

NOV 19 1986

MEMORANDUM FOR: Carl J. Paperiello, Director, Division of Reactor Safety
FROM: Patricia L. Eng, Reactor Inspector, Operational Programs
SUBJECT: VALUE IMPACT ASSESSMENT FOR ADDING A THIRD DIESEL GENERATOR
AT PRAIRIE ISLAND NUCLEAR GENERATING STATION

- Reference:
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 Plants"

Per 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 Plant. In addition, data have been acquired regarding the estimated cost for addition of a third diesel generator. Discussions with Messrs. P. W. Baranowsky, A. M. Rubin, A. R. Marchese of WRR 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 figures 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 Quad Cities' stations have been performed and will be published in NUREG CR 4448 in the near future. These costs, in 1985 dollars are 14.91 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 in 1985 dollars 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.

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B. Value of Adding a Third Diesel Generator to Prairie 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:

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

where: D = person rems per event
C = cost per person rem
P = 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

Assumptions made are:

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

Values used were:

800,000 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 Prairie Island configuration and accident probabilities as compared to the case with an additional installed diesel generator varies between 1×10^{-5} and 3×10^{-5} . Use of these values places the value of the additional diesel between \$480,000 and \$1,440,000.

C. Summary

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. It should be noted that additional data regarding the probabilities specific to Prairie Island are currently being developed. This information will be factored into the calculation once it is received.

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

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RLL
Eng/dls

Philips
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20540

EDD PRINCIPAL CORRESPONDENCE CONTROL

FROM:

DUE: 09/03/87

EDO CONTROL: 003120
DOC DT: 08/14/87
FINAL REPLY:

REP. EDWARD J. MARKEY

TO:

CHAIRMAN IECH

FOR SIGNATURE OF:

** PRIORITY **

SECY NO:

DESC:

Q'S RE BACKFIT RULE

ROUTING:

STELLO
TAYLOR
REHM
MURRAY

DATE: 08/20/87

ASSIGNED TO: AEOD (CRGR)	CONTACT: JORDAN
ASSIGNED TO: NMSS	CONTACT: THOMPSON
ASSIGNED TO: NRR	CONTACT: MURLEY
ASSIGNED TO: RI	CONTACT: RUSSELL
ASSIGNED TO: RII	CONTACT: GRACE
ASSIGNED TO: RIII	CONTACT: DAVIS
ASSIGNED TO: RIV	CONTACT: RMARTIN
ASSIGNED TO: RV	CONTACT: JMARTIN
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 2. PARA. A - ALL ADDRESSES
 3. PARA. B - AEOD (CRGR)
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- INPUT TO SCOTT NEWBERRY DUE 9/3/87.
NEGATIVE RESPONSES REQUIRED.

TAREHM

To: B. Russell, RI
J. Nelson Grace, RII
A. Bert Davis, RIII
R. Martin, RIV
J. Martin, RV