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NOV 18 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) - FUNCTIONAL DIVERSITY ASSESSMENT FOR EAGLE-21
PROCESS PROTECTION SYSTEM (TAC M81063)

This letter submits WCAP-13869 Revision 1, "Functional Diversity Assessment for the Reactor Protection System/Engineered Safety Features Actuation System at Watts Bar Units 1 and 2," to assist in the NRC staff review of WBN's new Eagle-21 process protection system. WCAP-13869 is a topical report prepared by Westinghouse Electric Corporation to address concerns about common-mode failure within the microprocessor-based, digital electronics of WBN's Eagle-21 system. The report demonstrates that, even with a postulated common-mode failure of Eagle-21, there are sufficient diverse means available to mitigate any of the accident transients which are analyzed as part of WBN's licensing basis.

WCAP-13869 is similar to assessments performed by Westinghouse for the Eagle-21 systems at Zion and Diablo Canyon. In fact, TVA initiated the functional diversity assessment for WBN based on the experiences of these two plants during NRC staff review of their Eagle-21 digital protection system upgrades. The NRC staff subsequently requested a functional diversity assessment for WBN in a letter dated June 14, 1993.

It is important to note that, even though the functional diversity assessment has been performed as requested by the NRC staff, neither Westinghouse nor TVA agree with the underlying assumption for this analysis. Both Westinghouse and TVA consider a common-mode failure of the Eagle-21 system to be highly improbable and beyond the design basis of WBN's reactor protection system (RPS) and engineered safety features actuation system

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(ESFAS). Eagle-21 equipment provides most of the signal processing and trip actuation circuitry within RPS and ESFAS. Most concerns about a common-mode failure of the Eagle-21 system hypothesize either an undetected software error or a hardware fault resulting from a deficiency in microprocessor design or manufacturing. Westinghouse and TVA believe that the first concern about an undetected software error is negated by the extensive verification and validation (V&V) process that Westinghouse uses to review and certify Eagle-21 software and any changes to it. The V&V activities for WBN's Eagle-21 software are described in detail in a letter dated November 8, 1993. The second concern about an inherent, undiscovered microprocessor fault is no longer a realistic issue in view of the widespread use of microprocessors throughout business and industry. Many of these microprocessors are virtually identical to those used in WBN's Eagle-21 system, and they have operated successfully for millions of hours.

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

Enclosure

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