TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II
85 SEP 18 P12:06
September 11, 1985

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

U.S. Nuclear Regulatory Commission
Region II
Attn: 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, 50-391/85-30 - 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 6208 and 6224. Enclosed is our final report.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. W. Hufham

J. W. Hufham, Manager
by RHS
Licensing and Risk Protection

Enclosure
cc (Enclosure):
Mr. James Taylor, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

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 6208 AND 6224
10 CFR 50.55(e)

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 results in a failure of affected class 1E equipment. This could adversely affect the safe operation of the plant.

Corrective Action

TVA will prepare a list of all class 1E equipment located in harsh environment areas and requiring Raychem type N material on cable terminations. The list will include 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." 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 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 materials.

TVA will use only Raychem type N materials on all future splices for cable terminations on class 1E equipment. Further, TVA will revise 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 Raychem type N materials are to be use done all future terminations for class 1E equipment. The standard drawings will also be revised to refer to the affected nuclear project's environmental drawings for identifiecation of harsh environment areas. This will prevent recurrence of the subject deficiency.

All corrective actions, except for the standard drawing revisions, for this item will be completed by November 1, 1985 for WBN unit 1 and by November 13, 1986 for unit 2. The electrical standard drawings will be revised by November 30, 1985.