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September 3, 1982

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Vice President Nuclear Operations

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Mr. R. L. Tedesco
Asst. Director of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: Waterford Steam Electric Station - Unit No. 3
Docket No. 50-382
CPC Software Functional Inconsistency

Dear Sir:

Recent qualification testing of the WSES-3 Core Protection Calculator (CPC) software has revealed a discrepancy between the "as-built" software and C-E's functional requirements. This has been identified in the Phase II Test Report [CEN-208 (C)] which was recently submitted to the NRC.

The discrepancy involves penalty factors associated with failed Control Element Assembly Calculators (CEACs). When both CEACs are "failed", the functional requirements specify that the CPCs are to use DNBR and LPD penalty factors (PFs) stored in the CPC data base. These PFs are the largest possible PFs that the CEACs could calculate during normal operation. In addition, the PFs are to be used with one CEAC "failed" and the other is "RSPT/CEAC INOP". A CEAC is considered "failed" by the CPCs whenever the FAILED BIT is set on the data link from the CEAC to the CPCs. This FAILED BIT is set by the CEAC whenever the CEAC determines that it has a detectable failure or is placed in "test". Recent testing of the CPC software on another plant has revealed that, during the above conditions, the large DNBR PF is applied but the large LPD PF is not. We believe that no safety concern exists for the following reasons.

For most plant operating conditions, the plant will immediately trip on failure of both CEACs due to the application of the large DNBR PF. The absence of the large LPD PF is therefore moot. There is a small set of plant conditions, notably at low power, under which the plant may not trip immediately. Based on current evaluations, C-E has determined that no design basis CEA misoperation event initiated from these initial conditions will result in exceeding Specified Acceptable Fuel Design Limits. The conclusions of the plant safety analyses presented in Chapter 15 therefore remain valid. Therefore, it can be concluded that the LPD trip function is not required for plant protection under these conditions.

Boo!

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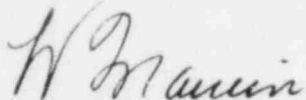
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In addition, it has been determined that the probability of achieving this very specific set of plant conditions is exceedingly small because: (1) The probability of a failure of both CEACs (or the failure of a single CEAC with the other in the "RSPT/CEAC INOP" Mode) is very small; and (2) Technical Specifications specifically do not allow continued operation under these conditions; (3) the probability of a CEA misoperation event (the only design basis event which could approach the LPD SAFDL) occurring when in this mode is also very small. It should be stressed that when only one CEAC is "failed", or when one or both CEACs are in the "RSPT/CEAC INOP" Mode, the CPCs function as intended.

Based on the above, it has been concluded that current operation of the CPCs using the present software is acceptable. A quality assured analysis to document the acceptability of the present software is currently being performed. This is expected to be completed in September, 1982, at which time you will be notified.



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LVM/RMF/snw

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