

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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October 30, 1985

WBRD-50-391/85-22

U.S. Nuclear Regulatory Commission
Region II
Attention: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Dr. Grace:

WATTS BAR NUCLEAR PLANT UNIT 2 - UNDERVOLTAGE CONDITION ON 125V DC VITAL CONTROL POWER SYSTEM - WBRD-50-391/85-22 - SECOND INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Al Ignatonis on July 16, 1985 in accordance with 10 CFR 50.55(e) as NCR EEB 8520. Enclosed is our second interim report. We expect to submit our next report on or about January 3, 1986.

If there are any questions, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Damer

J. W. Hufham, Manager
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)
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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNIT 2
UNDervOLTAGE CONDITION ON 125V DC VITAL CONTROL POWER SYSTEM
WBRD-50-391/85-27
NCR WBN EEB 85
10 CFR 50.5
SECOND INTERIM

Description of Deficiency

A condition was identified at Watts Bar Nuclear Plant (WBN), during a design review, in which some components of the auxiliary feedwater pump turbine (AFPT) control circuit could receive inadequate voltage to ensure their operation. This condition could occur due to a voltage drop in the circuit feeder cable from the 125V dc vital batteries to the affected components. The condition could only occur during a total loss of all ac power when the AFPT control circuit components are to be supplied with power from the 125V dc vital battery system. (Other components which normally receive power from the 125V dc vital control power system could be affected by this condition. However, their operation/function during a total loss of ac power is not required.)

TVA has determined that this deficiency occurred because the 125V dc vital control power system design was based upon a nominal voltage of 125V dc. However, as described in the WBN FSAR Chapter 8, Section 8.3.2, the system operates through a range of voltages from 105V dc to 140V dc. WBN Design Criteria WB-DC-30-2, "Design Criteria for 125V Vital Battery System," did not define the battery system voltage range. As a result, affected WBN electrical system designers and procurement personnel were unfamiliar with the information. Thus, affected electrical components were not properly specified or purchased at the lower dc voltage limit and cable voltage drop calculations were not performed using the lower dc voltage limits as the source voltage.

TVA previously reported this condition to the NRC for WBN unit 1 as nonconformance report (NCR) WBN EEB 8515.

Safety Implications

Upon a total loss of all ac power at WBN, both motor-driven auxiliary feedwater (AFW) pumps would be rendered inoperable. The turbine-driven AFW pump would then be required to supply adequate feedwater to the steam generators (SGs) to bring the reactor coolant system temperature down and maintain the reactor in a safe condition. The subject condition could result in a misoperation of the affected AFPT control circuit components and, subsequently, could adversely affect the operation of the AFPT. This could result in an inadequate supply of feedwater to the SGs and could adversely affect the safety of operations of the plant.

Interim Progress

TVA is still in the process of evaluating the subject condition. The ongoing review of 10 CFR 50 Appendix R for WBN unit 2 could affect the resolution of this deficiency and, subsequently, the scope of TVA's corrective action for WBN unit 2. A delay in the completion of the unit 2 Appendix R review has resulted from a deficiency involving Appendix R logic. This deficiency was reported to NRC on September 18, 1985, as significant condition report (SCR) WBN NEB 8516.

To prevent recurrence of this deficiency, TVA has revised WB-DC-30-2 to formally document the voltage range of the vital battery system. All affected design and procurement personnel have been familiarized with this information through the coordinated involvement of the Office of Engineering (OE) electrical, mechanical, and nuclear design branches in the design review analysis of the 125V dc vital power control system.

TVA will provide a final report on this item to the NRC by January 3, 1986.