

March 27, 2001

Mr. Robert H. Bryan, Chairman
Westinghouse Owners Group
Tennessee Valley Authority
1101 Market Street, Mail Stop LP4J
Chattanooga, TN 37402

SUBJECT: TOPICAL REPORT WCAP-14748/14749, "JUSTIFICATION FOR INCREASING
BREAK OPENING TIME IN WESTINGHOUSE PWRS" (TAC NO. M98031)

- References:
1. Safety Evaluation related to Topical Report WCAP-14748/14749, "Justification for Increasing Break Opening Times in Westinghouse PWRS," October 1, 1998.
 2. Letter from the Westinghouse Owners Group (OG-98-070) to the NRC "Response to Request for Additional Information," June 11, 1998.
 3. Letter from the Westinghouse Owners Group (OG-98-120) to the NRC, "Scope of Review of WCAP-14748," December 10, 1998.
 4. Letter from the Westinghouse Owners Group (OG-00-104) to the NRC, "Response to NRC Request for Clarification to the Topical Report WCAP 14748/14749, 'Justification of Increasing Postulated Break Opening Times in Westinghouse Pressurized Water Reactors'," October 19, 2000.
 5. Letter from the Westinghouse Owners Group (OG-00-114) to the NRC, "Additional Clarification to Westinghouse Owners Group Request for Approval of WCAP-14748/14749, 'Justification of Increasing Postulated Break Opening Times in Westinghouse Pressurized Water Reactors (MUHP-1037)'," November 13, 2000.
 6. Safety Evaluation related to WCAP-8708, "MULTIPLEX - A FORTRAN-IV Computer Program for Analyzing Thermal-Hydraulic-Structure System Dynamics," February 1976.
 7. WCAP-9735, Rev. 2, 'MULTIPLEX 3.0 - A FORTRAN IV Computer Program for Analyzing Thermal-Hydraulic Structure System Dynamics Advanced Beam Model,' February 1998.

Dear Mr. Bryan:

The purpose of this letter is to clarify the staff's position regarding the subject report and its applicability to a wide range of pressurized water reactor (PWR) issues. The staff completed its review of Topical Report WCAP-14748/14749 in October 1998 (Reference 1). The staff's approval of a licensing-basis break opening time (BOT) of greater than one millisecond for the Westinghouse primary coolant piping, as discussed in the subject WCAP, was limited in

application to the Baffle Barrel Bolting (BBB) program. The safety evaluation (SE) states that the future application to other issues involving different phenomena outside the BBB program will require the staff's review on a case-by-case basis. By letters dated June 11, 1998, December 10, 1998, October 19, 2000, and November 13, 2000 (References 2, 3, 4 and 5) and telephone conversations on May 10 and 12, 2000, the Westinghouse Owners Group (WOG) clarified its intent in that it is requesting a review of WCAP-14748/14749 for generic applications. The WOG also identified a number of components and subsystems where significant load reduction benefits may be expected from an application of an increased BOT. These included the baffle-fuel grid impact loads, sub compartment/containment pressurization analyses, pipe whip/jet impingement/piping support loads, steam generator loads, and reduced guide tube loads resulting in increased rod cluster control assembly insertability. The staff hereby provides generic approval for the use of the increased BOT as discussed in Reference 1. However, as discussed below, this approval does not extend to the use of the increased BOT with the MULTIFLEX code or any other loss-of-coolant accident (LOCA) analysis methodology that has not been approved by the staff.

The staff originally reviewed and approved the Westinghouse LOCA analysis methodology referred to as MULTIFLEX 1.0, as described in WCAP-8708, with the limitations stated in the staff's letter to Westinghouse of June 17, 1977 (Reference 6). When this methodology, which is used for analyzing thermal-hydraulic-structural system dynamics, was reviewed in 1976, the safety evaluation report stated that it could only be used with a BOT of 1.0 millisecond without further staff review. The staff has not subsequently reviewed the current Westinghouse LOCA analysis methodology embodied in MULTIFLEX 3.0 and discussed in WCAP-9735 (Reference 7). This topical report was submitted for review in conjunction with the review of the BBB program, but was subsequently withdrawn by the WOG. The staff's approval of an increased BOT and the plan for the BBB replacement effort did not constitute acceptance of the methodology in MULTIFLEX 3.0. If Westinghouse desires to use a new version of MULTIFLEX, such as the MULTIFLEX 3.0, or the existing approved version 1.0, or any other unapproved LOCA analysis methodology in conjunction with the increased BOT, the staff would require the review of that analytical methodology. Please note that a review of MULTIFLEX 3.0 is considered to be a major review activity, requiring an extensive staff review effort. Therefore, applications involving MULTIFLEX 3.0 or similar computer codes, not explicitly approved by the staff, must be submitted sufficiently in advance when staff determination is needed, to allow adequate time for staff review.

In its SE relative to WCAP-14749, the staff stated that the available applicable data was insufficient to validate the proposed crack propagation speeds. The staff, therefore, did not fully investigate the bases of the value cited and the SE did not constitute an endorsement of any particular crack propagation speed. As discussed in the SE, the time for crack propagation was not credited in the acceptance of BOT for the BBB program. Likewise, crack propagation time is not credited in our approval of the use of increased BOT for generic application. If crack

propagation speeds are to be credited for further increasing the accepted BOT in other applications, you will be required to submit additional data/information and the staff will require adequate time to review that information.

Sincerely,

/RA/

Girija S. Shukla, Project Manager, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Project No. 694

cc:

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