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

April 27, 1983

USNRC REGION II
ATLANTA, GEORGIA
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WBRD-50-390/82-02, -391/82-02
WBRD-50-390/82-57, -391/82-54
WBRD-50-390/82-59, -391/82-56
WBRD-50-390/82-73, -391/82-68
WBRD-50-390/82-74, -391/82-69
WBRD-50-390/82-78, -391/82-74
WBRD-50-390/83-19, -391/83-18
WBRD-50-390/83-20 -391/83-19
WBRD-50-390/83-21 -391/83-20
WBRD-50-390/83-22 -391/83-21

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 - PROGRAM DEFICIENCY: ALTERNATELY ANALYZED PIPING - SECOND COMBINED INTERIM REPORT

Our previous submittal on the subject alternate analysis program deficiency, dated November 24, 1982, combined, for reporting purposes, the following 10 CFR 50.55(e) items: NCR WBN SWP 8160 (WBRD-50-390/82-02, -391/82-02), NCR WBN SWP 8220 (WBRD-50-390/82-57, -391/82-54), NCR WBN CEB 8218 (WBRD-50-390/82-59, -391/82-56), NCR 4164R (WBRD-50-390/82-73, -391/82-68), NCR WBN SWP 8231 (WBRD-50-390/82-74, -391/82-69), and NCR WBN SWP 8238 (WBRD-50-390/82-78, -391/82-74).

Since our previous submittal, four related nonconformances have been identified and determined to be reportable under 10 CFR 50.55(e). These NCRs were initially reported to NRC-OIE as NCRs WBN SWP 8264, WBN SWP 8306, WBN SWP 8311, and WBN SWP 8315, on December 17, 1982, March 2, March 3, and March 11, 1983, respectively. NRC-OIE was notified that these NCRs would be reported as part of the program deficiency and as such would be addressed in this submittal. The following WBRD numbers have been assigned to these NCRs: NCR WBN SWP 8264 (WBRD-50-390/83-19, -391/83-18), NCR WBN SWP 8306 (WBRD-50-390/83-20, -391/83-19), NCR WBN SWP 8311 (WBRD-50-390/83-21, -391/83-20), and NCR WBN SWP 8315 (WBRD-50-390/83-22, -391/83-21).

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U.S. Nuclear Regulatory Commission April 27, 1983

Enclosed is our second combined interim report. We expect to submit our next report on or about September 30, 1983.

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

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
PROGRAM DEFICIENCY: ALTERNATELY ANALYZED PIPING
WBRD-50-390/82-02, -391/82-02; WBRD-50-390/82-78, -391/82-74
WBRD-50-390/82-57, -391/82-54; WBRD-50-390/83-19, -391/83-18
WBRD-50-390/82-59, -391/82-56; WBRD-50-390/83-20, -391/83-19
WBRD-50-390/82-73, -391/82-68; WBRD-50-390/83-21, -391/83-20
WBRD-50-390/82-74, -391/82-69; WBRD-50-390/83-22, -391/83-21
10 CFR 50.55(e)
SECOND COMBINED INTERIM REPORT

Description of Deficiency

Recently a number of 10 CFR 50.55(e) items have been written against various aspects of alternately analyzed piping. Consequently, TVA determined that an overall program deficiency existed in the Watts Bar Nuclear Plant (WBN) alternate analysis program. The following is a brief description of the 10 CFR 50.55(e) items which have been combined under this program deficiency.

NCR WBN SWP 8160 (WBRD-50-390/82-02, -391/82-02) - Interface between alternately analyzed piping and deadweight supported piping not correctly analyzed.

NCR WBN SWP 8220 (WBRD-50-390/82-57, -391/82-54) - Alternate analysis not documented properly. No engineering procedure to control alternate analysis.

NCR WBN CEB 8218 (WBRD-50-390/82-59, -391/82-56) - Flanged joints not analyzed.

NCR 4164R (WBRD-50-390/82-73, -391/82-68) - Spacing requirements on Seismic Pipe Support not followed.

NCR WBN SWP 8231 (WBRD-50-390/82-74, -391/82-69) - Technical deficiencies in analysis.

NCR WBN SWP 8238 (WBRD-50-390/82-78, -391/82-74) - Axial restraint not provided by supports.

NCR WBN SWP 8264 (WBRD-50-390/83-19, -391/83-18) - Some small process piping supports were not designed consistently with the allowed installation. Small process piping support drawings have been identified as having the following discrepancies:

1. Drawing 47205[illegible]-151 was analyzed with an overall length of 100 inches in lieu of the 120-inch overall length. Using the 120-inch length in the analysis will lower the allowable loading capacity.

2. Drawing 47[illegible]-38 is not adequate for use as a typical for the worst possible cases; it will require additional limitations on its use.

3. Drawing 47A053-3 allowed fillet welds between the lug and the support angle which, due to the moment, will result in an overstressed weld.

4. Drawing 47A053-136 shows a vertical, horizontal, and axial restraint without specifying the maximum axial span lengths. This typical may be used for axial spans in excess of the support design.

NCR WBN SWP 8306 (WBRD-50-390/83-20, -391/83-19) - Aluminum piping was used for the demineralized water system in many areas. Portions of this piping were alternately analyzed per the Watts Bar Alternate Analysis Criteria, CEB 76-5. The Watts Bar Alternate Analysis Criteria does not include aluminum piping in its scope. Consequently, data and support information for steel piping was used erroneously for aluminum piping.

NCR WBN SWP 8311 (WBRD-50-390/83-21, -391/83-20) - Schedule 10S stainless steel piping (6 inches and smaller in diameter) was used for portions of the Primary Water Makeup System. Some of this piping has been alternately analyzed per the Watts Bar Alternate Analysis Criteria CEB 76-5. The scope of the Watts Bar Alternate Criteria does not include schedule 10S stainless steel piping for diameters 6 inches and smaller. Consequently, analysis and support data for normal weight stainless steel piping was used erroneously for scheudle 10S stainless steel piping.

NCR WBN SWP 8315 (WBRD-50-390/83-22, -391/83-21) - Support detail discrepancies have been found on the support drawing series 47A491 and 47A492 for the raw service water, service air, primary makeup water and demineralized water piping systems. The following discrepancies were identified.

1. Incorrect use of component parts and materials in design of the supports as shown on support design drawings.

2. Disagreement between the loads used on support design drawings and the loads used on the Watts Bar Alternate Analysis Criteria CEB 76-5.

<u>Interim Progress</u> (All above deficiencies)

Due to the deficiencies identified by the TVA design review team formed to investigate the program deficiency, TVA has concluded that a significant breakdown in the WBN alternate analysis program has occurred which will require a reverification of the alternate analysis performed for WBN. TVA is currently proceeding with a 100 percent reverification of the WBN alternate analysis work.

The full review program will also evaluate the qualification of the piping systems against code requirements if compliance with the WBN alternate analysis criteria cannot be achieved. This will be done to minimize field rework.

This program will utilize hand calculations as well as computer analysis to qualify piping analyses which do not meet the specific rules of the alternate analysis methods.

At this time the program is approximately 75 percent design complete for units 1 and common. Additional information will be provided in our next report.