

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

NRC REGION II
ATLANTA, GEORGIA

March 23, 1983

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BLRD-50-438/82-61
BLRD-50-439/82-54

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

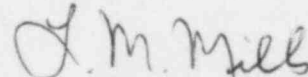
BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - DESIGN BASIS FOR UNISTRUT
INSTRUMENTATION HANGERS - BLRD-50-438/82-61, BLRD-50-439/82-54 - FINAL
REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
D. Quick on August 23, 1982 in accordance with 10 CFR 50.55(e) as NCR
BLN BLP 8224. This was followed by our first interim report dated
September 22, 1982. Enclosed is our final report.

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 Licensing

Enclosure

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

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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
DESIGN BASIS FOR UNISTRUT INSTRUMENTATION HANGERS
NCR BLN BLP 8224
BLRD-50-438/82-61, BLRD-50-439/82-54
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Instrumentation lines at Bellefonte Nuclear Plant are supported by typical hangers made from Unistrut components. Calculations to verify the seismic response and to assure that stress limits are not exceeded are not available. The design basis for the Unistrut typical instrument hangers is unverifiable and potentially unconservative.

It has been determined that the cause of this deficiency is the failure to follow Division of Engineering Design (EN DES) engineering procedure (EP) 5.14 entitled "Vendor Documents - Handling and Disposition" which cover the handling and disposition of vendor documents such as (a) design verification records (b) vendor instructions to TVA. This failure can be attributed to the individual(s) lack of understanding of this procedure.

Safety Implications

The safety-related Unistrut instrumentation hangers may not be adequate for their design loading because their stress limits and seismic response cannot be verified. This could have resulted in the failure of these hangers due to overloading. This condition could have adversely affected the safe operation of the plant.

Corrective Action

A testing program for the Unistrut typical instrumentation tubing supports was performed at TVA's Singleton Materials Engineering Laboratory. Testing and analysis was in accordance with ASME Section III, Subsection NF 3260. The support load capability in each orthogonal direction was determined by direct load application. Based on the experimentally determined load capabilities, an allowable support mass load was calculated such that allowable stress limits for the supports will not be exceeded. The results of this analysis had been tabulated on TVA drawings (series 5GB0925-10) and issued to TVA's Division of Constuction (CONST) for their information and use.

As part of the ongoing construction process, all Unistrut typical instrumentation supports will be reviewed by TVA CONST to determine if the allowable support mass has been exceeded. Those hangers which exceed the allowable support mass will be reworked in accordance with the approved design drawings to make sure that the allowable limits are not exceeded.

To prevent recurrence of this type of deficiency, the Manager of EN DES issued a management directive on February 26, 1982, which states that all individuals within EN DES are to be trained in those EPs which affect their work. Training for EP 5.14 was completed by all affected personnel during the month of December 1982.