UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Attachment 1

APR 1 2 1984

MEMORANDUM FOR: Darrell G. Eisenhut, Director
Division of Licensing

FROM: Roger J. Mattson, Director
Division of Systems Integration

SUBJECT: RISK OF 5% POWER OPERATION AT GRAND GULF CONSIDERING FAILED DELAVAL DIESEL GENERATORS

Reference: Memo from R. J. Mattson to H. R. Denton "Transmittal of Report on Reduction in Risk Associated with Proposed Low Power Testing Program at LaSalle," dated February 18, 1982 (copy attached)

Per your request, we have, with RRAB support, evaluated the effect of failed Delaval diesel generators on the risk for 5% power operation at Grand Gulf. The basis for the review was the work done in the referenced memo. That is, since we demonstrated in the referenced memo that there was insignificant risk at LaSalle at 5% power, we started with that baseline and asked how the result would change if we completely disregarded Delaval diesels at Grand Gulf. The design differences between the two plants were considered in our analysis.

There were four categories of internally initiated events considered in the referenced memo. There were:

1. events which fail to remove decay heat from containment
2. non-LOCA, non-ATWS events with failure to inject water into the reactor vessel
3. LOCA with failure of required ECCS
4. ATWS.

The risk at low power for events in the first two categories would not be affected by loss of diesel generators, since AC power is not required for these events to prevent core melt at 5% power. For category 3 events the effect of losing diesel power is very small. This is because at 5% power there is virtually no grid disturbance due to reactor shutdown, and the probability of retaining offsite power remains high. Also, the high pressure core spray system (HPCS) at Grand Gulf has its own dedicated diesel generator not manufactured by Delaval. Thus for any LOCA at 5% power, failure of a Delaval diesel would not measurably affect the risk. It is estimated that the change in risk due to Delaval diesel unavailability is negligible and the previous estimates in the referenced memo would apply to Grand Gulf.

CONTACT: N. Lauben, X27579

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XA 2pp.

ATWS events initiated by loss of offsite power (LOOP) would have consequential failure of the Standby Liquid Control (SLC) System if the diesels were unavailable. For this evaluation, it was assumed that all ATWS events initiated by LOOP for more than 2 hours resulted in core melt. Loss of offsite power for more than two hours is estimated to be about 2 to 8 percent of all ATWS initiators. Therefore, the estimated reduction in risk to the public from ATWS events at 5 percent power, compared to 100% power, is on the order of 300 to 2000 which is a smaller reduction than previously estimated for situations with the diesels available at LaSalle. (Ref.) The staff believes that this estimate is conservative because it gives no credit for the diesels and no credit for the operator manually inserting control rods one by one. Taking these conservatisms into account, the new estimate is well within the uncertainty of the previous estimate and is, therefore, not significant.

We, therefore, conclude that total failure of the Delaval diesels at Grand Gulf would not significantly increase the risk of low power operation and that the risk of low power operation is acceptably small.

Roger J. Mattson

Roger J. Mattson, Director
Division of Systems Integration

cc: R. Rowsome
D. Houston
T. Speis
T. Novak
A. Schwencer