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NOV 08 1993

U.S. Nuclear Regulatory Commission
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Gentlemen:

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

WATTS BAR NUCLEAR PLANT (WBN) - VERIFICATION AND VALIDATION (V&V) OF EAGLE-21
PROCESS PROTECTION SYSTEM (TAC M81063)

This letter summarizes the verification and validation (V&V) program for WBN's Eagle-21 process protection system. Two reports are enclosed with the letter to describe the detailed results of the program. The NRC staff specifically requested information about V&V activities for the Eagle-21 system in a letter dated June 14, 1993.

The Eagle-21 process protection system, which was designed and manufactured for WBN by Westinghouse Electric Corporation, uses digital electronics and programmable microprocessors. Regulatory Guide 1.152 and Standard ANSI/IEEE-ANS-7-4.3.2-1982 impose specific V&V requirements for this type of system to demonstrate that it functions in accordance with its design criteria. Westinghouse developed a comprehensive program for its Eagle-21 product line to address these V&V requirements. This program has been refined and enhanced based on experience gained from Eagle-21 equipment supplied to other nuclear plants such as Sequoyah, Zion, Diablo Canyon, Turkey Point, and South Texas. Westinghouse's V&V program was also used for the first four Eagle-21 cabinets that were provided to WBN several years ago as part of the modification for resistance temperature detector bypass elimination. The NRC staff approved the use of these four cabinets, including the associated V&V activities, in a letter dated June 13, 1989.

The V&V plan for WBN's Eagle-21 process protection system is in Appendix A of the Westinghouse topical report titled "Eagle-21 Microprocessor-Based Process Protection System," WCAP-12374 Revision 1, dated December 1991. This

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report was submitted for NRC staff review in a letter dated February 26, 1992. The V&V plan was used by Westinghouse throughout the design, assembly, and testing of WBN's Eagle-21 system before it was shipped to the site for installation. The results of the V&V program are described in the Westinghouse topical report titled "Watts Bar Eagle 21 Process Protection System Replacement Hardware Verification and Validation Final Report," WCAP-13191 Revision 2, dated October 1992. This report is provided as Enclosure 1.

TVA reviewed and approved Westinghouse's V&V plan. TVA also reviewed and approved the principal engineering documents for the Eagle-21 system as they were completed by Westinghouse. The TVA oversight role included monitoring of V&V activities. Near the completion of Westinghouse's V&V activities, TVA personnel visited Pittsburgh to review the V&V process and audit supporting documentation. Enclosure 2 is a report describing this audit and the actions resulting from it. A letter from Westinghouse to TVA is included at the end of Enclosure 2 to summarize the closure of open items from TVA's audit.

Based on the detailed information presented in Enclosures 1 and 2, TVA considers that verification and validation of WBN's Eagle-21 system is complete and acceptable.

If you have any questions about the information provided in this letter, please telephone John Vorees at (615) 365-8819.

Very truly yours,



William J. Museler

Enclosures
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cc (Enclosures):

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ENCLOSURE 1

WCAP-13191

REVISION 2

WATTS BAR EAGLE 21 PROCESS PROTECTION SYSTEM REPLACEMENT HARDWARE
VERIFICATION AND VALIDATION FINAL REPORT