rems per event \$1000 per person rem 2 reactors per site 30 years remaining in plant lifetime

Discussions with Mr. Baranowsky revealed that the difference in event probability per reactor year for the current Frairie Island configuration and accident probabilities as compared to the case with an additional installed diesel generator varies between 1 x 10° and $3 \times 10^{\circ}$. Use of these values places the value of the additional diesel between \$480,000 and \$1,440,000.

C. Summary

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Comparison of the relative value and cost associated with the addition of the third diesel reveal that a value of 1.5 million is approximately an order of magnitude smaller than the estimated diesel generator costs.

Any questions regarding the calculational details, probability theory, event conditions etcetera, should be directed to Mr. F. W. Baranowsly, NRR, (FTS 492-4433).

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Ena Phillips Hehl