

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

34 OCT 1 P 1 September 27, 1984

WBRD-50-390/84-39  
WBRD-50-391/84-34

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:

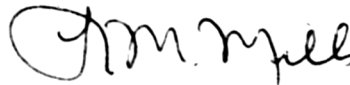
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - SPURIOUS VALVE OPERATION DUE TO FIRE  
DAMAGE - WBRD-50-390/84-39, WBRD-50-391/84-34 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector  
Dave Verrelli on July 30, 1984 in accordance with 10 CFR 50.55(e) as NCR  
5760. Our first interim report was submitted on August 24, 1984. Enclosed is  
our final report.

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  
SPURIOUS VALVE OPERATION DUE TO FIRE DAMAGE  
NCR 5760  
WBRD-50-390/84-39 AND WBRD-50-391/84-34  
10 CFR 50.55(e)  
FINAL REPORT

### Description of Deficiency

During July 1984, TVA performed a 10 CFR 50 Appendix R design review for Watts Bar Nuclear Plant (WBN). During this review, several sets of redundant valves were observed to be capable of invalidating the safe shutdown analysis for WBN. This is due to potentially spurious valve operation as a result of fire damage to control circuitry. The following sets of valves were identified:

1-FCV-67-126, -128 (Essential Raw Cooling Water (ERCW) System)  
1-FCV-70-197, -010 (Component Cooling Water (CCW) System)  
1-FCV-70-002, -003 (CCW system)

Additional valves and/or systems could be affected.

TVA has determined the cause of this deficiency to be a design oversight. This resulted from not having an established procedure for performing a fire protection analysis or for reviewing previously implemented design to ensure compliance with 10 CFR 50, Appendix R.

### Safety Implications

Spurious actuation of an affected valve(s) during a fire could prevent the safe shutdown of the plant. This could result by spuriously closing essential safety-related flow paths, or by spuriously diverting flow from an essential path to another nonessential system or component. This could adversely affect the safe operation of the plant.

### Corrective Action

TVA has completed a review of all 10 CFR 50, Appendix R, shutdown paths at WBN. All valves capable of invalidating the Appendix R safe shutdown analysis due to spurious operation as a result of fire damage to control circuitry have been identified. These valves include but are not limited to those sets of valves identified above.

TVA is evaluating the existing cable routing for the valves identified in the above review. This evaluation will identify all required control circuit wiring modifications required to prevent spurious valve operation due to fire damage, and will ensure the ability to achieve and maintain a safe shutdown of the plant. All necessary redesign and construction modifications work will be accomplished under engineering change notices (ECN) 5109 and 5110 for units 1 and 2, respectively.

To prevent recurrence of this deficiency, TVA has issued a special engineering procedure (SEP) EN DES-SEP 84-09, entitled "Safe Shutdown Analysis for Postulated Fire at Watts Bar Nuclear Plant." This procedure will provide the framework and establish requirements to ensure that an adequate analysis and review is performed for WBN to achieve and maintain a plant configuration that is in compliance with 10 CFR 50, Appendix R. This SEP will remain in effect until establishment of design criteria that will provide permanent plant design guidance for adhering to the requirements of 10 CFR 50, Appendix R.

SEP 84-09 will be incorporated into a WBN design criteria by August 1, 1986. All corrective action for unit 1 will be completed by November 29, 1984. It is acceptable for corrective action for this item to go beyond fuel loading for unit 1 because cable separation for safe shutdown paths as specified by 10 CFR 50, Appendix R, is not required until initial criticality is achieved. All corrective action for unit 2 will be completed by November 1, 1985.