

June 5, 2012

Mr. J. A. Gresham, Manager  
Westinghouse Electric Company  
Nuclear Services  
1000 Westinghouse Drive  
Cranberry Township, PA 16066

SUBJECT: ACCEPTANCE FOR REVIEW OF WESTINGHOUSE TOPICAL REPORT  
WCAP-17524-P, REVISION 0, AP1000 CORE REFERENCE REPORT

Dear Mr. Gresham:

By letter dated March 6, 2012, Westinghouse Electric Company submitted for U. S. Nuclear Regulatory Commission (NRC) staff review Topical Report (TR) WCAP-17524-P, Revision 0, AP1000 Core Reference Report. The NRC staff has performed an acceptance review of the Core Reference Report, and found that, except for the key issues identified below; the material presented provides the technical information in sufficient detail to enable the staff to complete a detailed technical review. The key issues identified by the NRC staff as having potential scheduling impact are:

- Fuel Thermal Conductivity Degradation (TCD) – The  $UO_2$  thermal conductivity (see Section 4.4.2.11.1) does not account for burnup effects. In its letter of April 5, 2012, Westinghouse committed to provide the NRC with a numerical estimate of the impact of the fuel pellet TCD on the Loss of Coolant Accident peak cladding temperature results reported in WCAP-17524-P by June 15, 2012. The NRC staff expects that Chapter 15 safety analyses supplemental information will be submitted to demonstrate that the impact of TCD is accounted for.
- Impact of Robust Protection Grid (RPG) on GSI-191 – The Topical Report indicates (see Section 2.6) that the RPG design retained key characteristics of the previous P-grid design such that the GSI-191 performance was expected to be the same as for the previous P-grid design; and that some GSI-191 comparison tests were run with the RPG, which demonstrated that the RPG performed as well if not better than the standard P-grid. The NRC staff will evaluate whether sufficient comparison test information is available to demonstrate sufficient head loss margin exists for the RPG.
- Fuel Assembly Seismic Structural Response – The Topical Report indicates (see Section 4.2.3.5) that the fuel assembly seismic response analysis follows the guidelines of Appendix A of the Standard Review Plan, Section 4.2, which may imply that only the beginning of life (BOL) condition of grid strength is needed for seismic and LOCA evaluations. Because of spacer grid spring relaxation due to irradiation which could affect the fuel bundle stiffness and the grid strength, the NRC staff has determined the need to evaluate the fuel structural response to the seismic/LOCA load for the minimum grid strength considering irradiation effects.

The NRC staff expects to complete its review and issue its safety evaluation by June 2013 provided that Westinghouse is able to address these key issues and any other issues identified during the review process in a timely manner. The request for additional information (RAI) will also cover other areas, such as the critical heat flux test data bases pertaining to the fuel spacer grid design changes, the spent fuel pool criticality analysis pertaining to the advanced first core design, the transition cycle core design and analysis beyond the first cycle, and the RCS pressure-temperature limit pertaining to the revised core loading pattern.

The above schedule for completion of staff's review and issuance of its safety evaluation assumes:

- One round of RAIs
- Westinghouse Response to RAIs within 60 days
- No interaction with Advisory Committee on Reactor Safeguards (ACRS)

Section 170.21 of Title 10 of the *Code of Federal Regulations* requires that TRs are subject to fees based on the full cost of the review. You did not request a fee waiver; therefore, NRC staff hours will be billed accordingly.

If you have any questions, please contact the Project Manager, Ravindra Joshi, at (301) 415-6191 or [Ravindra.Joshi@NRC.gov](mailto:Ravindra.Joshi@NRC.gov).

Sincerely,

***/RA Amy Snyder for:/***

Mark Tonacci, Chief  
Licensing Branch 4  
Division of New Reactor Licensing  
Office of New Reactors

Project No. 0793

cc: See next page

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Mark Tonacci, Chief  
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 Division of New Reactor Licensing  
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(Revised 05/21/2012)

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