

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

ENRRO REGION
ATLANTA, GEORGIA

October 21, 1981
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WBRD-50-390/81-81
WBRD-50-391/81-75



Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - INADEQUATE CABLE TERMINATIONS -
WBRD-50-390/81-81, WBRD-50-391/81-75 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
R. V. Crlenjak on September 21, 1981 in accordance with 10 CFR 50.55(e)
as NCF 2903R 31. Enclosed is our final report.

If you have any questions, please get in touch with R. H. Shell at
FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills
L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
INADEQUATE CABLE TERMINATIONS
WBRD-50-390/81-81, WBRD-50-391/81-75
10 CFR 50.55(e)
FINAL REPORT

Description of Condition

Cable connections are made where field cables interface with cable "pigtaills" at electrical penetrations through primary containment. In some cases the cable connections involve different sizes of cables (field cable versus penetration cable). Cable connections (spliced, bolted or pinned connections) on cables rated 600 volts or less, are insulated with Raychem Corporation's WCSF type N heat shrinkable sleeving. This sleeving has been tested and has passed the standards for type testing of Class 1E electrical cables, field splices, and connections for nuclear power generating stations (IEEE 383-1974 and IEEE 323-1974).

Before May 15, 1980, Class 1E cable connections at Watts Bar Nuclear Plant were made according to the construction procedure developed from general design and vendor instructions. It has been determined that these cable connections were not insulated with the minimum 2-inch overlap of sleeving onto the primary insulation on each side of the cable interface. In some cases, part of the minimum 2-inch overlap was installed over the outer cable jacket rather than the primary insulation as required. In addition, sufficient information was not provided to Construction with regard to cable preparation and cable shimming requirements to ensure that the vendor's installation recommendations (as a result of qualification testing) were met.

Safety Implications

If this deficiency had remained uncorrected it could have caused the failure of safety-related systems inside primary containment during accident conditions. Failure of these systems could adversely affect the safety of operations of the plant.

Corrective Action

To prevent recurrence of this condition Watts Bar construction procedure WBF1-E22 (WBNP Field Instructions for Terminating Cables on Primary Containment Electrical Penetrations) has been revised (Revision 1) to include sufficient information to ensure that the vendor's installation recommendations are met. In addition, electrical standard drawings have been issued to provide detailed requirements for cable splices and connections.

All class 1E cable connections made before May 15, 1980, have been reworked to conform with the requirements of WBF1-E22 R1 and the above-mentioned electrical standard drawings.