

May 8, 1997

Mr. Nicholas J. Liparulo, Manager
Nuclear Safety and Regulatory Analysis
Nuclear and Advanced Technology Division
Westinghouse Electric Corporation
P.O. Box 355
Pittsburgh, PA 15230

SUBJECT: FOLLOWON QUESTIONS REGARDING THE EX-VESSEL SEVERE ACCIDENT ANALYSIS
FOUND IN THE PROBABILISTIC RISK ASSESSMENT (PRA) FOR THE AP600

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. Specifically, the enclosure to this letter contains requests for additional information concerning ex-vessel severe accident analysis found in the AP600 PRA.

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 Nuclear Regulatory Commission Public Document Room.

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

Sincerely,

original signed by:

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

Docket No. 52-003

Enclosure: As stated

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Mr. Nicholas J. Liparulo
Westinghouse Electric Corporation

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
REGARDING DETERMINISTIC CALCULATIONS OF EX-VESSEL PHENOMENA

- 720.387 The deterministic evaluation of ex-vessel fuel coolant interactions (Appendix B to Revision 9 of the PRA) indicates that the impulse loads from ex-vessel steam explosions would fail the reactor cavity floor and wall structures, but that the embedded steel liner will stay intact. The evaluation also indicates that containment vessel integrity will not be compromised by the displacement of the RPV due to the impulse loading. Please submit additional details regarding the calculation of containment vessel strains referenced in Section B.3.2.1 and the calculation of maximum lift of the RPV referenced in Section B.3.2.2.
- 720.388 Please provide a reassessment of the large release frequency and population doses for the baseline PRA, consistent with the arguments in Appendix B that the containment will sustain ex-vessel steam explosions.
- 720.389 The AP600 PRA documentation regarding the MAAP model (Chapter 44 of PRA), indicates that the AP600 basemat is assumed to be limestone concrete in order to maximize non-condensable gas generation. If this same assumption was retained in the deterministic calculations, the time to breach the embedded liner can be substantially less than the 9 hours estimated in Appendix B of the PRA. Please provide estimates of the time of melt-through of the embedded liner and the time of containment overpressure failure (e.g., Service Level C) if alternative concrete compositions are specified for the reactor cavity floor and walls. The range of compositions evaluated should include those that would minimize and maximize the time of liner melt-through.
- 720.390 Given the relatively short estimated time to melt-through of the embedded liner in Appendix B, justify why a concrete composition that maximizes the time of melt-through is not prescribed as part of the AP600 design. Include an estimate of related costs to specify a particular composition.

Enclosure

DISTRIBUTION Letter to Mr. Nicholas J. Liparulo, Dated: May 8, 1997

*Docket File *Enclosure to be held for 30 days

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