

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II81-013-03L ✓
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JUN 10 June 8, 1981

WBRD-50-390/81-01
WBRD-50-391/81-01Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - FILLET WELD MISSPECIFICATION -
WBRD-50-390/81-01 AND WBRD-50-391/81-01 - THIRD INTERIM REPORT

This deficiency was initially discovered on Bellefonte Nuclear Plant and was reported to the NRC on November 7, 1980, as NCR BLN BLP 8007. Subsequent investigation revealed that this deficiency was applicable to all TVA plants. The deficiency was reported to NRC-OIE Inspector R. W. Wright on December 10, 1980, in accordance with 10 CFR 50.55(e) for Watts Bar as NCR's WBN SWP 8008 and WBN 2807R. Our first interim report was submitted on January 9, 1981, and a second interim report was provided on April 8, 1981. Enclosed is our third interim report. We expect to provide additional information by October 20, 1981.

If you have any questions, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Director (Enclosure)
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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
FILLET WELD MISSPECIFICATION
SKEWED TEE JOINTS
WBRD-50-390/81-01, WBRD-50-391/81-01
10 CFR 50.55(e)
THIRD INTERIM REPORT

Description of Condition

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. This requirement is imposed by the American Institute of Steel Construction (AISC) specification and the American Welding Society (AWS) D1.1 structural welding code.

This condition was found to exist in miscellaneous Category I steel features and for Category I mechanical and electrical component supports. The Category I buildings are not involved in the nonconformance since none of these structures are steel framed. Further investigation has also identified this condition in engineered pipe supports in the intake and essential raw cooling water pumping stations and in gates, cranes, locks, doors, hatches, and other miscellaneous mechanical features in both TVA and vendor designs.

Corrective Action

All drawings of the steel civil features were reviewed for presence of the nonconforming geometry. These features include cable tray supports, platforms, pipe-rupture protective devices, monorails, and tank and equipment supports. These structures are located in the auxiliary, control, reactor, diesel generator, and CO₂ storage buildings. For all civil structures, approximately 100 representative nonconforming joints were selected for detailed structural analysis. In all cases evaluated, the joints were found to be stressed within allowable values. This analysis was conservative in that it either neglected the load-carrying capacity of the fillet weld in the acute and obtuse angle portions of all joints, or only considered a portion of the weld throat as structurally effective. TVA concludes that the structural integrity of these joints was not impaired by specification of acute angles less than allowed by the design codes.

TVA plans to review engineered support drawings for all piping sizes and typical mechanical support drawings for conduit, instrumentation, ducts, and alternately analysed piping 2 inches and under. The systems to be reviewed are as follows:

Reactor coolant	Component cooling
Residual heat removal	Main feedwater
Safety injection	Upper head injection
Chemical and volume control	Containment spray
Auxiliary feedwater	Steam generator blowdown
Main steam	Essential raw cooling water

Except for drawings furnished under our NSSS contract, TVA has completed identification and evaluation of nonconforming weld joints occurring on all TVA and vendor drawings involving gates, cranes, locks, doors, hatches, screens, bulkheads, seals, and platforms. Evaluation methods and criteria were as discussed above for other civil and mechanical features.

Regarding the joints not yet reviewed, any nonconforming skewed tee joints which are found by analysis to be structurally inadequate will either have the adequacy established by other methods or will be repaired.

Engineers and designers have been alerted to the AISC/AWS requirements for limiting angles for skewed tee joints. Instructions are presently being developed to provide additional design information.