



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

OCT 31 1994

CDR-50-390, 391/94-10

10 CFR 50.55(e)

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

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-390
50-391

WATTS BAR NUCLEAR PLANT (WBN) - UNITS 1 AND 2 - GENERAL ELECTRIC (GE)
MAGNE-BLAST CIRCUIT BREAKERS - CONSTRUCTION DEFICIENCY REPORT (CDR)
50-390, 391/94-10 - SUPPLEMENT REPORT

The subject deficiency was initially reported to NRC Operations Center on July 12, 1994, in accordance with 10 CFR 50.55(e) as Problem Evaluation Report (PER) WBP940262. An initial report was submitted on August 6, 1994. A supplement report is provided in the enclosure.

If there are any questions, please telephone P. L. Pace at (615) 365-1824.

Sincerely,

Dwight E. Nunn
Vice President
New Plant Completion
Watts Bar Nuclear Plant

Enclosure

cc: See page 2

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U.S. Nuclear Regulatory Commission
Page 2

OCT 31 1994

cc (Enclosure):

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
GENERAL ELECTRIC MAGNE-BLAST CIRCUIT BREAKERS
PROBLEM EVALUATION REPORT WBPER940262
10 CFR 50.55(e) SUPPLEMENTAL REPORT
CDR 50-390, 391/94-10

DESCRIPTION OF DEFICIENCY:

On May 9, 1994, smoke was observed coming from a 6.9 KV breaker compartment. Further investigation revealed a General Electric Magne-Blast circuit breaker, Serial Number 256A4604-027, inoperable. The pin connecting the trip coil link to the crank had separated from the adjoining weld and had fallen out. Without the pin, the breaker failed to open after receiving a trip signal. As a result, the trip coil remained energized and eventually overheated and also failed. Preliminary inspection of the surface area along the pin weld may indicate that the weld surface was shaved too thinly during the finishing process. The depth of the weld material remaining on the pin surface was estimated to be only 1/32 of an inch deep along the side of the pin. The weld was separated along the pin surface and not along the adjoining surface of the special weld cavity. The cause of the pin failure appears to be the result of insufficient weldment between the pin and the crank.

On June 26, 1994, while performing an unrelated inspection, a similar pin was found under the Normal Feeder Breaker of a 6.9 KV Unit Board, Serial Number 256A4608-023.

In November of 1985, a similar deficiency was documented in nonconformance report (NCR) W-312-P. At that time, the manufacturer considered the failure to be isolated to one batch of welded pins associated with Serial Number 256A4603.

Additional Information:

GE Magne-Blast 6.9 KV circuit breakers are used in 206 applications involving the Unit Boards, Common Boards, Shutdown Boards, Start Boards, and Reactor Coolant Pump Boards.

SAFETY IMPLICATIONS:

The subject breakers are used in various safety-related applications such as the feed for the 480 Volt Shutdown Board Transformers and on the 6.9 KV Shutdown Board as the feed for the Emergency Raw Cooling Water pump motors. Thus, failures as described above could compromise the plant's capability to mitigate the consequences of postulated accidents.

CORRECTIVE ACTIONS:

TVA developed an inspection plan and acceptance criteria in conjunction with GE. GE has indicated that breakers procured prior to 1988 are suspect. After 1988, the crank assemblies were manufactured with an improved design.

TVA has inspected 191 crank assemblies of the previous design on 6.9 KV Magne-Blast circuit breakers installed in the plant. The remaining breakers will be inspected by December 5, 1994. Approximately 50 percent of inspected breakers have exhibited defects. The results have been discussed with GE. The crank was visually inspected by viewing the flat surface of the crank at the point where the pin penetrates the crank. Any indications at the interface between the crank and the 3/8 inch diameter pin was considered cause for replacing the part, for example:

- a. voids in the weldment,
- b. hairline cracks around the pin,
- c. and other flaws in the weldment.

Defective breakers have been taken out of service. Tags have been placed on the breakers which prohibit their use without further actions to resolve the subject deficiency.

TVA has procured new snap rings (94NH-111946) and trip coil cranks (94N3H-112108) for crank assembly replacements. Crank assembly parts of the previous design have been removed from inventory and scrapped.

Maintenance Instruction (MI)-57.001, "6900 Volt Circuit Breaker Inspection," has been revised to require future inspections of the crank pin weldment area.

Four suspect breakers were being held in warehouse stock. Inspection of these breakers revealed two defective pin weldments. These two have been tagged as nonconforming which prohibits their use without further actions to resolve the subject deficiency. The two circuit breakers, which were determined to have acceptable pin weldments, have been made available for issue to the plant.

Additional Information:

GE is currently experiencing difficulty passing its own in-house acceptance criteria for crank assemblies from its subsupplier. TVA engineering is investigating the manufacturing process and design alternatives. The results are expected to be available by November 15, 1994.