

March 14, 2003

Mr. Michael M. Corletti
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Post Office Box 355
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SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION - AP1000 DESIGN
CERTIFICATION REVIEW (TAC NO. MB5491)

Dear Mr. Corletti:

By letter dated March 28, 2002, Westinghouse Electric Company (Westinghouse) submitted its application for final design approval and standard design certification for the AP1000.

The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of your design certification application to ensure that the information is sufficiently complete to enable the NRC staff to reach a final conclusion on all safety questions associated with the design before the certification is granted.

The NRC staff has determined that additional information is necessary to continue the review. The requests for additional information (RAIs) are included in the enclosure. The topics covered in these RAIs include the areas of resolution of unresolved safety issues/generic safety issues. These RAIs were sent to you via electronic mail on February 28, 2003. You agreed to provide your responses to these RAIs by March 31, 2003.

If you have any questions or comments concerning this matter, you may contact me at (301) 415-2753 or jxc1@nrc.gov.

Sincerely,

/RA/

Joseph Colaccino, Senior Project Manager
New Reactor Licensing Project Office
Office of Nuclear Reactor Regulation

Docket No. 52-006

Enclosure: As stated

cc: See next page

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Requests for Additional Information (RAIs)
AP1000 Standard Design Certification

Series 440 - Reactor Systems

440.185 - Shutdown Modes SGTR Analysis

Westinghouse indicated in design control document (DCD) Section 19E4.7.3 that the margin to the steam generator (SG) overfill would be maintained for the SG tube rupture (SGTR) events initiated at lower power levels and shutdown modes even with higher initial SG inventory corresponding to the lower mode conditions. The staff notes that the margin to SG overfill depends on parameters such as the initial SG water inventory, time to actuate the passive residual heat removal (PRHR) for cooling and depressurization, and time to terminate the chemical volume control system (CVCS) flow. In the absence of a quantitative analysis for SG overfill, it is not clear that the margin to SG overfill can be maintained for the SGTR events.

Provide an analysis to show adequacy of the AP1000 design for the SG overfill prevention during an SGTR event in shutdown modes. The analysis should include the following cases (which were analyzed for the AP600): (1) Mode 3 with the reactor coolant system (RCS) at no-load conditions; (2) Mode 4 with the RCS at 420 degrees F and 1900 psig (the maximum RCS pressure on the basis of the required primary to secondary differential pressure specified in operating procedures); and (3) Mode 4 with the RCS at 350 degrees F and 1000 psig (the maximum RCS expected pressure when the RCS temperature is 350 degrees F).

440.186 - Inadvertent PSV opening or ADS Actuation

Westinghouse indicated in DCD Section 19E.4.7.1 that the loss of RCS inventory aspects of the inadvertent opening of a pressurizer safety valve and inadvertent actuation of automatic depressurization valve events are covered in Subsection 19E.4.8.2 (or 19E.4.8 as corrected in a February 13 conference call). The staff notes that DCD Section 19E.4.8 discusses the loss-of-coolant accident (LOCA) analysis at Mode 3 conditions and the loss of the RNS events during shutdown modes. No specific information in DCD Section 19E.4.8 is related to the loss inventory aspects of the inadvertent opening of valves in shutdown modes.

Provide the exact information that is intended to be used for completion of the DCD Section 19E.4.7.1 discussion.

440.187 - Reactor Cavity Seal

Current plants use temporary reactor cavity seals to flood the refueling cavities. Failure of these seals can divert water to the reactor pit, and subsequently to the reactor floor drains, and may result in a loss of shielding and fuel cooling during spent fuel assembly movement.

Please identify the connections to the refueling cavity that could drain the filled refueling pools during refueling operations, discuss any potential loss of refueling water scenarios associated with reactor cavity, and the provisions to prevent the loss of refueling water events from occurring.

Series 451 - Meteorology

451.008

The relative concentration (X/Q) value provided in the AP1000 DCD is listed for the site boundary. However, dose regulations are based upon the exclusion area boundary (EAB). Is Westinghouse assuming that the site boundary values also apply to the EAB? If so, this should be explicitly stated.

Series 720 - Reliability and Risk Assessment

720.099

Vacuum refill of the RCS from drained conditions was mentioned; however, no risk assessment was done for this plant configuration. Passive residual heat removal (RHR) should be operable according to the AP1000 Technical Specifications during this plant configuration since the RCS would be closed which may reduce risk. Document in the AP1000 shutdown probabilistic risk assessment (PRA) the additional plant risk occurring from vacuum refill of the RCS during drained conditions.

AP 1000

cc:

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