

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

85 SEP 12 AIO: 15 September 9, 1985

WBRD-50-390/85-29

WBRD-50-391/85-28

U.S. Nuclear Regulatory Commission
Region II

Attn: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Dr. Grace:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - DEFECTIVE 480V WESTINGHOUSE SWITCHGEAR
BREAKERS - WBRD-50-390/85-29, WBRD-50-391/85-28 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
Al Ignatonis on July 25, 1985 in accordance with 10 CFR 50.55(e) as
NCR W-218-P. Enclosed is our final report. We consider 10 CFR Part 21
applicable to this deficiency.

A two-week delay in submittal of this report was discussed with NRC OIE Region
II Inspector Al Ignatonis on August 20, 1985.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. W. Hufham
J. W. Hufham, Manager *by rls*
Licensing and Risk Protection

Enclosure

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

Records Center (Enclosure)
Institute of Nuclear Power Operations
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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
DEFECTIVE 480V WESTINGHOUSE SWITCHGEAR BREAKERS
WBRD-50-390/85-29, WBRD-50-391/85-28
NCR W-218-P
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

TVA's personnel at Watts Bar Nuclear Plant (WBN) have identified four situations where electrically operated Westinghouse type DS 480V switchgear breakers would rack in but would not close electrically. Troubleshooting revealed that in three instances the switchgear's spring release latch was broken, while in the fourth instance the switchgear's roller constraining link had broken.

From preliminary information received from the vendor, TVA has determined that the failure of the spring release latches was due to improper heat treatment which was batch related and occurred in batches produced in early 1975, April 1976, and early 1978. The breakage of the one roller constraining link was a random failure.

Safety Implications

The breakage of a spring release latch or roller constraining link in a DS type breaker prevents the closure of the breaker upon receipt of an electrical signal. This type breakage does not affect the manual closure capability of the breaker nor does it affect the breaker's overcurrent protection function when the breaker is closed. Because of this limited effect on the breakers, TVA has determined that only 29 breakers (all located on the 480V shutdown boards) could have adversely affected plant safety due to this condition. These breakers control safety-related loads and receive automatic closure signals after the load has been shed upon a loss of offsite power or after the failure of the load's redundant counterpart. In either case, the failure of the breaker to automatically close prohibits the operation of the safety-related load until the breaker can be manually closed.

Corrective Action

As stated above, TVA has determined (through Calculation WBN-OSG4-030) that 29 breakers (see Table 1) could, if left uncorrected, have adversely affected plant safety as a result of this deficiency. Seven of these breakers require correction by unit 1 fuel load with another 20 needing repair by unit 1 hot shutdown (12 of these 20 can be left uncorrected until unit 1 hot shutdown on the condition that plant operators are aware that the automatic closure function may not work and the breaker may need to be closed manually). The remaining two breakers are required to be repaired by unit 2 fuel load. TVA

has requisitioned 32 replacement spring release latches and expects to have the 27 breakers associated with unit 1 (identified in Table 1) repaired and back in service by November 1, 1985, contingent upon receipt of the parts onsite by the end of September. If receipt of the parts is delayed, TVA will repair the seven breakers needed for unit 1 fuel load by November 1, 1985, and will issue instructions informing the plant operators of the possible failure of the automatic closure feature for the 12 breakers listed in Table 1. Replacement of the spring release latches for these 12 breakers and the other 8 needed by hot standby will then be scheduled so that they will be back in service before unit 1 enters mode 4. TVA then plans to replace all the remaining suspect latches used in class 1E breakers by September 1, 1986, depending on availability of parts from the manufacturer (the original four breakers have already been repaired).

As the means to prevent a recurrence of this problem, the manufacturer has redesigned the spring release latch to include an increased radii at stress points and a lowering of the minimum acceptable Rockwell hardness limit.

TABLE 1
 CLASS 1E 480V SWITCHGEAR BREAKERS REQUIRING REPAIR
 OF SUSPECT SPRING RELEASE LATCHES

Devices requiring repair of their respective 480V breaker by unit 1 fuel load:

Component cooling system pump 1A-A	- 1-MTR-70-46-A
Component cooling system alternate feeder	- 0-MTR-70-51-S
Component cooling system pump 1B-B	- 1-MTR-70-38-B
Station fire pump 1A-A	- 1-MTR-26-1-A
Station fire pump 1B-B	- 2-MTR-26-4-B
Station fire pump 2A-A	- 2-MTR-26-9-A
Station fire pump 2B-B	- 2-MTR-26-11-B

Devices requiring repair of their respective 480V breaker by unit 1 mode 4 with the condition that plant operators are informed that the automatic closure feature of the breaker may fail and manual closure may be required:

480V shutdown board room air handling unit A-A	- 0-MTR-31-45-A
480V shutdown board room air handling unit C-B	- 0-MTR-31-55-A
480V shutdown board room air handling unit B-A	- 0-MTR-31-44-A
480V shutdown board room air handling unit D-A	- 0-MTR-31-61-B
480V shutdown board room chiller package B-B	- 0-MTR-31-49/2-B
480V shutdown board room chiller package A-A	- 0-MTR-31-36/2-B
Electrical board room air handling unit A-A	- 0-MTR-31-30B-A
Electrical board room air handling unit C-B	- 0-MTR-31-31B-B
Electrical board room air handling unit C-A	- 0-MTR-31-30D-A
Electrical board room air handling unit D-B	- 0-MTR-31-31D-B
Electrical board room air-conditioning compressor A-A	- 0-MTR-21-128/2-A
Electrical board room air-conditioning compressor B-B	- 0-MTR-21-128/2-A

Devices which do not require repair of their respective 480V breakers until unit 1 enters mode 4:

Containment air return fan 1A-A	- 1-MTR-30-38-A
Containment air return fan 1B-B	- 1-MTR-30-39-B
Containment air return fan 2A-A	- 2-MTR-30-38-A
Containment air return fan 2B-B	- 2-MTR-30-39-B
Auxiliary control air compressor A	- 0-MTR-32-25
Auxiliary control air compressor B	- 0-MTR-32-26
Control room air-conditioning compressor A-A	- 0-MTR-31-80/2-A
Control room air-conditioning compressor B-B	- 0-MTR-31-96/2-B

Devices which do not require repair of their respective 480V breaker until unit 2 fuel load:

Component cooling system pump 2A-A	- 2-MTR-70-59-A
Component cooling system pump 2B-B	- 2-MTR-70-33-B