

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

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January 22, 1986

WBRD-50-390/86-03

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 1 - UNACCEPTABLE APPENDIX R INTERACTION
ON AUXILIARY FEEDWATER - WBRD-50-390/86-03 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
Al Ignatonis on November 27, 1985 in accordance with 10 CFR 50.55(e) as SCR
WBN MEB 8543. Our interim report was submitted on January 10, 1986.
Enclosed is our final report.

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. Domer

J. A. Domer
Manager of Licensing

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 1
UNACCEPTABLE APPENDIX R INTERACTION ON AUXILIARY FEEDWATER
WBRD-50-390/86-03
SCR WBN MEB 8543
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Adequate separation of redundant auxiliary feedwater (AFW) equipment at Watts Bar Nuclear Plant (WBN) has not been provided in accordance with 10 CFR 50 Appendix R on auxiliary building el 737.0 between columns s-t/A3-A4. This area contains the motor-driven AFW pumps' steam generator level control valves 1-LCV-3-148, -156, -164, and -171. The WBN unit 1 Appendix R safe shutdown analysis required two or more of these normally closed valves to be manually opened to satisfy one possible shutdown path during a fire. The area also contains the following control circuits for the turbine-driven AFW pump's steam supply line isolation valves which are required for the redundant shutdown path:

<u>Cable</u>	<u>Function</u>
1V1833A	120V ac control for valve 1-FCV-1-15
1V2621A	120V ac control for valve 1-FCV-1-17
1V2623A	120V ac control for valve 1-FCV-1-17
1V2631B	120V ac control for valve 1-FCV-1-18
1M1452A	Transfer control for valves 1-FCV-1-16 and -51

Interactions between electrical cables and manually operated equipment were evaluated during the WBN unit 1 Appendix R safe shutdown analysis. However, this specific interaction was not identified by either the individuals performing the work or those independently checking their efforts. Key personnel involved in the analysis have been interviewed and indicated that similar deficiencies in other areas of the analysis are very unlikely. The temporary procedures that controlled the analysis and the permanent design criteria that replaced it have been reviewed and no programmatic problems were identified that contributed to the deficiency. As such, TVA considers the failure to identify the unacceptable interaction to be an oversight, and it is considered to be an isolated occurrence.

Safety Implications

A postulated fire in the identified area could prevent operator access which is necessary to manually open the steam generator level control valves. This could effectively render the motor-driven AFW pumps inoperable.

The same fire could also cause the spurious closure of one or more of the affected turbine-driven AFW pump steam supply line isolation valves due to direct fire damage of their control circuits. This could cause the loss of the turbine-driven AFW pump's steam supply, thus rendering the pump inoperable. Although the steam line isolation valves can be reopened using local manual actions, and the turbine-driven pump restored to operation, such efforts would tax the capabilities of available manpower when all other operator actions are considered in a postulated fire scenario. If the valves cannot be reopened promptly, the result could be a total loss of the AFW supply, and a subsequent loss of safe shutdown capability. Therefore, if this condition had remained uncorrected, the safe operation of the plant could have been adversely affected.

Corrective Action

TVA will relocate cables 1V2623A and 1M1452A outside of the postulated fire area. The remaining control circuits for the affected turbine-driven AFW pump steam line isolation valves will be modified to prevent the possibility of spurious valve closure due to fire damage. This work will be done per engineering change notice (ECN) 6016.

A similar configuration exists with WBN unit 2 AFW components at auxiliary building el 737.0, between columns s-t/A12-A13. This situation is being addressed in the original Appendix R safe shutdown analysis for unit 2.

As previously stated, TVA considers this item to be an isolated occurrence. As such, the above-stated corrective actions are adequate and no further action to prevent recurrence will be taken.

All corrective actions for this item will be completed by initial fuel loading.