



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

JUN 22 1992

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of ) Docket Nos. 50-390  
Tennessee Valley Authority ) 50-391

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - ELIMINATION OF DYNAMIC  
EFFECTS OF PRESSURIZER SURGE LINE PIPE BREAKS

- References:
1. 10 CFR 50, Appendix A, General Design Criterion (GDC) 4, as amended in the Federal Register (52 FR 41288) October 27, 1987
  2. NUREG-1061, Volume 3, dated November 1984, "Report of the USNRC Piping Review Committee - Evaluation of Potential for Pipe Breaks"
  3. Standard Review Plan 3.6.3 (proposed), published in the Federal Register, Volume 52, No. 167, August 28, 1987
  4. NUREG/CR-3464, 1983, "The Application of Fracture Proof Design Methods Using Tearing Instability Theory to Nuclear Piping Postulated Circumferential Through Wall Cracks"
  5. Letter from John Garrity to NRC dated March 30, 1992, NRC Bulletin 88-11 - Pressurizer Surge Line Thermal Stratification

This letter requests approval for application of the leak-before-break technology on the WBN pressurizer surge line. The use of this application would eliminate the dynamic effects of the postulated surge line breaks from the structural design basis for each unit.

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The enclosed WCAP-12773 (proprietary) and WCAP-12774 (nonproprietary) reflect analyses performed by Westinghouse. The analyses use leak-before-break technology, as permitted by GDC 4 of Appendix A to 10 CFR Part 50 (Reference 1). The recommendations and criteria proposed in NUREG-1061, Volume 3 (Reference 2), have been used in these analyses. The flaw stability analysis is performed using the methodology described in Reference 3. The crack opening area required for calculating the leak rates is obtained by subjecting the postulated through-wall flaw to normal operating loads, as described in Reference 4. Specific compliance with the detailed technical requirements is addressed in WCAP-12773 and WCAP-12774.

A reanalysis of Units 1 and 2 pressurizer surge lines for thermal stratification effects (Reference 5) demonstrated that the lines meet the American Society of Mechanical Engineers (ASME) code requirements for the design life of the units, providing the multiple pipe rupture restraints are modified to accommodate the movements resulting from the reanalysis. The modifications for thermal stratification movement will be implemented as committed in Reference 5.

The above modifications will potentially result in increased gaps and, subsequently, higher dynamic pipe rupture loadings. Multiple protective devices are presently utilized for the two terminal end breaks. The application of the leak-before-break technology will eliminate the need for substantial recalculation of the higher dynamic loadings and for reanalysis and potential modifications/additions of pipe rupture restraints. This application effectively permits deactivation of the protective devices and minimizes modifications due to pipe rupture dynamic loadings.

This application of leak-before-break also results in better access for maintenance and inservice inspection, and indirectly reduces operational radiation exposure; eliminates potential damage to components during reinstallation; removes a potential source of inadvertent interference with piping movement; and generally provides a more rational design approach with improved safety.

As stipulated in Reference 2, no credit is taken toward mitigation of containment global design, equipment global environmental qualification requirements, or emergency core cooling system design requirements. At this time, no credit is taken for any reduced pressurization loadings on subcompartments.

Following NRC's approval of this proposed leak-before-break application, TVA will submit revisions to the WBN Final Safety Analysis Report (FSAR) and reflect application of the leak-before-break technology in the design criteria to address the elimination of dynamic effects of postulated ruptures in the pressurizer surge line.

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Enclosure 1 provides a copy of Westinghouse Electric Corporation WCAP-12773, "Technical Justification for Eliminating Pressurizer Surge Line Rupture as the Structural Design Basis for WBN Units 1 and 2," dated December 1990 (Proprietary version).

Enclosure 2 provides a copy of Westinghouse Electric Corporation WCAP-12774, "Technical Justification for Eliminating Pressurizer Surge Line Rupture as the Structural Design Basis for WBN Units 1 and 2," dated December 1990 (Nonproprietary version).

Enclosure 3 is a Westinghouse Application for withholding proprietary information from public disclosure CAW-92-306, with accompanying Affidavit, Proprietary Information Notice, and Copyright Notice.

Because this submittal contains information proprietary to Westinghouse Electric Corporation, it is supported by an Affidavit signed by Westinghouse, the owner of the information. The Affidavit sets forth the basis on which the information may be withheld from public closure by the Commission and addresses with specificity the considerations listed in Paragraph (b)(4) of 10 CFR, Section 2.790 of the Commission's regulations.

Accordingly, it is respectively requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR, Section 2.790 of the Commission's regulations. Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse Affidavit should reference CAW-92-306 and should be addressed to N. J. Liparulo, Manager, Nuclear Safety and Regulatory Activities, Westinghouse Electric Corporation, P. O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

If you have any questions concerning this matter, please telephone John Vorees at (615) 365-8819.

Sincerely,



W. J. Museler  
Site Vice President

Enclosures  
cc: See Page 4

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