

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

September 26, 1983 8:56

WBRD-50-390/83-31  
WBRD-50-391/83-31

U.S. Nuclear Regulatory Commission  
Region II  
Attn: Mr. James P. O'Reilly, Regional Administrator  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

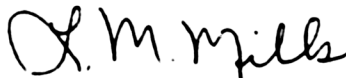
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - REACTOR TRIP BREAKERS DESIGN ERROR  
WBRD-50-390/83-31, WBRD-50-391/83-31- FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Linda Watson on May 5, 1983 in accordance with 10 CFR 50.55(e) as NCR WBN NEB 8305. Our first interim report was submitted on June 6, 1983. Enclosed is our final report. 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  
REACTOR TRIP BREAKERS DESIGN ERROR  
NCR WBN NEB 8305  
WBRD-50-390/83-31, WBRD-50-391/83-31  
10 CFR 50.55(e)  
FINAL REPORT

### Description of Deficiency

In April 1983, Westinghouse Electric Corporation, Pittsburgh, Pennsylvania, notified TVA of a potential problem with the model DS-416 reactor trip breakers supplied for use at Watts Bar Nuclear Plant (WBN). According to Westinghouse letters WAT-D-5433 and WAT-D-5451, an undervoltage attachment of the DS-416 breaker failed to trip during testing at a plant operated by another utility. Investigation of a second, independent incident revealed a missing retaining ring on an undervoltage attachment pivot shaft which allowed the shaft to move laterally such that one end came out of its guide hole in the frame of the undervoltage attachment, and prevented the attachment from operating on demand. The Westinghouse evaluation of the failures revealed a discrepancy in design wherein a 1972 retaining ring design change increased the retaining ring's size without a corresponding increase of the groove in the shaft. Westinghouse also concluded that improper alignment and clearances between the undervoltage attachment and the breaker trip shaft could cause misoperation of the breakers.

### Safety Implications

While no failure of the reactor trip breaker has been identified at WBN for the retaining ring deficiency, if this condition had remained uncorrected, it could have caused the undervoltage attachment to fail during an automatic trip signal which could adversely affect safe operation of the plant.

### Corrective Action

Westinghouse has revised their undervoltage attachment design and has provided new attachments with wider grooves for installation at Watts Bar. These new attachments will be installed by TVA, per Westinghouse field change notices (FCNs) WATM-10687 for unit 1 and WBTM-10659 for unit 2 by November 30, 1983. (These FCNs also contain installation procedures to ensure proper alignment and interface of the attachment with respect to the breaker trip shaft.)

To prevent a recurrence Westinghouse has implemented design assurance and verification procedures which now require independent design and safety review of changes to safety-related designs.