

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

March 16, 1983

BLRD-50-438/81-13
BLRD-50-439/81-13

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:

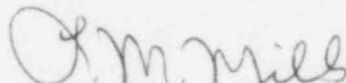
BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - UNACCEPTABLE PIPE BREAK
INTERACTIONS - BLRD-50-438/81-13, BLRD-50-439/81-13 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
R. W. Wright on January 27, 1981, in accordance with 10 CFR 50.55(e)
as NCR BLN BLP 8003. This was followed by our interim reports dated
February 24, April 27, and December 22, 1981 and May 24, and August 23,
1982. Enclosed is our final report.

If you have any questions concerning this matter, 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

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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
UNACCEPTABLE PIPE BREAK INTERACTIONS
NCR BLN BLP 8003
BLRD-50-438/81-13, BLRD-50-439/81-13
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Unacceptable pipe break interactions were discovered in the Auxiliary Building electrical equipment trained area (elevations 649 and 669) during TVA's Division of Engineering Design (EN DES) evaluation of postulated pipe break interactions. An inspection at the site confirmed the EN DES evaluation. Chilled water, demineralized water, and fire protection piping were not routed in accordance with Design Criteria for Auxiliary Building ESF Zone Environmental Control System, N4-VW-D740, which requires piping to be routed to prevent damage to electrical equipment unless spray shields are provided. This error is attributed to an incorrect assumption that the Class IE electrical equipment cabinets are qualified to withstand a water spray environment (NEMA 4 rating). These equipment cabinets have a NEMA rating of 1 which will allow water to enter and possibly damage the electrical equipment.

Safety Implications

This condition of unacceptable interaction between essential electrical equipment and water spray from moderate energy chilled water, demineralized water, and fire protection piping could cause loss of the Class IE equipment. A loss of the Class IE equipment caused by this initiating event followed by a single failure in the opposite train could prevent safe shutdown of the plant. Such a condition violates general design criterion 4 of appendix A to 10 CFR 50.

Corrective Action

TVA has completed several engineering change notices (ECN's), listed below, to alleviate the potential problem of unacceptable pipe break interactions from chilled water, demineralized water, and fire protection system piping with essential electrical equipment.

Chilled Water Piping

ECN No. 1044 was issued and design drawings revised to add spray shields and drain pans to piping to prevent spraying of Class IE equipment. The drain pan design for pipes was tested and found to be acceptable.

Demineralized Water Piping

ECN No. 1831 was issued and design drawings revised to remove and relocate piping to prevent spraying of Class IE equipment. Design drawings have been revised to show spray shields at selected locations to prevent spraying of Class IE equipment.

Fire Protection Piping

ECN Nos. 1211 and 1212 were issued and design drawings revised to add deluge valves to standpipes to maintain dry standpipes above elevation 649.

No further action is required to prevent recurrence.

All corrective action will be completed by June 1, 1984.