

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

OCT 15 10:31
October 9, 1985

WBRD-50-391/82-41

U.S. Nuclear Regulatory Commission
Region II
Attn: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Dr. Grace:

WATTS BAR NUCLEAR PLANT UNIT 2 - USE OF INCORRECT RESPONSE SPECTRA IN
GILBERT/COMMONWEALTH PIPING ANALYSIS - WBRD-50-391/82-41 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
F. J. Long on April 26, 1982 in accordance with 10 CFR 50.55(e) as
NCR WBN CEB 8207. Interim reports were submitted on May 27 and October 15,
1982 and April 22, 1983. Our final report for unit 1 and fourth interim
report for unit 2 was submitted on August 31, 1983. The fifth, sixth, and
seventh interim reports for unit 2 were submitted on May 22, 1984, May 13 and
June 26, 1985. Enclosed is our final report. TVA considers 10 CFR Part 21
applicable to this deficiency.

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

J. A. Dome
R. W. Hufham, Manager
Licensing and Risk Protection

Enclosure

cc: Mr. James Taylor, 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

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNIT 2
USE OF INCORRECT RESPONSE SPECTRA
IN GILBERT/COMMONWEALTH PIPING ANALYSIS
WBRD-50-391/82-41
NCR WBN CEB 8207
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Incorrect response spectra was used for the X-Y operating basis earthquake (OBE) dynamic level case for piping analysis 0600200-09-05 by Gilbert/Commonwealth, Oak Ridge, Tennessee. Spectra for el 725.0 feet (No. 202) in the east-west direction should have been used instead of spectra for el 715.0 feet (No. 201), since affected piping is located at el 725.0 feet. The application of spectra 201 may result in unconservative pipe stresses and support loads. The data supplied by Westinghouse (letters WAT-D-1778 and WAT-D-2948) was input incorrectly when applied to anchor movements at points 123 and 148. Points 123 and 148 are boron injection piping connections to the reactor coolant loops inside containment.

The analysis error mentioned above was discovered during an analysis review. It has been determined that the analyst did not properly choose the applicable response spectra and also dynamic movement data was improperly used. Westinghouse-supplied dynamic movement data which contained a diagram pertaining to the coordinate system with which they were working. The designer erred when he missed incorporating this Westinghouse-supplied coordinate information into the selection of a value from the Westinghouse data tables.

Safety Implications

The safety-related piping and/or supports in zone 4 of the safety-injection system could have been stressed beyond their design limits, thus resulting in failure of the pipe. Failure of the safety-related piping would create a condition adverse to the safe operation of the plant.

Corrective Action

The rigorous piping analysis problem 0600250-09-05 (which is the unit 2 counterpart of unit 1 problem 0600200-09-05) has been reanalyzed and issued to incorporate the correct response spectra and anchor movements. Unit 2 analysis and support design has been performed under engineering change notice (ECN) 4792. TVA has completed support drawing modifications for unit 2. All construction modifications to affected hangers are scheduled for completion by November 29, 1985. To prevent recurrence, a section of the WBN rigorous analysis handbook which delineates the proper procedures for choosing and verifying the applicable response spectra and dynamic movement data has been issued to TVA designers. This information has also been issued to Gilbert/Commonwealth.