

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

September 19, 1984

WBRD-50-390/84-36

WBRD-50-391/84-32

U.S. Nuclear Regulatory Commission
Region II

Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Mr. O'Reilly:

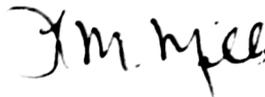
**WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - INADEQUATE SEPARATION OF REDUNDANT
CABLES NEAR FLOOR OPENINGS - WBRD-50-390/84-36, WBRD-50-391/84-32 - FINAL REPORT
FOR UNIT 1 AND SECOND INTERIM REPORT FOR UNIT 2**

The subject deficiency was initially reported to NRC-OIE Inspector Dave Verrelli on July 23, 1984 in accordance with 10 CFR 50.55(e) as NCR WBN MEB 8430. Our first interim report was submitted on August 21, 1984. Enclosed is our final report for unit 1 and second interim report for unit 2. We expect to submit our next report for unit 2 on or about September 30, 1985.

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
INADEQUATE SEPARATION OF REDUNDANT CABLES NEAR FLOOR OPENINGS
NCR WBN MEB 8430
WBRD-50-390/84-36 AND WBRD-50-391/84-32
10 CFR 50.55(e)
FINAL REPORT FOR UNIT 1 AND
SECOND INTERIM REPORT FOR UNIT 2

Description of Deficiency

Section III.G.2 of 10 CFR 50 Appendix R specifies separation of redundant safe shutdown components by one of the following methods:

1. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a fire barrier having a three-hour rating.
2. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.
3. Enclosure of cable and equipment and associated nonsafety circuits of one redundant train in a fire barrier having a one-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

Cables have been routed at Watts Bar Nuclear Plant (WBN) in accordance with these requirements when looking at a single building elevation. However, separation near large floor openings was not considered when the redundant cables are located on different elevations. Consequently, cables for redundant safe shutdown components have not been separated adequately per Section III.G.2 in the following Auxiliary Building areas:

1. Near the open stairwells connecting elevations 692.0, 713.0, and 737.0 at columns A4-A5/s-t and A11-A12/s-t.
2. Near the normally closed, steel equipment hatch located in the floor between elevations 757.0 and 772.0 at columns A12-A13/s-t.
3. Near heating, ventilating, and air-conditioning (HVAC) duct penetrations between elevations 692.0 and 713.0 at columns A6/s and A10-A11/s and between elevations 713.0 and 737.0 at columns A5/r.

The cause of this deficiency is that floor-to-floor separation of redundant circuits was not considered to be a problem by TVA design personnel during the original safe shutdown analysis for postulated fires at WBN. This is attributed to inadequate procedural controls addressing 10 CFR 50, Appendix R, requirements during the analysis and review process.

Safety Implications

A single exposure fire from an affected redundant cable or intervening combustible could produce effects (e.g., smoke, heat, or ignition) which could adversely affect the other redundant cable of a safe shutdown system.

Both redundant cables could be adversely affected in the event of a fire from intervening combustibles. This could adversely affect the ability to achieve and maintain the safe shutdown of the plant.

Corrective Action for Unit 1

TVA will install water curtains designed in accordance with National Fire Protection Association Standard (NFPA) 13-1983, Section 4-4.8.2, around the affected stairwell and hatch openings. Fire dampers rated at 1-1/2 hours will be installed in the affected duct penetrations. These modifications will resolve the deficiencies associated with the routing of redundant safe shutdown circuits for unit 1 identified by this nonconformance.

All unit 1 redesign and construction modifications will be accomplished per engineering change notice (ECN) 5087. All unit 1 corrective action will be completed by November 29, 1984. Completion of corrective action beyond fuel load for WBN unit 1 is justified because the ability to bring the plant to a safe shutdown is not required until initial criticality.

To prevent recurrence of this deficiency, TVA has issued a special engineering procedure (SEP) EN DES-SEP 84-9, entitled "Safe Shutdown Analysis for Postulated Fire at Watts Bar Nuclear Plant." This procedure will provide the framework and establish requirements to ensure that an adequate analysis and review is performed for WBN to achieve and maintain a plant configuration that is in compliance with 10 CFR 50, Appendix R. This SEP will remain in effect until establishment of design criteria that will provide permanent plant design guidance for adhering to the requirements of 10 CFR 50, Appendix R. SEP 84-09 will be incorporated into a WBN design criteria by August 1, 1985.

Interim Progress for Unit 2

TVA is still in the process of investigating the subject deficiency for WBN unit 2. More information will be provided in the next report.