

TENNESSEE VALLEY AUTHORITY

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FEB 28 1986

WBRD-50-390/86-05
WBRD-50-391/86-04

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 - INAPPROPRIATE CONTROL CIRCUITRY
FOR DIESEL GENERATOR (DG) VOLTAGE REGULATORS - WBRD-50-390/86-05 AND
WBRD-50-391/86-04 - REVISED FINAL REPORT

The subject deficiency was initially reported to NRC Region II Inspector
Al Ignatonis on November 20, 1985, in accordance with 10 CFR 50.55(e) as
Nonconforming Condition Report (NCR) W-295-P. This was followed by a final
report on January 15, 1986. Enclosed is our revised final report as committed
in TVA's response to violation 390, 391/87-13-01. There are no commitments
contained in this submittal.

If there are any questions, please telephone G. R. Ashley at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

W. R. Gridley
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Enclosure
cc: See page 2

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U.S. Nuclear Regulatory Commission

FEB 28 1989

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ENCLOSURE

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2
INAPPROPRIATE CONTROL CIRCUITRY FOR
DIESEL GENERATOR VOLTAGE REGULATORS
WBRD-50-390/86-05 AND WBRD-50-391/86-04
NONCONFORMING CONDITION REPORT (NCR) W-295-P
10 CFR 50.55(e)

REVISED FINAL REPORT

Description of Deficiency

TVA's emergency diesel generator (DG) excitation systems have a manual and automatic (auto) voltage regulator. Proper system operation requires the ability to select between the auto and manual voltage regulators from both the local engine control panel (local) and the main control room (MCR) (remote) and to automatically transfer from manual to auto upon an emergency DG start signal. However, the present design does not include either feature as required by Design Criteria WB-DC-40-28 and as documented in WBN's Final Safety Analysis Report (FSAR), section 8.3 and figure 8.3-24.

The cause of this deficiency is the failure to adequately incorporate system parameters and operational modes (as defined in Design Criteria WB-DC-40-28) into design output documents; specifically that, "control equipment shall have the capability of being automatically transferred from manual to automatic control" This requirement was not incorporated into the DG voltage regulator logic diagrams and schematics.

Safety Implications

Without the auto return to the auto voltage regulator feature, the DG, upon receipt of an emergency start signal, will respond to the manual voltage regulator if the DG was going from test mode to emergency start, or if the DG's manual regulator had inadvertently been left in the controlling position after testing of the DG.

If the DG responded to the manual regulator values, there is a potential that the DG could operate outside of analyzed conditions with regard to voltage and current. As such, TVA assumes that there is a potential to adversely affect safe operation of the plant.

Corrective Action

The control circuitry for DG excitation has been redesigned and modified to include the capability to remotely select between the auto and manual voltage regulators and to automatically transfer to the auto regulator upon an emergency start signal. This work was completed in accordance with Engineering Change Notice (ECN) 5979. The manual and automatic regulator design is unique to the DGs. Therefore, no action is being taken with regard to preventing recurrence of this deficiency, since it is considered an isolated design oversight.