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

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September 22, 1983

WBRD-50-390/82-41
WBRD-50-391/82-38

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 - DIGITIZED RESPONSE SPECTRA DATA USE - WBRD-50-390/82-41, WBRD-50-391/82-38 - FINAL REPORT FOR UNIT 1 AND FOURTH INTERIM REPORT FOR UNIT 2

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on April 22, 1982 in accordance with 10 CFR 50.55(e) as NCR WBN CEB 8205. Interim reports were submitted on May 21 and October 25, 1982 and July 20, 1983. Enclosed is our final report for unit 1 and our fourth interim report for unit 2. We expect to submit our next report for unit 2 on or about June 30, 1984.

The generic implications related to the use of uncontrolled Civil Engineering Support Branch reports in the design of safety-related features are being evaluated. Deficiencies identified during this evaluation will be handled on an individual or generic basis as appropriate. Nonconformance reports will be initiated to document such deficiencies and evaluated for reporting applicability in accordance with the requirements of 10 CFR 50.55(e).

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

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
DIGITIZED RESPONSE SPECTRA DATA USE
NCR WBN CEB 8205
WBRD-50-390/82-41, WBRD-50-391/82-38
10 CFR 50.55(e)
FINAL REPORT FOR UNIT 1 AND
FOURTH INTERIM REPORT FOR UNIT 2

Description of Deficiency

Digitized seismic response spectra data used to qualify safety-related piping which attaches to the reactor coolant loop (RCL) (branch lines) was found to be used improperly. This deficiency involved the use of previously superseded data for the reanalysis of these components with respect only to the seismic portion of the analysis.

Also, the seismic response spectra for the unit 2 reactor building was applied to the analysis of the RCL piping located inside the unit 1 reactor building. The unit 1 reactor building is opposite hand with respect to unit 2 and rotated 90 degrees. Unit 2 spectra data is normally given by Westinghouse, and must be converted for unit 1 application.

The incorrect utilization of seismic spectra was discovered during a design-data review. The assignable cause has been determined to be that a TVA Civil Engineering Support Branch (CEB) report which contained the seismic response spectra data was an uncontrolled document. Because of this, an obsolete revision was inadvertently used to perform piping analyses. The seismic response spectra was incorrectly used for the unit 1 analyses because the analyst inadvertently used the unit 2 spectra (the notes detailing proper unit 2 to unit 1 conversion were evidently not read or followed).

Safety Implications

This condition resulted in superseded and possibly nonconservative response spectra data being used to qualify safety-related piping (reactor coolant loop branch line). If the design was deficient, this condition could have jeopardized the integrity of the reactor coolant loop during a seismic event, and thereby, jeopardize the safe operation of the plant.

Corrective Action

TVA has investigated the use of all uncontrolled reports which were used in the Watts Bar rigorous piping analyses. The investigation concluded that the extent of this deficiency with respect to the Watts Bar rigorous piping analysis was limited to the use of the CEB report discussed previously in the description of deficiency.

TVA has completed the reanalysis of all unit 1 piping analysis problems affected by this deficiency. All necessary unit 1 piping drawing and support load table revisions have also been completed. Engineering change notice (ECN) 3481 has been issued in order to revise affected unit 1 support drawings and to accomplish necessary field modifications. All unit 1 support drawing revisions will be completed by October 1, 1983, and all unit 1 support modifications will be completed by November 15, 1983.

TVA has established a controlled computer data base for the reactor coolant loop seismic response spectra data, and has issued a revised CEB report (80-09) which serves as an index for the spectral data base and references other pertinent data. TVA has also issued sections WBN-RAH-211 and WBN-RAH-212 to the Watts Bar Nuclear Plant Rigorous Analysis Handbook which detail how to select the correct response spectra for piping analysis and the proper method for reactor coolant loop interface, respectively. Also, CEB Engineering Procedure (EP) 21.38 was developed and issued on April 25, 1983. This EP establishes instruction and responsibilities for the control and documentation of CEB reports. These corrective measures should prevent recurrence of this type deficiency.

Interim Progress - Unit 2

Unit 2 reanalysis work is still being performed. Additional information will be provided in our next submittal on unit 2.