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

USNRC REGION II
ATLANTA, GEORGIA

March 14, 1983

83 MAR 17 A9:43

WBRD-50-390/82-87
WBRD-50-391/82-83

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 - USE OF FILLET WELDS ON PIPING LUGS - WBRD-50-390/82-87, WBRD-50-391/82-83 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on August 19, 1982 in accordance with 10 CFR 50.55(e) as NCR GEN CEB 8209. This was followed by our interim reports dated September 20, 1982 and January 19, 1983. Enclosed is our final report. An interim report is being submitted separately on this NCR for the Bellefonte Nuclear Plant.

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

L. M. Mills, Manager
Nuclear Licensing

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

8303210596 830314
PDR ADOCK 05000390
S PDR

OFFICIAL COPY

IE 27

ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
USE OF FILLET WELDS ON PIPING LUGS
WBRD-50-390/82-87, WBRD-50-439/82-83
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Fillet welds have been used to attach lugs to piping at Watts Bar. These lugs are permanent integral attachments on mechanical piping and are designed to provide support or to retain movement axially or laterally. These lugs were designed by either TVA or by vendors, and while the use of the fillet-welded lugs is permitted by the ASME Code, TVA's Civil Engineering Support Branch (CEB) was concerned that TVA had no specific design document to qualify piping with fillet-welded lugs and that their design document, CEB report 76-20, was being used even though it requires the use of full penetration welds.

Safety Implications

Use of CEB report 76-20 in the design of fillet-welded lugs intended for use with safety-related piping could produce larger piping stresses than those for which the piping was designed. This could cause the pipe to fail, which in turn could adversely affect safe operation of the plant.

Interim Progress

TVA has determined that the vendor's designs were based on their own design standards and not on CEB report 76-20. At Watts Bar, this involves two lugs used in rigorously analyzed piping and designed by EDS Nuclear. These vendor-designed fillet-welded lugs are adequate as is.

The use of fillet-welded lugs on rigorously analyzed piping was limited to the two lugs designed by EDS. For alternately analyzed piping, the use of fillet-welded lugs was limited to systems which will operate at 275 lb/in pressures or less. Because the data presented in CEB report 76-5, "WBN-Alternate Criteria for Piping Analysis and Support," was based on pressures of 875 lb/in or greater, TVA has determined that in those cases where CEB 76-20 was used to design fillet-welded lugs the piping stress margin in CEB report 76-5 data exceeded the additional design stresses required for the use of fillet-welded lugs. Therefore, the lugs are acceptable as is. To control the future design of fillet-welded lugs at Watts Bar, design procedures have been included in design input memorandum (DIM) WB-DC-31.9-5. Therefore, all necessary corrective actions and actions to prevent recurrence have been completed.