TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

October 12, 1982

WBRD-50-390/82-62, -391/82-59
BLRD-50-438/82-41, -439/82-37
HTRD-50-518/82-20, -520/82-20
YCRD-50-566/82-17, -567/82-17

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, BELLEFONTE, HARTSVILLE, AND YELLOW CREEK NUCLEAR PLANTS UNITS 1 AND 2 - NONCONSERVATIVE CALCULATION METHOD FOR GENERAL CONSTRUCTION SPECIFICATION G-32 VIOLATIONS - SECOND INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector D. Quick on May 28, 1982 in accordance with 10 CFR 50.55(e) as NCR WBN SWP 8208. Related NCR GEN CEB 8205 was also determined to be reportable under 10 CFR 50.55(e). This was followed by our first interim report dated July 2, 1982. Enclosed is our second interim report. We expect to submit our next report by April 18, 1983.

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, D.C. 20555

ENCLOSURE

WATTS BAR, BELLEFONTE, HARTSVILLE, AND YELLOW CREEK NUCLEAR PLANTS UNITS 1 AND 2
NONCONSERVATIVE CALCULATION METHOD FOR GENERAL CONSTRUCTION
SPECIFICATION G-32 SPACING VIOLATIONS
NCR'S WBN SWP 8208 AND GEN CEB 8205
WBRD-50-390/82-62, -391/82-59; BLRD-50-438/82-41, -439/82-37;
HTRD-50-518/82-20, -520/82-20; YCRD-50-566/82-17, -567/82-17
10 CFR 50.55(e)
SECOND INTERIM REPORT

Description of Deficiency

NCR WBN SWP 8208 concerns TVA using a nonconservative calculational method when evaluating violations of the TVA General Construction Specification G-32 spacing requirements between installed concrete anchors and embedded plates. This situation could degrade the maximum load capability of either. The apparent cause of this deficiency was the use of manufacturers information by TVA because of a lack of procedural controls assuring use of safety factors spelled out in TVA's G-32 and Design Standard DS-C6.1.

NCR GEN CEB 8205 concerns too closely spaced stud anchors on strip plates which could fail because of pulling out a section of concrete rather than failure of the studs themselves if overloaded. Computations for strip plates using closely spaced Nelson studs on Watts Bar Nuclear Plant indicate that in some cases design loads for each stud were compared to the ultimate concrete capacity when checking attachments, whereas close spacing of the studs results in a reduction of the load carrying capability of each stud because of the interaction of the forces within the concrete. This could indicate that some safety-related supports could have a factor of safety as low as one when a minimum of four is required, as specified in Design Standard DS-C6.1. This is a generic condition which is potentially applicable to all TVA plants.

Interim Progress

For NCR WBN SWP 8208, in lieu of reviewing the calculations to determine when the nonconservative method was used, a random sample was selected which consisted of in-place expansion anchors which were spaced closer to embedded plates than allowed by G-32. Sixty occurences of reduced spacing were analyzed and all 60 were found to be acceptable. The zero failures in the sample of 60 is well within the 5% failure rate and 95% confidence level specified as acceptable in OIE Bulletin 79-02, Revision 2. Therefore, the use of the nonconservative method did not have a statistically significant effect on the acceptability of the in-place anchors. To prevent a recurrence of this situation, designers have been referred to Design Standard DS-C6.1, both by memorandum and by meeting, and a formal design procedure has been established in TVA document "Watts Bar Pipe Design Manual," volume 3, section 7.14. TVA is still investigating applicability to other TVA plants.

For GEN CEB 8205 TVA is continuing the process of evaluating the subject deficiency.