

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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January 29, 1982

WBRD-50-390/81-39  
WBRD-50-391/81-38

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:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - DEFICIENCIES IN BOX ANCHORS  
AND HANGER LUGS - WBRD-50-390/81-39, WBRD-50-391/81-38 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector  
R. V. Crlenjak on April 10, 1981 in accordance with 10 CFR 50.55(e)  
as NCR 2795R1. Interim reports were submitted on May 11, June 18,  
August 27, and November 5, 1981. 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*

L. M. Mills, Manager  
Nuclear Regulation and Safety

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  
WAT'S BAR NUCLEAR PLANT UNITS 1 AND 2  
DEFICIENCIES IN BOX ANCHORS AND HANGER LUGS  
WBRD-50-390/81-39, WBRD-50-391/81-38  
10 CFR 50.55(e)  
FINAL REPORT

Description of Deficiency

The ASME Code requires that the materials used in attachments welded to the RCS pressure boundary be traceable to the Certified Materials Test Reports (CMTR). Box anchors and hanger lugs have been fabricated using materials which are not traceable to CMTR's. These materials were not verified as having valid heat numbers. In addition, Code welds on box anchors and hanger lugs were made by uncertified welders and at least two cases have occurred where uncertified welders started welds which were finished by certified welders.

Safety Implications

This condition could have resulted in failures of box anchors and/or hanger lugs. These failures could result in ERCW piping becoming overstressed and failing during normal operations or during an accident, thus adversely affecting the safety of operations of the plant.

Corrective Action

The subject deficiency consists of items a, b, and c as follows: (a) Heat numbers on material used for box anchors and hanger lugs are not traceable to CMTR's; (b) Welds on box anchors and hanger lugs were made by unqualified welders (certified welders not qualified to the appropriate thickness range); and (c) Welds on anchors and lugs were partially performed by a welder not certified for seven-eighths of an inch thick plate.

Item (a), untraceable heat numbers, occurred due to an oversight in verifying and transferring heat numbers. The heat number, appearing on the seven-eighths of an inch thick plate used, is traceable to a CMTR which documents the heat numbers for one-half inch thick plate only. This deficiency was discovered during document finalization and review. Item (a) was in the process of resolution; however, the piping and shear lugs involved in this deficiency have been deleted from the design of this plant by means of Engineering Change Notices (ECNs) 2756, 3049, 3174, and 3217. These ECN's specify removing the previously installed carbon steel piping and reinstalling stainless steel piping. This was due to a flow rate and corrosion study which has shown carbon steel piping to be inadequate to meet design requirements for this system (see our final report dated September 23, 1981 on Corrosion of Carbon Steel Piping - WBRD-50-390/81-10, WBRD-50-391/81-09). Since the features involved in this deficiency are no

longer included in the design of this plant, TVA considers this item resolved. To prevent recurrence, TVA has done the following: (1) Separated the mechanical engineering unit into engineering and quality control groups, thus ensuring heat number verification by independent inspectors; (2) Issued a requirement that inspectors verify heat number validity before releasing material for welding; and (3) Retrained QC inspectors in the requirements for heat number verification as specified by WBNP-QCP-4.10, Standard Inspection and Test Instructions for Mechanical Piping Systems.

Item (b), unqualified welders, occurred because the craftsmen involved were under the erroneous impression that the plate was three-fourths of an inch thick, the maximum thickness for which they were certified. The plate was actually seven-eighths of an inch. This deficiency was discovered during the investigation of the heat number deficiency described under Item (a). This item has been dispositioned to "use-as-is" because design calculations demonstrated the as-built weld thickness (or material thickness) is sufficient to handle the designed loads and the weld thickness found in the field was in no case to be beyond that for which the welder(s) were qualified. Also, all welds in question have been surface examined (liquid penetrant examination) and found to be adequate. TVA has determined that this nonconformance was an isolated case. To prevent recurrence, applicable requirements of WBNP-QCI-4.3, "Welding Surveillance and Weld Procedure Assignment," were reemphasized to craft personnel on March 2, 1981. Also, the project began May 1, 1981, ensuring that all new welders certified onsite are certified to "heavy wall" requirements. Additionally, all welders previously certified to "thin wall" requirements only have been recertified to "heavy wall" requirements.

Item (c), thickness certification, documents cases where a weld was started by a welder who was certified to weld up to three-fourths of an inch but not to seven-eighths of an inch plate thickness. The welder completed the weld up to three-fourths of an inch and then a welder certified for seven-eighths of an inch and larger wall thickness completed the weld. This procedure is acceptable per ASME section 9 and is not a nonconforming condition.