

May 8, 2001

Mr. Michael M. Corletti
Advanced Plant Safety & Licensing
Westinghouse Electric Company
P.O. Box 355
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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE AP1000
PRE-APPLICATION REVIEW

Dear Mr. Corletti:

In a December 5, 2000, letter to Mr. Cummins, Westinghouse was requested to provide the analysis codes for AP1000 and the supporting documentation for the U.S. Nuclear Regulatory Commission staff's review. Based on a preliminary review, it appears that there are a number of differences in how the WGOTHIC code will be used for the AP1000 containment analysis compared to its use for the AP600. Please provide the staff with responses and clarification of the points in the enclosed Request for Additional Information (RAI).

Sincerely,

/RA/

Alan C. Rae, AP1000 Project Manager
Future Licensing Organization
Office of Nuclear Reactor Regulation

Project No. 711

Enclosure: RAI

cc w/encl: See next page

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Requests for Additional Information

- P3 For the AP600 essentially no credit was allowed for heat transfer through the dome, i.e. AP600 used 115 ft² for the dome surface area, while AP1000 will use 5,200 ft². The dome size has not changed. If the increased dome area is to be used, how does Westinghouse intend to provide the additional information to justify the heat transfer models used on the dome surfaces?
- P4 Since Westinghouse will be using a WGOTHIC model with multiple nodes inside the containment above the operating deck (consistent with the approved AP600 model and methodology) the NRC is not clear on the merit of reviewing the single node model results. Are there some insights or benefits that Westinghouse believe we would obtain by reviewing the "single node above the operating deck" WGOTHIC model? Consider the following:
- (a) In the AP600 application there were seven active climes of approximately the same height. For the AP1000 preliminary WGOTHIC model, the 7th clime was increased in height to add the additional 25.5 ft of containment height, while the height of the remaining climes was unchanged. Does Westinghouse intend to use this same approach of unequal clime height for the licensing analysis, or will approximately equal height climes be used?
 - (b) The shell temperatures for the steam line break (SLB) rather quickly exceed the boiling temperature on the outside of the shell. The results of a sensitivity study with no passive containment coolant system (PCS) water were shown. Does this mean that Westinghouse will take no credit for PCS water in the SLB licensing analysis, and only credit heat transfer through the dry shell? Given the high temperature how will Westinghouse justify compliance with General Design Criteria 38?
 - (c) The preliminary AP1000 analysis uses the AP600 337 second delay for credit of the PCS water. Given the 6 percent increase in flow coupled with the increased 20 to 35 percent increase in wetted surface area for full coverage (90 percent of the shell), it appears that the delay time for the AP1000 should be 20 to 60 seconds longer. Under loss-of-coolant accident conditions could the surface temperature exceed the boiling point? Would the WGOTHIC computed surface temperatures be different for the one node versus multi-node model?
 - (d) It is not clear whether heat transfer through the dome or establishment of water coverage with boiling will be included in the final WGOTHIC model. If these phenomena are to be included, the NRC will need to know how these phenomena were addressed in the phenomena identification and ranking table and why the current mass and heat transfer correlation are still appropriate.

ENCLOSURE

cc:

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