

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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WBRD-50-390/84-29  
WBRD-50-391/84-26

U.S. Nuclear Regulatory Commission  
Region II

Attn: Mr. James P. O'Reilly, Regional Administrator  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30323

Dear Mr. O'Reilly:

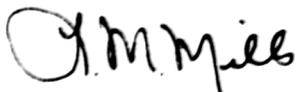
**WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - INCREASED ENVIRONMENTAL TEMPERATURES IN  
THE MAIN STEAM VALVE ROOMS - WBRD-50-390/84-29, WBRD-50-391/84-26 - THIRD  
INTERIM REPORT**

The subject deficiency was initially reported to NRC-OIE Inspector P. E. Fredrickson on May 22, 1984 in accordance with 10 CFR 50.55(e) as NCR WBN NEB 8403. Interim reports were submitted on July 21 and August 17, 1984. Enclosed is our third interim report. We expect to submit our next report on or about June 14, 1985. We consider 10 CFR Part 21 applicable to this deficiency.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Licensing

Enclosure

cc: Mr. Richard C. DeYoung, Director (Enclosure)  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Records Center (Enclosure)  
Institute of Nuclear Power Operations  
1100 Circle 75 Parkway, Suite 1500  
Atlanta, Georgia 30339

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## ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2  
INCREASED ENVIRONMENTAL TEMPERATURES IN THE MAIN STEAM VALVE ROOMS  
NCR WBN NEB 8403  
WBRD-50-390/84-29 AND WBRD-50-391/84-26  
10 CFR 50.55(e)  
THIRD INTERIM REPORT

### Description of Deficiency

The current Westinghouse main steam line break (MSLB) mass and energy release analysis did not consider the effects of steam superheating following steam generator tube uncover. Inclusion of steam superheating will result in a large increase in the environmental temperature following an MSLB in either main steam valve vault. The new temperature (446°F estimate) will exceed the currently predicted temperature of 325°F for WBN and must be considered in regard to qualification of class 1E electrical equipment and safety-related mechanical equipment.

### Interim Progress

TVA has completed an analysis to revise the environmental profiles resulting from a postulated main steam line break (MSLB) in the main steam line valve rooms. These profiles were developed utilizing data from the Westinghouse reanalysis of an MSLB inside containment for Catawba Nuclear Station which includes the effects of steam superheating due to steam generator tube uncover during the MSLB. TVA is confident that the application of the release rates for an MSLB inside containment conservatively bounds the release rates for a valve room MSLB, and because of the design similarities between Catawba and Watts Bar, TVA is also confident that the use of the Catawba data for Watts Bar is appropriate.

The TVA analysis utilizing the Catawba data predicts a peak environmental temperature of 446°F which exceeds the temperature used for equipment qualification and structural design calculations. As a result, a comprehensive evaluation of the effects of the increased temperature upon the plant's capability to achieve controlled hot standby was performed. The evaluation process consisted of (1) a heat transfer analysis of the structural steel and concrete to determine peak temperatures and/or worst case thermal gradients, (2) a subsequent failure evaluation of the structural steel and concrete in the valve vault, (3) an examination of the effects of the increased temperature profile upon the environmental qualification of 1E electrical equipment and safety-related mechanical equipment, and (4) a safety evaluation of the plant's safe shutdown capability.

TVA's evaluation of the postulated MSLB in the valve vault indicated that (1) the structural steel will remain intact even though some localized yielding will occur, (2) the valve vault concrete may undergo some localized damage with some spalling but its structural integrity will not be affected, and (3) all safety-related mechanical and class 1E electrical equipment (with the exception of postaccident monitoring (PAM) instruments) will perform all their required