

USNRC REGION
TENNESSEE VALLEY AUTHORITY
ATLANTA, GEORGIA
CHATTANOOGA, TENNESSEE 37401

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June 22, 1982

WBRD-50-390/82-32
WBRD-50-391/82-29
BLRD-50-438/82-29
BLRD-50-439/82-26

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:

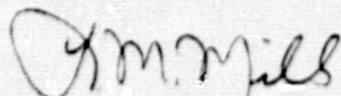
WATTS BAR AND BELLEFONTE NUCLEAR PLANTS UNITS 1 AND 2 - ERRORS IN WERCO
PROGRAM DISTRIBUTED BY AAA TECHNOLOGY - SECOND INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
D. Quick on April 9, 1982 in accordance with 10 CFR 50.55(e) as NCRs
WBN CEB 8204 and BLN CEB 8204. This was followed by our first interim
report dated May 10, 1982. Enclosed is our second interim report. We
expect to submit our next report by October 5, 1982.

If you have any questions concerning this matter, 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, DC 20555

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ENCLOSURE

WATTS BAR AND BELLEFONTE NUCLEAR PLANTS UNITS 1 AND 2
ERROR IN WERCO PROGRAM DISTRIBUTED BY AAA TECHNOLOGY
NCR'S WBN CEB 8204 ANI BLN CEB 8204

WBRD-50-390/82-32, WBRD-50-391/82-29; BLRD-50-438/82-29, BLRD-50-439/82-26
10 CFR 50.55(e)

SECOND INTERIM REPORT

Description of Deficiency

The documentation of the WERCO program, as distributed by AAA Technology (Houston), does not include a complete description of the assumptions and limitations of the program. This has contributed to unacceptable usage of the program in the design of TVA nuclear plants. Specific cases are as follows:

TVA users of the WERCO Program have erroneously assumed that WERCO uses the maximum curves in figures SR-1 through SR-3, SP-1 through SP-10, and SM-1 through SM-10 from Welding Research Council (WRC), WRC bulletin 107, "Local Stresses in Spherical and Cylindrical Shells Due to External Loadings," in the evaluation of peak stresses in spherical shells. The WERCO documentation alludes to, but does not state, that these curves are not used by the program.

The WERCO program uses curves which have been extended beyond the curves presented in WRC bulletin 107. In particular, figures 1C and 2C are extended into regions where the WRC bulletin states the curves are unextendable (WRC bulletin 107, page 13). The WERCO documentation fails to present the extended curves or state that the unwarranted extensions were made.

The form of the WERCO output implies that shell stresses because of torsional loads on rectangular attachments are included in the determination of peak stress. These stresses are not considered by the WERCO program no matter what torsional moment is input.

Interim Progress

All projects and branches within TVA's Division of Engineering Design with design responsibilities requiring the WERCO program were queried to determine the impact of the usage of the WERCO program on design. The responses obtained stated that all analyses utilizing the WERCO program have been reviewed and that reanalysis is being performed as applicable.

To prevent further misuse of the program, all WERCO users have been notified of the problems when using WERCO. TVA is planning to replace the WERCO program with the TVA program WRC107 by July 30, 1982.