

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

DEC 29 1987

WBRD-50-390/82-80
WBRD-50-391/82-76

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)
Tennessee Valley Authority)

Docket Nos. 50-390
50-391

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - CABLE BEND RADIUS DEFICIENCIES -
WBRD-50-390/82-80 AND WBRD-50-391/82-76 - PARTIAL RESPONSE TO NRC REQUEST FOR
INFORMATION

The subject deficiency was initially reported to NRC Region II Inspector
R. V. Crlenjak on July 29, 1982, in accordance with 10 CFR 50.55(e) as NCR
WBN 4194R. Enclosed is our response to questions 1 and 2 of the August 15,
1986 request for information related to this deficiency. As stated in our
November 4, 1987 submittal concerning this deficiency, we expect to provide
our final report addressing cable bend radius deficiencies and all eleven
questions on or about November 15, 1988.

If there are any questions, please telephone R. D. Schulz at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. Gridley
R. Gridley, Director
Nuclear Licensing and
Regulatory Affairs

Enclosure
cc: See page 2

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U.S. Nuclear Regulatory Commission

DEC 29 1987

cc (Enclosure):

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ENCLOSURE

SHIELDED POWER CABLE BEND RADIUS DEFICIENCIES

NCR WBN 4194R

RESPONSE TO QUESTIONS 1 AND 2

G. G. ZECH'S AUGUST 15, 1986 LETTER TO S. A. WHITE

Question 1

"Why did TVA purchase and install 12-inch radius raceways that did not allow conformance with [General Construction Specification] GCS-G-38 ['Installing Insulated Cables Rated Up To 15,000 Volts'] specifications and/or ICEA [Insulated Cable Engineer's Association] industry standards for cable bend radii? Describe the apparent QA/QC breakdown in purchase order/specification review prior to placing order."

Response

TVA specified the use of 12-inch radius cable tray fittings in accordance with the Master Bill of Material which had been used for earlier plants. Since these cable tray fittings had been accepted for use at earlier TVA (nuclear and nonnuclear) plants, they were inappropriately considered to be acceptable without additional design review of the purchase order/specification for cable bend radius requirements.

Failure to consider the potential for the fittings to cause difficulty in meeting bend radius requirements is considered to be an oversight on the part of the designers. Additionally, this was not recognized as a significant installation problem and was therefore not promptly addressed.

Question 2

"Address the inadequacies in the QA/QC program that allowed the cable bend radius deficiency to go undetected until June 1982."

Response

Requirements for inspection of cable bend radius have been included in construction installation and inspection procedures since 1976. However, the requirements were open to interpretation and the bend radius criteria were only specified as an attribute to be inspected during cable pulling.

Apparently, concern with regard to cable bend radius first arose in the late 1970s. This culminated in 1979 with issuance of Design Information Request (DIR) E-9, which stated that the bend radius factors provided were for cable pulling, and that the tie-down radius could be half of this value. No basis has been identified for this determination; it appears to have been a decision based on engineering experience. The DIR was revised in 1981 to specify adherence to ICEA recommended values.

While no condition adverse to quality (CAQ) was documented before 1982, it appears that concerns about cable bend radius were raised much earlier. The concerns were related to the need for clarification of the requirements and were not considered to represent a CAQ. Only in 1982, when installations were identified which did not meet the requirements of GCS-G-38, was CAQ documentation initiated.

In 1982, Nonconforming Condition Reports (NCRs) 4194 and 4933 were issued to document cable installations which did not meet GCS-G-38 (ICEA) bend radius requirements. These were dispositioned use-as-is based on cable vendor information and testing. Based on an NRC request, this disposition is currently under review by TVA