

July 27, 2001

Mr. H. A. Sepp, Manager
Regulatory and Licensing Engineering
Westinghouse Electric Company
P.O. Box 355
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SUBJECT: NON-CONSERVATISMS IN AXIAL BURNUP BIASES FOR SPENT FUEL RACK
CRITICALITY ANALYSIS METHODOLOGY

Dear Mr. Sepp:

This letter discusses an issue regarding calculated axial burnup biases that are part of the Westinghouse spent fuel rack criticality analysis methodology. Because of the large conservatisms used in other aspects of the methodology, the staff does not view the nonconservatisms in the calculated biases as a safety concern. However, as a result of identified non-conservatisms in a Westinghouse topical report (TR) on this subject, future licensing submittals from licensees will no longer be able to reference the methodology in the affected document. Westinghouse may wish to consider revising the TR to correct the non-conservatism.

In 1999, while performing analyses to support a license amendment for a McGuire spent fuel pool boron credit, Duke Energy Corporation (Duke) determined larger (more conservative) two-dimensional (2-D) to three-dimensional (3-D) axial burnup biases than Westinghouse had reported in WCAP-14416-NP-A, "Westinghouse Spent Fuel Rack Criticality Analysis Methodology." Duke contacted Westinghouse about this discrepancy, and Westinghouse performed its own re-analysis of the biases. Westinghouse concluded that the original sets of axial biases reported in WCAP-14416-NP-A were non-conservative in many instances. Westinghouse informed its customers of this non-conservatism via a Nuclear Safety Advisory Letter (NSAL-00-015, dated November 2, 2000). The NSAL describes actions that licensees can take to assure that their analyses are conservative. The NRC staff has not been officially notified of this issue by Westinghouse, but has become aware of it through information provided by affected licensees.

Westinghouse's approach to resolving this issue was to seek to identify conservative reactivity margins to compensate for the nonconservatisms in calculated burnup bias and to re-analyze (calculate) the axial burnup biases on a plant-specific basis. Although this approach may lead to sufficient margin to account for the identified non-conservatism(s) on a plant-specific basis, it departs from the Westinghouse methodology approved in WCAP-14416-NP-A. Therefore, the staff concludes that the methodology of WCAP-14416 can no longer be relied upon as "approved methodology" by the NRC staff or the licensees. For future licensing actions, licensees will need to submit plant-specific criticality calculations for spent fuel pool configurations that include technically supported margins.

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Westinghouse may choose to submit for review and approval a revision to WCAP-14416 to resolve the identified non-conservatism(s) with the report. Any revision to the TR should include evaluations benchmarked against a 3-D axial burnup model to assure that margin remains in the analysis.

Sincerely,

/RA/

Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Project No. 700

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