

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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October 24, 1985

WBRD-50-390/85-44  
WBRD-50-391/85-43

U.S. Nuclear Regulatory Commission  
Region II  
Attention: 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 - MINIMUM BEND RADIUS CABLE DEFICIENCIES  
- WBRD-50-390/85-44 AND WBRD-50-391/85-43 - INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Al Ignatonis on September 26, 1985 in accordance with 10 CFR 50.55(e) as NCR WBN 6295. Enclosed is our interim report. We expect to submit our next report on or about July 11, 1986.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*J. A. Doman*  
J. W. Hufham, Manager  
Licensing and Risk Protection

Enclosure

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

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

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## ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2  
MINIMUM BEND RADIUS CABLE DEFICIENCIES  
WBRD-50-390/85-44 AND WBRD-50-391/85-43  
NCR WBN 6295  
10 CFR 50.55(e)  
INTERIM REPORT

### Description of Deficiency

Several cases have been identified at Watts Bar Nuclear Plant (WBN) in which individual conductors of cables have been terminated in a manner which violates the minimum cable bend radius criteria of TVA Electrical Design Standard DS-E12.1.5 and TVA Electrical Standard Drawing SD-E15.3.2 R2. For the types of wiring affected, DS-E12.1.5 and SD-E15.3.2 R2 provide a minimum bend radius installation factor of 4 times the outer diameter (OD) of the cable. This criteria has not been met in various instances for both safety-related and non-safety-related cables.

Prior to the issuance of DS-E12.1.5 and SD-E15.3.2 R2 (issued on September 9, 1983, and February 2, 1984, respectively), the TVA standard bend radius for the types of wire affected was 1/4-inch minimum. TVA issued DS-E12.1.5 and SD-15.3.2 R2 in order to incorporate Insulated Cable Engineers Association (ICEA) standards and to enhance TVA's cable installation program. The affected conductors were installed prior to 1983 and, consequently, were installed to the previous TVA standard (SD-E15.3.2 R1). However, in some cases, the 1/4-inch minimum bend radius was violated. This was due to a failure by craft personnel to adhere to the requirements of SD-E15.3.2 R1.

### Safety Implications

Violating the minimum cable bend radius could result in a degraded life expectancy for the affected cables. This could possibly lead to a premature failure of the cables and, consequently, could potentially have an adverse effect on the operation of affected safety-related equipment. However, as identified above, TVA issued DS-E15.1.5 and SD-15.3.2 R2 in order to incorporate ICEA standards and to enhance the existing cable installation program, and not because of a perceived deficiency.

### Interim Progress

TVA has contracted Wyle Laboratories to perform qualification testing on wiring of the affected type and size that has been bent to 1/4-inch or less. The purpose of the testing is to demonstrate that the subject deficiency will not have a detrimental effect on the qualified life of the cables. It is TVA's belief that the test results will verify the adequacy of the installations. The testing is schedule for completion in June 1986.

The existing subject wiring is used in low voltage applications, has been satisfactorily tested, and has been similarly installed to the previous 1/4-inch requirement in TVA plants for several years without apparent problems. As such, TVA deems that this item does not represent a cause for immediate concern. Resolution of this deficiency beyond initial criticality for WBN unit 1 is considered to be acceptable.

TVA will provide our next report on this item to the NRC on or about July 11, 1986.