## 400 Chestnut Street Tower II

TE NESSEE VILLEY AUTHOR

May 29, 1981

SQRD-50-328/81-02

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 - FOURTH 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, March 3, and April 9, 1981. Enclosed is our fourth interim report. We expect to submit our next report on or about June 22, 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) 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 SKEWED TEE JOINTS SQRD-50-328/81-02 10 CFR 50.55(e) FOURTH INTERIM REPORT

## Description of Condition

Our investigation has identified violations on the 135 degree maximum, 60 degree minimum angle permitted for intersecting members of prequalified 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 America 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

- 1. 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 CO<sub>2</sub> st rage buildings. From 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.
- 2. The review of approximately 1,500 typical mechanical support drawings for conduit, instrumentation, ducts, and alternately analyzed piping two inches and under is complete. The nonconforming joints identified numbered 169. All were evaluated using the procedure discussed in paragraph 1 above and all were found to be structurally adequate.

3. Review is complete of the approximately 7,500 drawings of engineering tipe supports to identify locations of nonconforming joint geometry. The systems reviewed and number of drawings of nonconforming supports found in each are as follows:

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A. Reactor Coolant - 45
B. Residual Heat Removal - 1
C. Safety Injection - 51
D. Chemical and Volume Control - 27
E. Auxiliary Feedwater - 3
F. Main Steam - 5
G. Component Cooling - 78
H. Main Feedwater - 3
I. Upper Head Injection - 5
J. Containment Spray - 35
K. Steam Generator Blowdown - 15
L. Essential Raw Cooling Water - 24

For the engineered pipe supports, 176 representative supports were subjected to detailed structural analysis using the assumptions described in paragraph 1 above. All unit 2 pipe supports evaluated were found to be stressed within allowable values.

- 4. Except for drawings furnished under our NSSS contract, TVA has completed identification and evaluation of TVA and vendor drawings involving gates, cranes, locks, doors, hatches, screens, bulkheads, seals, platforms, and engineered pipe supports not previously evaluated. Evaluation methods and criteria were as discussed above for other civil and mechanical features. We anticipate review of the NSSS drawings will be completed before fuel load.
- 5. 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.