

February 3, 2006

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

SUBJECT: MODIFIED WRB-2 CORRELATION WRB-2M FOR PREDICTING CRITICAL
HEAT FLUX IN 17X17 ROD BUNDLES WITH MODIFIED LPD MIXING VANE
GRIDS

Dear Mr. Gresham:

During a November 7 - 10, 2005, visit to Westinghouse Electric Company (Westinghouse) headquarters, NRC staff performed an audit on subject matter related to Exelon's Extended Power Uprate (EPU), at which time it was brought to the NRC staff's attention that Westinghouse has opted to apply an adjustment factor to the departure from nucleate boiling (DNB) WRB-2M correlation (Reference). The effect of the adjustment factor is to lower the DNB ratio (DNBR), bringing it closer to the limit, while providing more conservatism in plant reload evaluations than the current correlation.

The WRB-2M DNB correlation was developed from test bundles simulating the Robust Fuel Assembly (RFA) fuel design with a cosine axial power shape (Reference). As part of a scoping study for new grid designs, DNB tests were performed with the uniform axial power shape at the Columbia University test loop. Although the grid designs were not the same, the mixing vanes of the test bundles were similar to the RFA fuel design. When compared to the data from those tests, the WRB-2M measured-to-predicted (M/P) critical heat flux (CHF) average ratio was lower than 1.0. No significant trend in M/P was observed with respect to key parameters such as local flow rate, local equilibrium quality, and pressure. Based on this comparison with the test results, Westinghouse decided to adjust the DNB margin predictions for the WRB-2M DNB correlation.

Westinghouse will implement this adjustment factor on its current fuel assembly designs which use the WRB-2M correlation. This adjustment factor will not be applied to its future fuel assembly designs.

The DNB margin retained in the existing plant safety analyses DNBR limit will remain unaffected. This adjustment was deemed by Westinghouse to represent a prudent response to the new information collected from scoping studies for future fuel designs which may use mixing vane grid designs similar to the RFA design supported by the WRB-2M database.

The adjustment factor does not constitute a change in the methodology as described in the licensing basis. The WRB-2M correlation with the current 95/95 DNBR limit continues to be applied as approved by the NRC. Furthermore, there are no safety or non-compliance issues with the continued use of the WRB-2M correlation and the proposed adjustment factor does not

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impose any changes to the plant's technical specifications or final safety analysis reports. Westinghouse will implement the adjustment factor through a change to the Westinghouse internal procedures.

The NRC staff has reviewed the adjustment factor and its consequences and finds it acceptable.

Sincerely,

/RA/
Daniel S. Collins, Acting Chief
Special Projects Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Project No. 700

Reference: L. D. Smith, III, et al., "Modified WRB-2 Correlation, WRB-2M, for Predicting Critical Heat Flux in 17x17 Rod Bundles with Modified LPD Mixing Vane Grids," WCAP-15025-P-A, April 1999.

cc:
Mr. Gordon Bischoff, Manager
Owners Group Program Management Office
Westinghouse Electric Company
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