

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

January 22, 1982 All : 20

BLRD-50-438/82-53

BLRD-50-439/82-55

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:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - FIREPROOFING MATERIAL APPLIED TO
CONDUIT - BLRD-50-438/82-53, BLRD-50-439/82-55 - REVISED FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on August 4, 1981 in accordance with 10 CFR 50.55(e) as NCR 1528. This was followed by our first interim report dated September 3, 1981 and our final report dated October 21, 1981. As discussed with R. V. Crlenjak by telephone on January 8, 1982, enclosed is our revised final report. The reason for the revision is to clarify our corrective action.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

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

8203080546 820122
PDR ADOCK 05000438
S PDR

OFFICIAL COPY
IE27
S11
T.E. 22

ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 FIREPROOFING MATERIAL APPLIED TO CONDUIT 10 CFR 50.55(e) BLRD-50-438/81-53, BLFD-50-439/81-55

REVISED FINAL REPORT

Description of Deficiency

In Bellefonte Nuclear Plant's cable spreading room, exposed surfaces of steel require application of a fireproof coating. There are four voltage-level circuits which are routed into this room. In order from lowest to highest voltage these are identified as V1, V2, V3, and V4 circuits. Some of these circuits are housed inside steel conduit. There are cases where conduits were installed before the design requirement (Design Information Request DIR-030) to coat the exposed steel was implemented.

Usually horizontal runs of conduit cross perpendicularly to and are attached to the horizontal steel beams. In other cases, the conduits penetrate the floor barrier. Fireproof coating was applied to conduits in 1-foot segments at these locations which generally occurred at multiple locations.

However, before the fireproof coating application, it was determined that conduits containing voltage level V1, V2, and V3 circuits and their conduit supports could be coated with the appropriate thickness of fireproofing material. The V1, V2, and V3 voltage levels are used for instrumentation and control level circuits. These circuits are of low energy application and not subject to heat buildup. Conservatively, it was decided that conduits containing power cables (V4 circuits) should not be coated since the coating may cause an overheating problem in the installed cables. Inadvertently, some conduits containing voltage level V4 circuits were partially coated with Pyrocrete 241, a fireproofing material.

Safety Implications

Originally, there was some concern that the limited application of the subject coating to V4 level circuits could result in overheating those circuits. Overheating of those circuits would result in increased voltage losses and possibly loss of the circuit altogether. As stated below, TVA has determined that no implication to safety exists as a result of this condition because the heat buildup within the cable is not significant.

Corrective Action

TVA has evaluated the ampacities of power cables installed in V4 level conduits where the fireproof coating was inadvertently applied. The heat transfer properties of Pyrocrete coating are comparable to those of concrete in that they allow heat dissipation. The full load current of the involved circuits and the thermal conductivity of the Pyrocrete coating on conduits were evaluated for overheating of cables. Conductor heating of these cables, because of limited coating applied to conduits, is insignificant.

DIR-030 is being revised to allow Pyrocrete coating of conduits containing power cables. TVA sizes cables at all nuclear plants using the same design standards. Therefore, conductor heating of power cables, because of limited coating of Pyrocrete applied to conduits at other TVA nuclear plants, is also considered insignificant.