July 7, 2009

Mr. James A. Gresham, Manager
Regulatory Compliance and Plant Licensing
Westinghouse Electric Company
P.O. Box 355
Pittsburgh, PA 15230-0355

SUBJECT: WESTINGHOUSE ELECTRIC COMPANY, REQUEST FOR ADDITIONAL INFORMATION RE: TOPICAL REPORT WCAP-16500-P, SUPPLEMENT 1, REVISION 1, "APPLICATION OF CE SETPOINT METHODOLOGY FOR CE [COMBUSTION ENGINEERING] 16X16 NEXT GENERATION FUEL (NGF)" (TAC NO. ME0143)

Dear Mr. Gresham:

By letter dated October 24, 2008 (Agencywide Documents Access and Management System Accession No. ML083050496), Westinghouse Electric Company (Westinghouse) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review Topical Report WCAP-16500-P Supplement 1 Revision 1. Upon review of the information provided, the NRC staff has determined that a Request for Additional Information (RAI) is needed to complete the review. On June 22, 2009, Ms. Anne Leidich, Westinghouse Licensing Engineer, and I agreed that the NRC staff should receive your responses to the enclosed RAI questions by August 14, 2009. If you have any questions regarding the enclosed RAI questions, please contact me at 301-415-1970.

Sincerely,

/RA/

George C. Bacuta, Project Manager
Special Projects Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Project No. 700
Enclosures:
1. RAI questions (non-proprietary version)
2. RAI questions (proprietary version)
cc w/encl: See next page

NOTICE: Enclosure 2 transmitted herewith contains proprietary information. When separated from Enclosure 2, this document is decontrolled

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cc:
Mr. W. Anthony Nowinowski, Manager
PWROG Program Management Office
Westinghouse Electric Company
P.O. Box 355
Pittsburgh, PA 15230-0355
nowinowa@westinghouse.com

REQUEST FOR ADDITIONAL INFORMATION

BY THE OFFICE OF NUCLEAR REACTOR REGULATION FOR

TOPICAL REPORT "APPLICATION OF CE SETPOINT METHODOLOGY

FOR CE [COMBUSTION ENGINEERING] 16X16 NEXT GENERATION FUEL (NGF)"

TAC NO. ME0143

WESTINGHOUSE ELECTRIC COMPANY

PROJECT NO. 700

1. In the proposed setpoint methodology, **[**

   ] Please calculate new addressable constants with these updated code versions and complete a thermal margin assessment. Provide the thermal margin assessment at several nominal operating points as well as top peaked and bottom peaked axial power distributions. Compare these thermal margins to identical state points generated using the proposed approach. The U.S. Nuclear Regulatory Commission (NRC) requests this work to assess the overall conservatism of the proposed approach and recognizes that updated versions of the COLSIM and CPCSIM codes do not need to include a proper verification and validation.

2. In the proposed setpoint methodology, an acceptance criterion of **[ ]** on the DNB power operating limit (POL) error is used to assess whether to perform the modified statistical combination of uncertainties (MSCU) within a limited range of temperature, pressure, and mass flux (i.e., hypercube). Please describe the basis for this acceptance criterion.

3. Both within the current setpoint methodology and transient analyses, CETOP-D/detailed design thermal hydraulics code (TORC) correction factors are used to adjust CETOP-D departure from nucleate boiling ratio (DNBR) and DNBOPM predictions based upon the more detailed 3-dimensional open channel TORC model predictions. It is understood that the CETOP-D model has been updated to include the ABB-NV and WSSV-T CHF correlations. However, CETOP-D/TORC corrections factors may be sensitive to axial power distributions (such that separate factors may be required for top-peaked versus bottom-peaked axial power distributions). Furthermore, within a given axial shape index (ASI) range, the correction factors may have different sensitivities to pressure, temperature, and mass flux. In addition, sensitivity between the two CHF correlations to assembly radial power distribution may also exist. Please describe how CETOP-D/TORC correction factors will be handled within the proposed setpoint process and for transient analyses for reload cores with CE16NGF assemblies.

4. Section 2.4 of TR WCAP-16500-P Supplement 1 Revision 1 describes the use of core protection calculator (CPC) constants **[**

] Please describe the historical basis for the current values of E1 and E2, describe how these values are credited in transient analyses, and provide calculated values for the sample **[** **]** analysis.

5. The sample **[** **]** analysis highlights the extent of the **[** **]** The DNB POL error within the transition region will depend on the characteristics of the axial power distribution relative to the axial height of the first mixing vane. For instance, two axial power distributions with the same ASI value may exhibit significantly different DNB POL errors. In Figure 20 of WCAP-16500-P Supplement 1 Revision 1, calculated **[** **]** In light of this variability, please provide further justification for the selection of ASI breakpoints and use of a linear function in the core operating limit supervisory system (COLSS) and core protection calculator system (CPCS) database constants.

6. Due to burnup effects on power distribution, the number of MSCU cases within any given ASI range varies with time-in-life. Are there a minimum number of cases which must exist for each ASI range to ensure a statistically significant population?