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

SEP 0 7 2001

10 CFR 50.46(a)(3)(ii)

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

Gentlemen:

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

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - EMERGENCY CORE COOLING SYSTEM (ECCS) EVALUATION MODEL CHANGES - 30 DAY REPORT AND REVISED ANNUAL NOTIFICATION REPORT FOR 2000

References:

(1) TVA letter to NRC, October 26, 2000, "WBN Unit 1 - ECCS Evaluation Model Changes - 30 Day Report and Annual Notification and Reporting for 2000"

(2) Westinghouse letter to TVA (WAT-D-10904), March 6, 2001, "WBN Unit 1, 10 CFR 50.46 Annual Notification and Reporting for 2000"

(3) Westinghouse letter to TVA (WAT-D-10942), August 8, 2001, "WBN Unit 1, Evaluation of Temporary Safety Injection Leakage to PRT"

The purpose of the letter is notify the NRC of changes or errors discovered in the WBN ECCS evaluation models for peak cladding temperature (PCT) in accordance with 10 CFR 50.46, and actions TVA has taken to address a temporary 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. These changes to WBN's ECCS evaluation models affect both the best estimate large break loss of coolant accident (BELOCA) analysis and the small break LOCA (SBLOCA) analysis and are described in Enclosure 1. The PCT margin allocations resulting from these changes are summarized in Enclosure 2.

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This report identifies changes that affect PCT margin allocations for BELOCA as reported to TVA by Westinghouse Electric Company in Reference 2, and for SBLOCA, as reported by Westinghouse in Reference 3. For BELOCA, Reference 2 identified an additional PCT impact of 4°F which had not been reported in Reference 1, therefore, the enclosed BELOCA PCT margin allocation represents a revised report for 2000. The resulting BELOCA PCT value of 1777°F remains below the licensing basis value of 1892°F discussed in Reference 1, therefore no further actions are required. There were no additional PCT impacts reported in Reference 2 for SBLOCA from those reported in Reference 1.

As discussed in Enclosure 1, TVA has experienced a condition involving apparent leakage when running the Watts Bar Unit 1 Safety Injection (SI) pumps which could result in diverting some SI flow to the pressurizer relief tank (PRT). TVA has been taking measures to identify and correct this situation, including evaluation and replacement/refurbishment of SIS piping relief valves. TVA requested Westinghouse to evaluate the impact of this condition. In Reference 3, Westinghouse concluded that there will be sufficient flow to meet the requirements of the safety analyses. Westinghouse evaluated the SI flow reduction for its impact on SBLOCA and BELOCA. As a result, a temporary PCT penalty of 120°F has been assessed on SBLOCA for the reduction in SI flow. This penalty has been added to the PCT Summary Sheet in Enclosure 2 and is expected to remain in place for the duration of the current operating cycle (Cycle 4). As shown in the summary sheet, the inclusion of this penalty results in a PCT of 1270°F which is considerably less than the 2200°F regulatory limit. There was no impact associated with the limiting PCT for BELOCA.

The temporary PCT assessment of 120°F for SBLOCA 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 these changes within the 30-day time limit 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. As a result of the temporary nature of the PCT assessment due to a hardware condition, and based on the acceptable evaluation results described herein, the WBN SBLOCA ECCS Model for the current cycle satisfies and complies with the 10 CFR 50.46 acceptance criteria.

Accordingly, TVA has completed the analysis required of 10 CFR 50.46 for changes or errors in an ECCS model and no further action is currently required.

SEP 0 7 2001

Because the SBLOCA change is a temporary condition which will be moot after the correction of the safety injection flow deficiency, TVA does not consider it will be necessary to make a 30-day report regarding the negative 120°F PCT change (increasing margin) that will occur when WBN reverts back to the previous SBLOCA model.

If you should have any questions concerning this matter, please contact me at (423) 365-1824.

Sincerely,

P. L. Pace
Manager, Licensing and
Industry Affairs

Enclosures
cc (Enclosures):
NRC Resident Inspector
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

Mr. L. Mark Padovan, Senior Project Manager
U.S. Nuclear Regulatory Commission
MS 08G9
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852-2739

U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, Georgia 30303

ENCLOSURE 1

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

1. Evaluation of Temporary Safety Injection Leakage to Pressurizer Relief Tank (PRT)

Background

Westinghouse was informed by TVA of an apparent leak when running the Safety Injection (SI) pumps in Watts Bar Unit 1 which could result in a loss of up to 30 gpm SI flow to the pressurizer relief tank (PRT). TVA requested Westinghouse to evaluate the impact of this condition. Based on the following evaluations, Westinghouse concluded that the SI shortfall can be accommodated by the amount of margin available and/or the lack of sensitivity to the SI flow volume in the various design basis analyses, and the pump performance will not be degraded and there will be sufficient flow to meet the requirements of the safety analyses. This conclusion is valid for the duration of the current operating cycle (Cycle 4) and is not intended to support a permanent reduction in SI flow. In particular, the evaluations do not account for the insertion of Tritium Producing Burnable Absorber Rods in future cycles.

