

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

September 18, 1985

11:30

WBRD-50-390/84-18

WBRD-50-391/84-18

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 - CABLE INSULATION FAILS FIRE PROTECTION TEST - WBRD-50-390/84-18 AND WBRD-50-391/84-18 - THIRD INTERIM REPORT FOR UNIT 2

The subject deficiency was initially reported to NRC-OIE Inspector Bob Carroll on April 5, 1984 in accordance with 10 CFR 50.55(e) as NCR WBN EEB 8408. Our final report for unit 1 and first interim report for unit 2 were submitted on May 4, 1984 and supplemental information for unit 1 was submitted on October 3, 1984. Our second interim report for unit 2 and a supplemental final report for unit 1 were submitted on January 24, 1985. A second supplemental final report for unit 1 was submitted April 2, 1985. Enclosed is our third interim report for unit 2. We expect to submit our final report for unit 2 on or about June 6, 1986.

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
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

8510030278 850918
PDR ADOCK 05000390
S PDR

11 1597

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNIT 2
CABLE INSULATION FAILS FIRE PROTECTION TEST
NCR WBN EEB 8408
WBRD-50-390/84-18 AND WBRD-50-391/84-18
10 CFR 50.55(e)
REPORT NO. 3 INTERIM

Description of Deficiency

In order to meet the requirements of 10CFR50, Appendix R, TVA has installed a one-hour fire barrier manufactured by 3M Company (TVA contract 83A35-8C2419) for cable trays, conduits, and junction boxes. The 3M fire barrier material has received Underwriters Laboratories (UL) certification. However, included with that certification is stipulation that the user (TVA) must ensure that the cable being protected by the fire barrier will perform its function while being exposed to the elevated temperatures measured inside the fire barrier during the qualification test.

Toward this end, TVA performed oven testing of electrical cables at TVA's Central Laboratories (Chattanooga Power Service Center). This testing has shown that polyethylene-insulated cable (TVA types PN, PJ, PNJ, and PJJ manufactured by various vendors) will not perform its required design function when subjected to the temperature specified by UL to validate the fire barrier qualification. The insulation on the cables will melt causing the cables to fail by shorting.

The cause of this deficiency is that TVA did not realize that the use of the one-hour fire barriers would result in unacceptably high temperatures for some cables because the temperatures the cables would be exposed to while in the fire barriers were not identified by the barrier vendor (3M Company) until after the barriers were installed.

Safety Implications

Some of the cables involved in this deficiency are used in safe shutdown circuits, and therefore, are essential to safety-related systems. Failure of these cables could cause degradation of essential safety-related systems, and thus have adverse affects on the safe operation of the plant.

Interim Progress

TVA is continuing its work on Appendix R for unit 2 which requires continued review of newly placed 3M fire barriers to determine the presence of polyethylene-insulated cables. Because the Office of Engineering (OE) anticipates the installation of additional fire barriers, additional re-routing or replacement of polyethylene cable is required. TVA will provide a final report on this deficiency by June 6, 1986.

To prevent recurrence of this problem, TVA has modified its computerized cable schedule to change the approved cable types from polyethylene-insulated cables to a qualified replacement type cable. Also, a special OE approval is now required to pull a polyethylene cable for a safe shutdown circuit and a denial is given for any request to pull such a cable through a UL-certified one-hour fire barrier.