



UNITED STATES
 NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 7, 1996

Mr. Nicholas J. Liparulo
 Nuclear Safety and Regulatory Activities
 Westinghouse Electric Corporation
 P.O. Box 355
 Pittsburgh, Pennsylvania 15230

SUBJECT: FOLLOWON QUESTIONS CONCERNING THE AP600 FLOODING PROBABILISTIC RISK ASSESSMENT (PRA)

Dear Mr. Liparulo:

As a result of its review of the June 1992, application for design certification of the AP600, the staff has determined that it needs additional information in order to complete its review. Specifically, the enclosed questions have resulted from a review of the shutdown flooding analysis, Chapter 56, of the PRA. The questions are related to the draft safety evaluation report Open Item 19.1.3.2-20.

You have requested that portions of the information submitted in the June 1992, application for design certification be exempt from mandatory public disclosure. While the staff has not completed its review of your request in accordance with the requirements of 10 CFR 2.790, that portion of the submitted information is being withheld from public disclosure pending the staff's final determination. The staff concludes that these followon questions do not contain those portions of the information for which exemption is sought. However, the staff will withhold this letter from public disclosure for 30 calendar days from the date of this letter to allow Westinghouse the opportunity to verify the staff's conclusions. If, after that time, you do not request that all or portions of the information in the enclosures be withheld from public disclosure in accordance with 10 CFR 2.790, this letter will be placed in the NRC's Public Document Room.

These followon questions affect nine or fewer respondents, and therefore is not subject to review by the Office of Management and Budget under P.L. 96-511.

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Mr. Nicholas J. Liparulo

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March 7, 1996

If you have any questions regarding this matter, you can contact me at (301) 415-1132.

Sincerely,

original signed by:

Joseph M. Sebrosky, Project Manager
Standardization Project Directorate
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Office of Nuclear Reactor Regulation

Docket No. 52-003

Enclosure: As stated

cc w/enclosure:
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Docket No. 52-003
AP600

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Enclosure to be distributed to the following addressees after the result of the proprietary evaluation is received from Westinghouse:

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AP600 PRA REVIEW
REQUEST FOR ADDITIONAL INFORMATION

720.322 Westinghouse stated on page 56-43 that normal RHR pipe rupture scenarios are included in the shutdown LOCA analysis and not in the flooding analysis. The staff notes that RHR pipe rupture was the dominant flooding scenario in the AP600 original flooding analysis. Upon review of the shutdown PRA, the staff found that RHR pipe ruptures are analyzed in the shutdown PRA using event trees. The event trees indicate that operation of the passive systems, including gravity injection, is not affected by any rupture of RHR piping. The staff accepts this method for analyzing RHR pipe ruptures, if Westinghouse can verify that passive system operation is not affected by any rupture of RHR piping. Therefore, the staff is asking Westinghouse to:

- a. Document in the Shutdown Flooding PRA that passive system operation is not affected by any rupture of RHR piping for both hot/cold shutdown and midloop/vessel flange operation.
- b. Document in the Shutdown Flooding PRA that losses of IRWST inventory from containment can not occur as a result of any rupture of RHR piping for both hot/cold shutdown and midloop/vessel flange operation.

720.323 The flooding scenario following the rupture of the fire water line in Annex Building 135'-3" disables both non-1E dc switchgear rooms, and eventually disables the 1E batteries in the auxiliary building basement if no mitigation is taken. This scenario is included in both the shutdown and at power analyses.

The shutdown analyses stated that the DAS would be failed by the flooding in the switchgear rooms. Distribution panel EDS3-EA-1 (Table 27-4) is included in the failed equipment list. The power analysis stated that the PCS (PLS) would be failed by flooding the switchgear room. Distribution panels EDS1-EA1 and EDS1-EA2 (Table 28-4) are included in the failed equipment list. Thus, it appears that both DAS and PLS will be failed in these flooding sequences.

Since power dependency is explicitly modeled in the logic models the PLS failure due to power failure should be logically included in the requantification. Use of a factor of 100 for scenarios 5 and 6 in the shutdown PRA to account for failures of the DAS and PLS is acceptable, but please identify and explain what values are assigned to the DAS and ALL-IND-FAIL basic events during the evaluation of sequences 15 and 16 in the at-power analysis.

The flooding scenarios in the focused PRA are developed from the scenarios in the base-line flooding PRA. In four of the five scenarios in Table 52-39 the flood damages no safety equipment,

Enclosure

the only differences are damage to non-safety equipment. Comparison of the conditional CDF (CCDF) given the initiating event indicate that sequences 1 and 3 have the same CCDF and sequences 2 and 4 have the same CCDF. Since the focused study does not credit non-safety equipment, please explain why all four are not the same (SBO) scenario.