

June 4, 2008

10 CFR 50.46

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority (TVA)	)	50-328

**SEQUOYAH NUCLEAR PLANT (SQN) - 10 CFR 50.46 - 30-DAY SPECIAL REPORT  
OF SIGNIFICANT CHANGES**

Reference: TVA letter to NRC dated November 14, 2007, "Sequoyah Nuclear Plant (SQN) - 10 CFR 50.46 Annual Report of Non-Significant Changes"

The purpose of this letter is to provide changes to the calculated peak cladding temperature (PCT) resulting from recent changes to the SQN emergency core cooling system (ECCS) evaluation model. This submittal satisfies the reporting requirements in accordance with 10 CFR 50.46(a)(3)(ii). The enclosure contains a summary of the recent changes to the SQN Units 1 and 2 ECCS evaluation model and the affect of these changes on the calculated PCT. The changes result in an absolute calculated peak clad temperature change in excess of 50 degrees Fahrenheit from that reported in the last annual report.

There are no regulatory commitments in this letter. Please direct questions concerning this issue to me at (423) 843-7170.

Sincerely,

***Original signed by:***

James D. Smith  
Manager, Site Licensing and  
Industry Affairs

U.S. Nuclear Regulatory Commission  
Page 2  
June 4, 2008

cc (Enclosure):

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## ENCLOSURE

### TENNESSEE VALLEY AUTHORITY (TVA) SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2

#### 10 CFR 50.46 SPECIAL REPORT OF SIGNIFICANT CHANGES

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In accordance with the reporting requirements of 10 CFR 50.46 (a)(3)(ii), the following is a summary of the limiting design basis accident (loss-of-coolant accident) (LOCA) analysis results established using the current SQN emergency core cooling system (ECCS) evaluation model.

#### Small Break LOCA (SB LOCA)

	<u>PCT</u>
Previous Licensing Basis PCT (November 08, 2004)	1162 degrees Fahrenheit (F)
Reanalysis for revised ECCS pump performance and core power peaking analytical input assumptions.	+241 degrees F
Updated Licensing Basis PCT	<u>1403 degrees F</u>
Net Change	+241 degrees F

The SQN large break LOCA (LB LOCA) has been recently analyzed using the realistic (LB LOCA) methodology described in Topical Report No. EMF-2103, Revision 00, "Realistic Large Break LOCA Methodology for Pressurized Water Reactors." A number of modified analytical input parameters were incorporated into the realistic LB LOCA analysis to support improved fuel utilization and expand the operating margin for the ECCS pumps.

For consistency with the realistic large break LOCA analysis, the SQN SB LOCA analysis has recently been analyzed to apply similar changes to the SB LOCA analytical input parameters. The analysis was performed using the same SQN plant-specific evaluation model with the same evaluation methodology (i.e., Topical Report No. BAW-10168P-A, Revision 03, "BWNT Loss-of-Coolant Accident Evaluation Model for Recirculating Steam Generator Plants - Volume II - Small Break") as the current analysis of record. Specific changes to the SB LOCA analytical input parameters include 1) an increase in the core power peaking factor ( $F_q$ ) from 2.5 to 2.65, 2) an increase in the hot channel enthalpy factor ( $f\Delta h$ ) from 1.70 to 1.89, and 3) a 5 percent reduction in the minimum developed head values for the ECCS charging (high head) and safety injection (intermediate head) pumps.

#### Results

The SB LOCA analysis with the revised analytical input parameters discussed above meet the 10 CFR 50.46 acceptance criteria. The limiting calculated fuel cladding temperature was determined to be 1403 degrees F for a 2.75-inch diameter break size. This result represents a net increase in the calculated peak clad temperature from the previous analysis of record of 241 degrees F.