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SUBJECT: Final deficency rept re knee brace tolerances used for inspecting interior angle bracing.Initially reported on 870710.No commitments in rept.

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Site Vice President, Bellefonte Nuclear Plant

APR 07 1994

BLRD-50-438/87-05
BLRD-50-439/87-04

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-438
50-439

BELLEFONTE NUCLEAR PLANT (BLN) - KNEE BRACE TOLERANCES USED FOR INSPECTING INTERIOR ANGLE BRACING - BLRD-50-438/87-05 AND BLRD-50-439/87-04 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Joe Brady on July 10, 1987 in accordance with 10 CFR 50.55(e) as CAQR BLF870075. The first interim report was submitted on August 10, 1987. Enclosed is the final report for the subject deficiency. Based on the reevaluation performed as part of the corrective actions, use of knee brace tolerances does not represent a condition adverse to quality. Therefore, this item is not reportable pursuant to 10 CFR 50.55(e). There are no commitments in this report.

Should there be any questions regarding this information, please telephone G. M. Morrison, BLN Acting Site Licensing Manager, at (205) 574-8057.

Fred McCluskey

H. Fred McCluskey

Enclosure
cc: See page 2

190007

JE27

APR 07 1994

cc (Enclosure):
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ENCLOSURE

BELLEFONTE NUCLEAR PLANT (BLN) - UNITS 1 AND 2
KNEE BRACE TOLERANCES USED FOR INSPECTING
INTERIOR ANGLE BRACING
BLRD-50-438/87-05 AND BLRD-50-439/87-04
CAQR BLF870075

FINAL REPORT

Description of Deficiency

Pipe supports were inspected using knee brace tolerances given on sheet 4B of the 3GA0059-00 drawing series to check interior angle bracing on supports in violation of General Construction Specification G-43. This deficiency was due to misapplication of the knee brace tolerance. The knee brace tolerances are less conservative than the interior angle bracing tolerances given in General Construction Specification G-43. The supports which violate General Construction Specification G-43 could be subjected to increased loads to a support member which might result in failure of the support. The supports involved are primarily multi-supporting structures which could exist in any Category I or I(1) piping system. This deficiency was identified as a result of an employee concern.

Safety Implications

As stated in corrective actions of the August 10, 1987 letter to NRC, supports with interior brace(s) that were inspected to tolerances on sheet 4B of the 3GA0059-00 drawing series were to be identified, evaluated for structural adequacy, and modified if required to meet design requirements.

TVA has revised this corrective action to instead evaluate the installation tolerances that were used to inspect the pipe supports against the criteria identified in Weld Research Council (WRC) Bulletin No. 353, dated May 1990, "Position Paper on Nuclear Plant Pipe Supports," Appendix B, Section 4.4-D. Bulletin 353 provides technical evaluation and recommends various pipe support installation tolerances to be used industry wide. The evaluation discussed in Appendix B, Section 4.4-D concludes that (+5 degrees, -3 degrees) angular and (+3", -3") load point linear location tolerances, are acceptable values for knee braces. These values are the same or less restrictive than 3GA0059-00-04R11 (Sheet 4B R12) note I.6 requirements that were used to inspect the interior brace members prior to October 24, 1985.

Geometrically, distribution of load at an interior brace joint, or at knee brace joint is a function of sin (ϕ) or cos (ϕ). The effect on load distribution due to angular (ϕ) or linear location tolerances (Δ) essentially remains in the same range for interior brace, or a knee brace, as evaluated in Appendix B of WRC Bulletin 353.

Based on the above justification and the evaluation performed in Appendix B in WRC Bulletin 353, use of knee brace tolerances per note I.6 on 3GA0059-00R11 to inspect interior brace member does not present a condition adverse to quality. Therefore, the pipe supports with interior brace(s) that were inspected to these requirements prior to October 24, 1985 are acceptable "as is" and do not require any corrections. This condition is not reportable pursuant to 10 CFR 50.55(e).