

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II
ATLANTA, GEORGIA

February 19, 1982

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HTRD-50-518, -519, -520, -521/81-01
PBRD-50-553, -554/81-01

U.S. Nuclear Regulatory Commission
Region II
ATTN: James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303



Dear Mr. O'Reilly:

HARTSVILLE AND PHIPPS BEND NUCLEAR PLANTS - REPORTABLE DEFICIENCY -
FILLET WELD MISSPECIFICATION FOR SKEWED TEE JOINTS - HTRD-50-518,
-519, -520, -521/81-01 - PBRD-50-553, -554/81-01

The subject deficiency was initially reported to NRC-OIE, Region II, Inspector R. W. Wright on December 8, 1980 as NCR's HTA HPP 8003, HTB HPP 8003, and PBN HPP 8003. The first, second, third, and fourth interim reports were submitted on January 7, April 6, July 31, and November 4, 1981, respectively. In compliance with paragraph 50.55(e) of 10 CFR Part 50, we are enclosing the final report on the subject deficiency. This deficiency was also reported for the Sequoyah, Watts Bar, Bellefonte, and Yellow Creek Nuclear Plants as NCR's SQN SWP 8025, WBN SWP 8008, WBN2807R, BLN BLP 8007, and YCN YCP 8006. If you have any questions, please call Jim Domer at FTS 858-2725.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L M Mills by DSK

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

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

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ENCLOSURE
HARTSVILLE AND PHIPPS BEND NUCLEAR PLANTS
FILLET WELD MISSPECIFICATION
SKEWED TEE JOINTS
10CFR50.55(e) REPORT NO. 5 (FINAL)
HTRD-50-518, -519, -520, -521/81-01
PBRD-50-553, -554/81-01

Description of Deficiency

Our investigation has identified violations of the 135 degree maximum, 60 degree minimum angle permitted for intersecting members of prequalified fillet-welded skewed tee joints. For the Hartsville and Phipps Bend Nuclear Plants, this requirement is imposed by the American Institute of Steel Construction (AISC) specification and the American Welding Society (AWS) D1.1 structural welding code.

The violations occurred because designers were unaware of the requirements of the AWS structural welding code governing angularity limits and weld symbols for fillet welded skewed tee joints.

Safety Implications

In any of the analyzed cases, had the initial specifications used proved to be inadequate, the ability of the structure involved to withstand design loads without excessive deformation could have been impaired. This situation could have resulted in a degradation of the safe operation of the plant.

Corrective Action

TVA has completed a review of all TVA and vendor designs which are governed by the AISC specification and AWS structural welding code. The results of this review are as follows:

1. Violations of the angle limitations were found to occur on TVA balance of plant (BOP) drawings of pipe supports in the ESW pumping station. These supports had not yet been constructed. The nonconforming welds were redesigned to conform to the AISC and AWS requirements. The drawings were revised and reissued on February 25, 1981 for Hartsville Plant A and Phipps Bend Plants 1 and 2 and on April 20, 1981 for Hartsville Plant B.
2. Fillet weld misspecification was identified on some of the STRIDE design drawings. The nonconforming STRIDE weld designs have been checked by GE/Braun as partial penetration connections by considering only a portion of the weld throat as structurally effective. GE/Braun has verified the joint's structural adequacy to sustain the design loads as required by the AISC and AWS codes. GE/Braun issued specification revisions on August 20, 1981 to clarify the requirements for fillet welded skewed members. These documents are acceptable to TVA.
3. A review of all suppliers and fabricators of BOP material was conducted. Upon completion of this review, it was concluded that no additional misspecified AWS fillet welds had been designated.

4. NUTECH, the subcontractor designing the STRIDE containment vessel, reviewed their drawings and determined that no fillet welded joint outside the 60-degree minimum, 135-degree maximum limits was specified.

Engineers and designers have been alerted to the AISC/AWS requirements for limiting angles for skewed tee joints. General Construction Specification G-29C has been revised to clarify construction requirements for skewed tee joints. Information will be provided to all engineers and designers further emphasizing the AISC/AWS requirements for fillet welded skewed tee joints. We anticipate issuing this information by April 1, 1982.