

January 31, 1997

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

SUBJECT: AP600 ADVANCED REACTOR DESIGN SITE PARAMETERS FOR SEISMIC DESIGN AND
NUCLEAR ISLAND FOUNDATION MAT ADEQUACY

Dear Mr. Liparulo:

In a letter dated November 4, 1996, the U.S. Nuclear Regulatory Commission (NRC), Civil Engineering and Geosciences Branch, identified three major issues associated with the seismic and structural review of the Westinghouse AP600 advanced reactor design. The NRC staff subsequently met with representatives of Westinghouse on December 9 through 13, 1996, to conduct an AP600 structural design review in Monroeville, Pennsylvania. On the basis of the interaction between Westinghouse representatives and the NRC staff during that meeting, the staff has concluded that its position on the subject issues should be recomunicated to Westinghouse for a clearer understanding. The staff's position is enclosed.

If you have any questions on this matter, please contact Diane Jackson at (301) 415-8548.

Sincerely,

original signed by:
Thomas T. Martin, Director
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

Docket No. 52-003

Enclosure: As stated

cc w/enclosure:
See next page

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Mr. Nicholas J. Liparulo
Westinghouse Electric Corporation

Docket No. 52-003
AP600

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AP600 SITE PARAMETERS FOR SEISMIC DESIGN AND NUCLEAR ISLAND FOUNDATION MAT ADEQUACY

Seismic Design Parameter

The AP600 standard seismic design parameter is 0.3g peak ground acceleration with the response spectra shown in Figures 3.7.1-1 and 2 of the AP600 standard safety analysis report (SSAR). If Westinghouse intends to use this standard seismic design for the AP600, it must either (1) demonstrate that the design meets the full range of site parameters, including shallow soil site conditions, or alternately, (2) revise the seismic design parameters and specify a separate design parameter for shallow soil sites that the AP600 design will meet.

In the AP600 SSAR, Revision 10, Subsection 2.5.4.5.5, "Response of Soil and Rock to Dynamic Loading," Westinghouse states that for sites at which the soil characteristics are outside the range considered in Appendix 2B.2 of the SSAR, site-specific soil-structure interaction analyses may be performed by the combined operating license (COL) applicant to demonstrate acceptability and that the analysis would use the site-specific soil conditions and the site-specific safe shutdown earthquake. The NRC staff has previously discussed this issue with Westinghouse and concluded that the proposal is unacceptable. Therefore, Westinghouse should revise the SSAR to reflect one of the two alternatives cited above.

Design of the Containment Foundation Basemat

The AP600 basemat is only 6-feet thick. As a result, the NRC staff has identified two issues: (1) the basemat needs to be designed so that it can be located at sites with a full range of conditions of soil stiffness variability, and (2) during the construction phase, structural cracking of the basemat can occur unless the basemat is constructed following a precise sequence.

The NRC staff has determined that the basemat thickness should be changed to demonstrate its acceptability over a full range of soil stiffness variability and without reliance on a specific construction sequence.

Enclosure