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MAR 30 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) - RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION (RAI) - USE OF LINEAR ELASTIC ANALYSIS METHODS (TAC M85774 AND M85775)

Reference: NRC letter dated February 22, 1993, FSAR Description of Use of Linear Elastic Methods (TAC M85774 and M85775)

In the referenced letter, the staff requested additional clarification relative to the design methodology of steel members that are subjected to thermal restraints. Specifically, two items discussed in Appendix 3.8E of the WBN Final Safety Analysis Report (FSAR) (as revised by Amendment 70) require further explanation.

The enclosure to this letter provides the requested supplemental discussion in these areas. If any questions remain, please contact P. L. Pace at (615) 365-1824.

Very truly yours,

W. J. Museler

William J. Museler

Enclosure
cc: See page 2

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cc (Enclosure):

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ENCLOSURE

RESPONSE TO NRC
REQUEST FOR ADDITIONAL INFORMATION (RAI)
USE OF LINEAR ELASTIC ANALYSIS METHODS
(TAC M85774 AND M85775)

Limiting Values

The note on page 3.8E-6 of the WBN FSAR, which reads "See Table 3.8E-1 for limiting values. Limiting values do not apply when thermal loads are present," was added under Amendment 70. The limiting values referred to are those established by TVA in Table 3.8E-1. For load combinations (1a), (2a), (3a), and (4) through (9), TVA imposed a limiting value on the allowable stresses which in some instances are less than the allowable stresses in FSAR Section 3.8E.4.

As a result of interactions with the staff on the methodology and criteria acceptable for the evaluation of structural steel under extreme environmental temperatures, TVA committed to use an analysis methodology consistent with the Standard Review Plan (SRP) Section 3.8.4. To this end, TVA removed the self-imposed limitation in Table 3.8E-1 when thermal loads are present (load combinations (1a), (2a), (3a), and (4) through (9) when Ta is present). For those load combinations, TVA utilizes the full SRP allowable, which is the allowable stress from AISC multiplied by the appropriate SRP factor.

To clarify this methodology, FSAR Section 3.8E.4(b) will be revised with a change in wording of the subject note. The new note will read, "If thermal loads are not present, the allowable stress shall be limited to the values given in Table 3.8E-1."

Buckling Allowables

The criteria for margin against buckling failure has been established in the FSAR in Table 3.8E-1 under notes 1 and 3. For service loads, the basis for this criteria is the AISC allowables. For accident loads, the basis is AISC allowables multiplied by the SRP load factor, but limited by note 3 of Table 3.8E-1. This criteria was previously reviewed by the staff and approved by NRC letter from Peter S. Tam to O. D. Kingsley, Jr., dated January 4, 1991, Watts Bar Nuclear Plant - Completion of FSAR Amendment 54 through 64 Review by Division of Engineering Technology (TAC No. 77325).

In order to implement TVA's commitment to use a methodology consistent with SRP Section 3.8.4 for the evaluation of structural steel under extreme environmental temperatures, the revised sentence on page 3.8E-6 removes the limits imposed by note 3. Without this limit, the criteria established in the FSAR under accident load combinations is consistent with SRP 3.8.4, i.e., AISC allowables multiplied by the appropriate SRP load factor.