Affected Evaluation Models

1985 Westinghouse Small Break LOCA Evaluation Model with NOTRUMP
1996 Westinghouse Best Estimate Large Break LOCA Evaluation Model

Estimated Effect

SBLOCA

The 30 gpm SI flow reduction was evaluated for its impact on small break LOCA (SBLOCA). The impact was evaluated based on the SBLOCA analysis of record (References 1 and 2). The most recent small break LOCA PCT summary sheet was transmitted via Reference 3. A PCT penalty of 120°F has been assessed for the reduction in SI flow. This penalty, which has been added to the PCT Summary Sheet provided in Enclosure 2, is expected to remain in place for the duration of the current operating cycle (Cycle 4). As shown in the summary sheet, the inclusion of this penalty results in a PCT of 1270°F which is considerably less than the 2200°F regulatory limit.

Best Estimate LBLOCA (BELOCA)

The BELOCA analysis for Watts Bar was evaluated for the impact of the reduction in SI flow. It was determined that the 30 gpm reduction results in a total integrated SI flow reduction of 3.36%. Based on a calculation documented in Reference 4, which reduced overall SI flow by 10%, it is concluded that the 30 gpm SI flow reduction has no effect on the limiting PCT for the BELOCA.

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 10 % SGTP Program", June 2 1997.

3. TVA letter to NRC, "WBN Unit 1 - ECCS Evaluation Model Changes - 30 Day Report and Annual Notification and Reporting for 2000," October 26, 2000.

4. WCAP-14839, "Best Estimate Analysis of the Large Break Loss of Coolant Accident for the Watts Bar Nuclear Plant," July 1997.

2. Decay Heat Uncertainty Error in Monte Carlo Calculations

Background

It was determined that an error existed in the calculation of decay heat uncertainty in the Monte Carlo code used for calculation of the 95th percentile PCT for Best Estimate LBLOCA. This issue was determined to be a Non-Discretionary change in accordance with Section 4.1.2 of WCAP-13451.

Affected Evaluation Models

1996 Westinghouse Best Estimate Large Break LOCA Evaluation Model

Estimated Effect

Plant specific PCT calculations were performed to assess the impact of this error for all analyses using the affected evaluation models. The current code version contains the correction. The PCT impact for WBN Unit 1 due to this error is 4°F.

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 Small Break

Plant Name: Watts Bar Unit 1
Utility Name: Tennessee Valley Authority
Revision Date: 8/ 3/01

Analysis Information

EM:	NOTRUMP	**Analysis Date:**	11/96	**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. 10 CFR 50.59 SAFETY EVALUATIONS			
1 . Annular Blankets	10	3	
C. 2001 10 CFR 50.46 MODEL ASSESSMENTS (Permanent Assessments of PCT Margin)			
1 . None	0		
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 =** 1270		

* 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-10942, "Tennessee Valley Authority, Watts Bar Nuclear Plant Unit 1, Evaluation of Temporary SI Leakage to PRT," August 3, 2001.

Notes:

(a) PCT assessment for reduced SI flow due to SI leakage to PRT is applicable until the end of Cycle 4.

Westinghouse LOCA Peak Clad Temperature Summary For Best Estimate Large Break

Plant Name: Watts Bar Unit 1
Utility Name: Tennessee Valley Authority
Revision Date: 2/23/01

Analysis Information

EM:	WCOBRA/TRAC	**Analysis Date:**	08/98	**Limiting Break Size:**	Guillotine
FQ:	2.5	**FdH:**	1.65		
Fuel:	Vantage +	**SGTP (%):**	10		**Composite**
Notes:	Mixed Core - Vantage + / Performance +				

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	**1892**	**1,2**	
MARGIN ALLOCATIONS (Delta PCT)			
A. PRIOR PERMANENT ECCS MODEL ASSESSMENTS			
1 . Vessel Channel DX Error	-4	3	
B. 10 CFR 50.59 SAFETY EVALUATIONS			
1 . Accumulator Line/Pressurizer Surge Line Data Evaluation	-131	4	
2 . Increased Accumulator Temperature Range Evaluation	4	5	
3 . 1.4% Uprate Evaluation	12	5	
C. 2000 10 CFR 50.46 MODEL ASSESSMENTS (Permanent Assessments of PCT Margin)			
1 . MONTECF Decay Heat Uncertainty Error	4	6	
D. TEMPORARY ECCS MODEL ISSUES*			
1 . None	0		
E. OTHER			
1 . None	0		
LICENSING BASIS PCT + MARGIN ALLOCATIONS	**PCT =** 1777		

* 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 . WCAP-14839, Rev. 1, "Best Estimate Analysis of the Large Break Loss of Coolant Accident for the Watts Bar Nuclear Plant," August 1998.

2 . WAT-D-10499, "Tennessee Valley Authority Watts Bar Nuclear Plant Units 1 and 2, 10 CFR 50.46 Annual Notification and Reporting for 1997," February 27, 1998.

3 . WAT-D-10618,"Tennessee Valley Authority, Watts Bar Nuclear Plant Units 1 and 2, 10 CFR 50.46 Annual Notification and Reporting for 1998," March 5, 1999.

4 . WAT-D-10725,"Tennessee Valley Authority, Watts Bar Nuclear Plant Unit 1, 10 CFR 50.46 Annual Notification and Reporting for 1999," February 23, 2000.

5 . WAT-D-10840, "Tennessee Valley Authority, Watts Bar Nuclear Plant Unit 1, Final Deliverables for 1.4% Uprate Program," August 31, 2000.

6 . WAT-D-10904, "10 CFR 50.46 Annual Notification and Reporting for 2000," February 2001.

Notes:

None