TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

83 September 6: 09

WBRD-50-390/83-11
WBRD-50-391/83-10

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW
Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - FILLET WELDS REPLACING CONCRETE ANCHORS ON PIPE SUPPORTS - WBRD-50-390/83-11, WBRD-50-391/83-10 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector P. Fredrickson on March 2, 1983 in accordance with 10 CFR 50.55(e) as NCR WBN SWP 8273. Our first interim report was submitted on March 28, 1983. Enclosed is our final report.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Licensing

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

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
FILLET WELDS REPLACING CONCRETE ANCHORS ON PIPE SUPPORTS
NCR WBN SWP 8273
10 CFR 50.55(e)
WBRD-50-390/83-11, WBRD-50-391/83-10
FINAL REPORT

Description of Deficiency

During an independent review of the auxiliary feedwater system performed by Black & Veatch and subsequent investigation by TVA's Division of Engineering Design (EN DES) into several Black & Veatch findings, it was discovered that on several pipe supports the use of fillet welds to replace concrete anchors was used per General Note 3 on TVA drawing 47A050-1T. In accordance with General Note 3, TVA's Division of Construction (CONST) may substitute a 2-inch long, 5/16-inch fillet weld for each concrete anchor where supports attach to existing embedded plates. After investigation, it was discovered that the service load capacity of 1-1/4-inch diameter wedge bolts and anchors with equal or greater capacity exceeds the capacity of a 2-inch long, 5/16-inch fillet weld allowed by General Note 3. The cause of this deficiency is that during the design phase, neither the designer nor the checker anticipated that any bolt sizes or types larger than 7/8-inch diameter concrete anchors would be used in Watts Bar pipe supports. However, different bolt types and larger sizes were used but the note was not revised.

Safety Implications

The substitution of the fillet weld for the larger anchor bolts can result in unconservative or inadequate pipe supports in category I structures. This could adversely affect the safe operation of the plant.

Corrective Action

TVA identified 10 systems in which there were 22 supports for unit 1 and nine supports for unit 2 designed with 1-1/4-inch and larger diameter wedge bolts or 1-inch and larger diameter grouted anchors. An inspection of all identified supports was conducted, and it was found that of the 22 supports for unit 1, the substitution of welds for anchor bolts was made on 5 supports. A review of the detailed calculations for these supports determined that the installation of all 5 supports is adequate. None of the 9 identified unit 2 supports were installed. TVA has completed an evaluation of all typical supports and general notes and has found no similar deviations of this type. There is no other note of this type in the typical drawing series.

To alleviate this condition and prevent recurrence, TVA has stopped the use of the note for bolts 1-inch and larger in diameter, and has revised drawing 47A050-1T. The revised drawing has been issued under engineering change notice (ECN) 3988. Also, TVA Construction Specification N3C-928 was issued on February 10, 1983. This specification provides requirements for locating attachments on embedded plates and will require a detailed review of connections of this nature.