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

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December 18, 2003

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

10 CFR 50.46

Gentlemen:

In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - EMERGENCY CORE COOLING SYSTEM (ECCS) EVALUATION MODEL CHANGES - 30 DAY REPORT AND ANNUAL REPORT

References:

(1) TVA letter to NRC, February 21, 2003, "WBN Unit 1 - ECCS Evaluation Model Changes - 30 Day Report"

(2) Westinghouse letter to TVA (WAT-D-11195), November 11, 2003, "Watts Bar Nuclear Plant Units 1 & 2, 10 CFR 50.46 Mid-Year Notification and Reporting for 2003," (Received November 18, 2003).

The purpose of this letter is notify the NRC of change or errors discovered in the WBN ECCS evaluation models for peak cladding temperature (PCT) in accordance with 10 CFR 50.46, and actions TVA is taking to address a change of more than 50°F in calculated PCT. This report includes model changes or errors since TVA's last report (Reference 1), and is intended to satisfy both the 30-day and annual reporting requirements of 10 CFR 50.46. As reported by Westinghouse in Reference 2, this change to WBN's ECCS evaluation model affects only the small break LOCA (SBLOCA) analysis, and is described in Enclosure 1. The PCT margin allocations resulting from this change are summarized in Enclosure 2.

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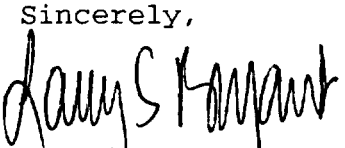
As shown in Enclosure 2, the inclusion of this 35°F penalty results in a PCT of 1185°F (1305°F less 120°F Temporary SI Leakage to PRT which expired at the end of Cycle 5). This 1185°F PCT is considerably less than the 2200°F regulatory limit and is also below the previously evaluated and reported temporary PCT of 1270°F discussed in Reference 1.

This PCT assessment for SBLOCA, when combined with previously reported margin allocations of 24°F (Enclosure 2, Items A, B, and E.1), exceeds the threshold defined in 10 CFR 50.46(a)(3)(i) for a change of more than 50°F in calculated PCT. Therefore, TVA is reporting this change within the 30-day time period specified in 10 CFR 50.46. In accordance with 10 CFR 50.46(a)(3)(ii), TVA is required to provide a proposed schedule for providing a reanalysis or taking other actions needed to show compliance with 50.46 requirements for the changes or errors discussed above. A revised analysis is now in progress as part of the WBN replacement steam generator project. This analysis will be completed and become effective in support of the WBN Refueling Outage following Cycle 7 when the steam generators are replaced, currently scheduled for Fall 2006.

Accordingly, since the current model has significant margin to regulatory limits on peak clad temperature, WBN proposes that the staff accept the replacement generator analysis and schedule as meeting the requirement to provide a date for a replacement analysis.

Enclosure 3 lists the commitment for this submittal. If you have any questions about this change, please contact Paul Pace at (423) 365-1824.

Sincerely,



for W. R. Lagergren

Enclosures
cc: See page 3

cc (Enclosures):
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ENCLOSURE 1

DESCRIPTION OF CHANGES WHICH AFFECT WBN'S EMERGENCY CORE COOLING SYSTEM EVALUATION MODEL(S) AND ITS CALCULATION OF PEAK CLADDING TEMPERATURE

NOTRUMP Bubble Rise / Drift Flux Model Inconsistency Corrections

Background

NOTRUMP was updated to resolve some inconsistencies in several drift flux models as well as the nodal bubble rise / droplet fall models. In summary, these changes include: Bubble rise and droplet fall model calculations were made consistent with flow link calculations. Corrections were made to limits employed in the vertical counter-current flooding models. Checking logic was added to correct situations where drift flux model inconsistencies could result (i.e., prevent no liquid from an all vapor node and no vapor from all liquid node.) Also, a more rigorous version of the Yea Drift Flux Model was implemented since the previous version of this model was incorrectly restricted to a 50% void fraction limit. This represents a closely-related group of Non-Discretionary Changes in accordance with WCAP Section 4.1.2 of WCAP 13451.

