

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

January 9, 1984

WBRD-50-390/84-01
WBRD-50-391/84-01

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:

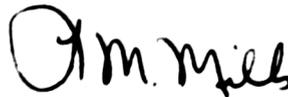
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - AUTOMATIC TRANSFER OF SUPPLY FOR 6.9 kV
SHUTDOWN BOARDS - WBRD-50-390/84-01, WBRD-50-391/84-01, - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
Linda Watson on December 16, 1983 in accordance with 10 CFR 50.55(e) as
NCR WBN WBP 8337. 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
AUTOMATIC TRANSFER OF SUPPLY FOR 6.9 kV SHUTDOWN BOARDS
NCR WBN WBP 8337
WBRD-50-390/84-01, WBRD-50-391/84-01
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

As presently designed, relay contacts which initiate automatic transfer of the power supplies for the 6.9 kV shutdown boards in the event of a generator trip signal do not reset after transfer is complete. Due to this, the relays will correctly initiate a fast transfer from the normal to first alternate supply after a generator trip, but because the relays maintain contact and bypass the residual voltage control circuits, an undervoltage condition at the first alternate supply will then cause a subsequent fast transfer to the second alternate supply. This second fast transfer (which would occur when the first alternate supply decreased to approximately 70 percent of nominal) is contrary to the description of the transfer process given in Chapter 8 of the FSAR which states that transfer from first to second alternate will be a slow transfer supervised by the residual voltage relays set to operate at 30 percent of nominal voltage. A second condition which occurs because the relays do not reset is that the closed contacts provide a maintained trip signal to the normal feeder breaker that prevents the plant operator from manually transferring from either alternate supply back to the normal supply.

The control power and auxiliary power portions of the affected circuitry were designed and checked by engineers of different units, and the unit designing the auxiliary power circuits assumed the control circuit contacts designed by the second unit were momentary contacts and neither they nor the responsible checkers verified this assumption as required by TVA's Division of Engineering Design (EN DES) Engineering Procedure (EP) 4.25.

Safety Implications

Fast transfer of 6.9 kV shutdown board power from the first alternate to second alternate supply could subject safety-related motors loaded on the boards to an out-of-phase voltage. This out-of-phase voltage could damage these motors which in turn could adversely affect safe operation of the plant.

Corrective Action

Time delay relays will be added to the generator trip auxiliary relay circuits which will automatically reset the contacts after a generator trip actuated transfer has occurred. This action will be done under engineering change notice (ECN) 4456 and will be completed by February 1, 1984.

To prevent recurrence, all section personnel involved with the design and checking of the auxiliary power system have received documented training to revision 5 of EP 4.25. This condition does not apply to other TVA plants.