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TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

April 24, 1984 16 P 4: 05

WBRD-50-390/83-18
WBRD-50-391/83-17

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 - INACCURATE RESULTS FROM COMPUTER PROGRAM "ANCHORS" - WBRD-50-390/83-18, WBRD-50-391/83-17- REVISED FINAL REPORT FOR UNIT 1 AND FOURTH INTERIM REPORT FOR UNIT 2

The subject deficiency was initially reported to NRC-OIE Inspector L. Watson on March 29, 1983 in accordance with 10 CFR 50.55(e) as NCR GEN CEB 8302. Interim reports were submitted on April 26 and September 21, 1983. A final report for unit 1 and third interim report for unit 2 was submitted on January 4, 1984.

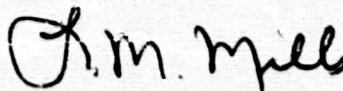
NRC-OIE Inspector C. A. Julian was notified on April 9, 1984 that NCR GEN CEB 8402 will supersede NCR GEN CEB 8302, due to a change of status concerning the subject deficiency. Enclosed is our revised final report for unit 1 and fourth interim report for unit 2. We expect to submit our next report for unit 2 on or about November 21, 1984.

Please note that this deficiency is not applicable to Bellefonte Nuclear Plant (BLN) as no skewed anchors were designed for BLN using the direction cosines option of the ANCHORS computer program.

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

Records Center (Enclosure)
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, Georgia 30339

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
INACCURATE RESULTS FROM COMPUTER PROGRAM "ANCHORS"

NCR GEN CEB 8402

WBRD-50-390/83-18, WBRD-391/83-17

10 CFR 50.55(e)

REVISED FINAL REPORT FOR UNIT 1 AND FOURTH INTERIM REPORT FOR UNIT 2

Description of Deficiency

Errors have been found in using version 2.0 of the ANCHOR program for determining the design loads for piping anchors. The output loads from the program are conservative; however, the results of the transformation from global coordinate system to local coordinate system for skewed anchors (that is, anchors whose local axes are not parallel to one of the global directions) are unconservative. It appears that this program error can be attributed to the use of absolute values of the global loads. Reversing global loads were not considered in the process of coordinate system transformation.

Safety Implications

Since output loads from this program are unconservative, and it is possible that the anchors have been underdesigned, safety-related piping could fail which would subsequently adversely affect the safety of the plant.

Corrective Action - Watts Bar unit 1

The version 2 of ANCHOR program has been revised to consider the reversing nature of the loads in the global to local coordinate transformation. ANCHOR version 3, which is now available as a controlled version, conservatively computes the local loads as was intended for version 2. Where anchor designs are affected, anchor loads will be evaluated on a case-by-case basis to remove conservatism.

Fifty-two anchors for WBN unit 1 were identified in a skewed direction which would be affected by this deficiency. Of the 52 anchors, 50 required revision. The reanalysis of anchor loads has been completed and the new anchor load tables have been issued by WBN analysis personnel. The anchor support designs are being reviewed by the Watts Bar Design Project to determine if new loads are acceptable or if design revision is required. All corrective action for this effort is being accomplished under engineering change notice (ECN) 3882. Any required anchor modifications at Watts Bar will be completed by May 17, 1984.

Interim - Watts Bar unit 2

Anchor load revisions are pending and will be corrected prior to issue.