Affected Evaluation Models

1985 Westinghouse Small Break LOCA Evaluation Model with NOTRUMP

Estimated Effect

Representative plant calculations using the NOTRUMP code demonstrate that the implementation of these corrections leads to a bounding 35°F increase of the calculated PCT for 10 CFR 50.46 purposes. As shown in the attached summary sheet, the inclusion of this penalty results in a PCT of 1185°F (1305°F less 120°F Temporary SI Leakage to PRT which expired at the end of Cycle 5). This 1185°F PCT is considerably less than the 2200°F regulatory limit and is also below the previously evaluated temporary PCT of 1270°F discussed in Reference 1.

References

1. TVA letter to NRC, February 21, 2003, "WBN Unit 1 - ECCS Evaluation Model Changes - 30 Day Report"

2. Westinghouse letter to TVA (WAT-D-11195), November 11, 2003, "Watts Bar Nuclear Plant Units 1 & 2, 10 CFR 50.46 Mid-Year Notification and Reporting for 2003"

ENCLOSURE 2

SUMMARY OF PEAK CLADDING TEMPERATURE MARGIN ALLOCATIONS RESULTING FROM CHANGES TO THE EMERGENCY CORE COOLING SYSTEM EVALUATION MODEL

Westinghouse LOCA Peak Clad Temperature Summary for Small Break

Plant Name: Watts Bar Unit 1
Utility Name: Tennessee Valley Authority
Revision Date: 10/14/03

Analysis Information

EM:	NOTRUMP	**Analysis Date:**	11/1/96	**Limiting Break Size:**	4 inch
FQ:	2.5	**FdH:**	1.65		
Fuel:	Vantage +	**SGTP (%):**	10		
Notes:	Mixed Core - Vantage + / Performance +				

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	1126	1,2	
MARGIN ALLOCATIONS (Delta PCT)			
A. PRIOR PERMANENT ECCS MODEL ASSESSMENTS			
1 . NOTRUMP Mixture Level Tracking / Region Depletion Errors	13	4	
B. PLANNED PLANT CHANGE EVALUATIONS			
1 . Annular Blankets	10	3	
C. 2003 PERMANENT ECCS MODEL ASSESSMENTS			
1 . NOTRUMP Bubble Rise / Drift Flux Model Inconsistency Corrections	35	6	
D. TEMPORARY ECCS MODEL ISSUES*			
1 . None	0		
E. OTHER			
1 . Tavg Uncertainty of 6 °F	1		
2 . Temporary SI Leakage to PRT	120	5	(a)
LICENSING BASIS PCT + MARGIN ALLOCATIONS	**PCT =** 1305		

* It is recommended that these temporary PCT allocations which address current LOCA model issues not be considered with respect to 10 CFR 50.46 reporting requirements.

References:

1 . WAT-D-10337, "Tennessee Valley Authority, Watts Bar Nuclear Plant, Final Safety Evaluation to Support Technical Specification Changes," March 5, 1997.

2 . WAT-D-10356, "Tennessee Valley Authority, Watts Bar Nuclear Plant Units 1 & 2, Final Report and Safety Evaluation for the 10% SGTP Program," June 2, 1997.

3 . WAT-D-10618, "Tennessee Valley Authority, Watts Bar Nuclear Plant Unit 1, 10 CFR 50.46 Annual Notification and Reporting for 1998," March 5, 1999.

4 . WAT-D-10810, "Tennessee Valley Authority, Watts Bar Nuclear Plant Unit 1, 10 CFR 50.46 Appendix K (BART/BASH/NOTRUMP) Evaluation Model Mid-Year Notification and Reporting for 2000," June 30, 2000.

5 . WAT-D-11100, "Tennessee Valley Authority, Watts Bar Nuclear Plant Unit 1, Evaluation of Temporary SI Leakage to PRT," January 15, 2003.

6 . WAT-D-11195, "10 CFR 50.46 Mid-Year Notification and Reporting for 2003," October 2003.

Notes:

(a) PCT assessment for reduced SI flow due to SI leakage to PRT is applicable until the end of Cycle 5.

ENCLOSURE 3

LIST OF COMMITMENTS

TVA will perform a revised SBLOCA analysis as part of the WBN replacement steam generator project. This analysis will be completed and become effective in support of the WBN Refueling Outage following Cycle 7 when the steam generators are replaced, currently scheduled for Fall 2006.