TENNESSEE VALLEY AUTHORITY

5N 157B Lookout Place

April 17, 1986

WBRD-50-390/83-28
WBRD-50-391/83-28

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

Dear Dr. Grace:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - SEISMIC ANALYSIS OF THE NORTH STEAM VALVE ROOMS - WBRD-50-390/83-28, WBRD-50-391/83-28 - REVISED FINAL REPORT FOR UNIT 2

The subject deficiency was initially reported to NRC-OIE Inspector Linda Watson on May 2, 1983 in accordance with 10 CFR 50.55(e) as NCR WBN CEB 8301. Our final report for both units was submitted on December 1, 1983 and the item was closed for unit 1 in Inspection Report No. 50-390/84-45. Enclosed is our revised final report for unit 2.

If there are any questions, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. L. Gridley
Manager of Licensing

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
SEISMIC ANALYSIS OF THE NORTH STEAM VALVE ROOMS
WBRD-50-391/83-28
NCR WBN CEB 8301
10 CFR 50.55(e)
REVISED FINAL REPORT

Description of Deficiency

In reviewing the "Dynamic Earthquake Analysis of the North Steam Valve Room" in accordance with the Division of Engineering Design (EN DES) Special Engineering Procedure (SEP) 82-14, it was found that TVA analysts failed to follow requirements in Watts Bar Design Criteria WB-DC-20-24 when doing the original analysis. Specifically, WB-DC-20-24 requires that natural frequencies be used in the generation of response acceleration spectra. This was not done, resulting in clipping of the peaks of the response spectra. Also, during the original analysis, the torsional effects of the structure were considered insignificant and analysis did not include these effects. Later changes in the structural configuration and weights of attached masses have caused changes in structural responses of approximately 40 percent, and as the valve rooms are an open structure, the inclusion of the torsional effects in the analysis is required. However, because of a lack of procedure, the structural and load changes made were never sent to the analysts for review and reanalysis.

Safety Implications

Failure to consider natural frequencies or structural and load changes in the valve room design could result in the design and installation of inadequate supports for various safety-related piping in the rooms. This could cause the supports to fail during a seismic event which could cause a subsequent failure of the piping and adversely affect safe operation of the plant.

Corrective Action

TVA has completed its reanalysis on the north steam valve room for unit 2, and has identified 155 supports which require modification. These modifications will be performed per engineering change notice (ECN) 4155 by unit 2 fuel load.

To prevent a recurrence of this problem, TVA has taken steps to ensure that any future changes in structural configurations or loads are coordinated with the seismic analysis personnel by placing appropriate requirements in Office of Engineering Procedure OEP-10 and in interface document, CEB-DI-121.03. Also, all affected analysts have been trained in the requirements of WB-DC-20-24.