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

August 31, 1982

WBRD-50-390/81-82
WBRD-50-391/81-76

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

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - DESIGN OF AXIAL SUPPORTS FOR PIPING USING LUGS WELDED TO THE PIPE - WBRD-50-390/81-82, WBRD-50-391/81-76 - THIRD INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on September 22, 1981 in accordance with 10 CFR 50.55(e) as NCR WBN SWP 8155. Interim reports were submitted on October 22, 1981 and March 16, 1982. Enclosed is our third interim report. We expect to submit our next report on or about January 31, 1983.

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

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U.S. NRC REGION II
ATLANTA, GEORGIA

Enclosure
cc: Mr. Richard C. DeYoung, Director (Enclosure)
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
DESIGN OF AXIAL SUPPORTS FOR PIPING USING LUGS WELDED TO THE PIPE
NCR WBN SWP 8155
WBRD-50-390/81-82, WBRD-50-391/81-76
10 CFR 50.55(e)
THIRD INTERIM REPORT

Description of Deficiency

The two deficiencies identified by this NCR are:

1. Lugs, designed to keep pipes from moving axially, butt up against the rounded corner of square tubing on pipe supports allowing greater movement than designed for. This results in a longer moment arm, creating a bending moment on the pipe wall that could result in overstressing of the pipe.

2. The criteria for determining the moment arm to the centroid of the bearing area was misinterpreted. This resulted in smaller moment arms, producing nonconservative pipe stresses induced by the lug.

Interim Progress

TVA design employees have reviewed all typicals and engineered supports against reevaluated criteria (which removed some of the conservatism). We are currently reviewing and revising appropriate design documents (CEB Lug Report 76-20 and Pipe Support Design Manual). All the typical supports have been found to be adequate. The engineered supports have lugs that cause overstressing of the pipe walls in some cases. A 2-fold approach was taken toward resolving this problem. (1) Some of the lugs that caused the overstress condition have been redesigned. (2) A testing program was initiated at the construction site and load rated at Singleton Laboratory to see if it was feasible to modify the supports by a shimming process. The testing program showed that it was practical to shim the supports to eliminate condition No. 1 (see Description of Deficiency). A series of drawings was issued to CONST outlining the use of the shim to correct condition 1. Revisions to engineered supports were done under ECN 3184. All support drawings have been issued with corrections. Additional information will be provided in the next report.