Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

John H. Garrity
Vice President, Watts Bar Nuclear Plant

DEC 03 1991

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

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of	)	Docket Nos. 50-390
Tennessee Valley Authority	)	50-391

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - INCORRECT EQUIPMENT CABLE TERMINATIONS IN HARSH ENVIRONMENTS - WBRD-50-390/85-31 AND 391/85-30 - FINAL REPORT - REVISION 2

References:

1. Letter from TVA to NRC dated December 16, 1988, "Watts Bar Nuclear Plant (WBN) - Corrective Action Program (CAP) Plan for Cable Issues"

2. Letter from TVA to NRC dated June 27, 1989, "Watts Bar Nuclear Plant (WBN) - Revision to Corrective Action Program (CAP) Plan for Cable Issues"

3. Letter from TVA to NRC dated June 15, 1990, "Watts Bar Nuclear Plant (WBN) Unit 1 - Supplemental Information on WBN Cable Issues.

The subject deficiency was initially reported to NRC Region II on August 14, 1985, in accordance with 10 CFR 50.55(e) as Nonconformance Reports (NCRs) WBN 6224 and 6208. The final report was submitted on September 11, 1985, and a revised final report was submitted on January 30, 1986.

9112120005 911203
PDR ADOCK 05000390
S PDR

1837

U.S. Nuclear Regulatory Commission

DEC 03 1991

The enclosure provides TVA's final report, Revision 2, regarding incorrect cable terminations in harsh environments. This document has been revised to maintain consistency with the methodology submitted to NRC in the above references in resolution of the splice issues for the Cable Issues CAP. These changes reflect revisions to update the corrective actions and TVA's progress towards resolution of this concern. The corrective actions identified in the enclosure will be implemented by initial fuel loading for Units 1 and 2, respectively.

No new commitments are made in this submittal.

If there are any questions, please telephone P. L. Pace at (615) 365-1824.

Sincerely,

John H Garrity

John H. Garrity

Enclosure
cc (Enclosure):
INPO Record Center
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

NRC Resident Inspector
Watts Bar Nuclear Plant
P.O. Box 700
Spring City, Tennessee 37381

Mr. P. S. Tam, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

Mr. B. A. Wilson, Project Chief
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

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)
FINAL REPORT - REVISION 2

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. The affected cables have not been terminated using a qualified Raychem nuclear plant splice kit (type N). 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 by the 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 which could adversely affect the safe shutdown of the plant.

CORRECTIVE ACTIONS

TVA has developed and documented in a calculation (WBPEVAR8904055) a list of Class 1E cable splices and terminations located in harsh and mild environments. Cable end splices were identified by reviewing equipment qualification binders and construction records to determine which equipment uses pigtails for field cable connection.

TVA will replace all 10CFR50.49 harsh environment cable spliced terminations with Raychem type N or equivalent material which TVA has approved for use in specific postulated environmental conditions. Calculation WBPEVAR8904055 is the basis for identifying the terminations to be reworked.

Additionally, TVA will use only Raychem type N materials on all future splices for cable terminations on Class 1E equipment documented on the 10CFR50.49 list, unless approved by Engineering. General Engineering Specification, G-38, has been updated to clearly define these requirements. This corrective action will prevent recurrence of the subject deficiency.

Corrective actions for the terminations will completed by initial fuel loading for Units 1 and 2, respectively.