TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
5N 157B Lookout Place

January 30, 1986

WBRD-50-390/85-31
WBRD-50-391/85-30

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 UNITS 1 AND 2 - INCORRECT EQUIPMENT CABLE TERMINATIONS IN HARSH ENVIRONMENTS - WBRD-50-390/85-31, WBRD-50-391/85-30 - REVISED FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Al Ignatonis on August 14, 1985 in accordance with 10 CFR 50.55(e) as NCRs WBN 6208 and 6224. Our final report was submitted on September 11, 1985. Enclosed is our revised final report.

This change was discussed with Al Ignatonis on January 6, 1986.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. L. Gridley
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)
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

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TVA will use only Raychem type N materials, or approved equivalent qualified materials on all future splices for cable terminations on class 1E equipment. TVA has revised the electrical standard drawings (SD-E12.5.7-1 and -2, SD-E12.5.5-1 and -2, SD-E12.5.6, and SD-E12.5.8) to clearly indicate that only Raychem type N or approved equivalent qualified materials are to be used on all future terminations for class 1E equipment. This corrective action will prevent recurrence of the subject deficiency.

All corrective actions on the terminations will be completed by initial fuel loading for units 1 and 2, respectively.

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
INCORRECT EQUIPMENT CABLE TERMINATIONS IN HARSH ENVIRONMENTS
WBRD-50-390/85-31, WBRD-50-391/85-30
NCRs WBN 6208 AND WBN 6224
10 CFR 50.55(e)
REVISED FINAL REPORT

Description of Deficiency

A condition was identified at Watts Bar Nuclear Plant (WBN) in which some class 1E equipment cable terminations were not installed correctly. The affected cables are located in areas designated as having a harsh environment and below the computed maximum flood level as shown on WBN drawings 47E235-39 through 47E235-86. The affected cables have not been terminated using a qualified Raychem nuclear plant splice kit (type N) or equivalent as required by TVA electrical standard drawing SD-E12.5.7-1. Rather, some of the subject cables have been terminated using 3M Scotch 70 and/or 33 tape, and some of the cables have been terminated using unapproved end caps.

TVA has determined that the subject deficiency resulted from the misinterpretation of TVA electrical standard drawings SD-E12.5.7-1 and SD-E12.5.7-2 by responsible construction personnel.

Safety Implications

Insulation deterioration at unqualified terminations due to heat, moisture, and radiation could cause affected cables to short to other cables or to conduit. This could result in a failure of affected class 1E equipment. This could adversely affect the safe operation of the plant.

Corrective Action

TVA has prepared a list of all class 1E equipment located in harsh environment areas and requiring Raychem type N or equivalent qualified material on cable terminations. The list includes all category A, B, C, and D devices as defined in TVA document NEB-DI 125.01, "Program Requirements for Environmental Qualification of Electrical Equipment in Harsh Environments," (842 850820 501). Categories A and B will be included in the evaluation since equipment in these categories must withstand design basis accident conditions. Equipment in categories C and D will be included since it must be qualified to the nonaccident service environment in accordance with IEEE Standard 323-1974. TVA's Office of Construction (OC) will perform a review of the listed equipment to determine which devices are improperly terminated. All incorrect terminations will be reworked using Raychem type N or equivalent qualified materials which TVA has approved for use in specific postulated environmental conditions.

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
INCORRECT EQUIPMENT CABLE TERMINATIONS IN HARSH ENVIRONMENTS
WBRD-50-390/85-31, WBRD-50-391/85-30
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