

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37402
400 Chestnut Street Tower II

SQRD-50-328/81-02

April 9, 1981

Mr. 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:

SEQUOYAH NUCLEAR PLANT UNIT 2 - FILLET WELD MISSPECIFICATION -
SQRD-50-328/81-02 - THIRD INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. W. Wright on December 10, 1980, in accordance with 10 CFR 50.55(e) as NCR SQN SWP 8025. Interim reports were submitted on January 9, and March 3, 1981. Enclosed is our third interim report. We expect to submit our next report by May 29, 1981.

If you have any questions concerning this matter, 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, Jr., Director (Enclosure) ✓
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555



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ENCLOSURE

SEQUOYAH NUCLEAR PLANT UNIT 2
FILLET WELD MISSPECIFICATION
SQRD-50-328/81-02
10CFR50.55(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 fillet-welded skewed tee joints. For the Sequoyah Nuclear Plant (SQN), 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.

Interim Progress

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.

The review of approximately 1500 typical mechanical support drawings for conduit, instrumentation, ducts, and alternately analyzed piping 2 inches and under is complete. The nonconforming joints identified numbered 169. All were evaluated using the procedure discussed above and all were found to be structurally adequate.

Review is complete of the approximately 7500 drawings of engineered pipe supports to identify locations of nonconforming joint geometry. The systems reviewed and number of nonconforming supports found in each are as follows:

- | | |
|-------------------------------------|-------------------------------------|
| A. Reactor coolant - 45 | G. Component cooling - 78 |
| B. Residual heat removal - 1 | H. Main feedwater - 3 |
| C. Safety injection - 51 | I. Upper head injection - 5 |
| D. Chemical and volume control - 27 | J. Containment spray - 35 |
| E. Auxiliary feedwater - 3 | K. Steam generator blowdown - 15 |
| F. Main steam - 5 | L. Essential raw cooling water - 24 |

Analysis of these nonconforming joints is underway using the assumptions described in paragraph 1 above.

TVA will evaluate nonconforming weld joints occurring on both TVA and vendor drawings involving gates, cranes, locks, doors, hatches, screens, bulkheads, seals, platforms, and engineered pipe supports not yet evaluated. Evaluation methods and criteria will be 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.

With the review and analysis of SQN drawings near 50 percent complete, there is no indication that the subject nonconformance could in any way interfere with or impair the ability to load fuel at SQN unit 2. The review, analysis, and any necessary repair, rework, or reevaluation will be completed before initial criticality.