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

August 18, 1981

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - SEISMIC RESPONSE FOR PRIMARY BRANCH LINES MAY NOT BE CONSERVATIVE - NCR CEB 79-18 - SEVENTH INTERIM REPORT

On May 7, 1979, Milton Hunt, NRC-OIE Region II, was informed that the subject nonconformance was determined to be reportable in accordance with 10 CFR 50.55(e). This was followed by our interim reports dated June 7 and June 26, 1979, March 18, July 23, and October 15, 1980, and February 6, 1981. Enclosed is our seventh interim report. We expect to submit our next report by January 19, 1982. TVA considers 10 CFR Part 21 to be applicable to this nonconformance.

If you have any questions concerning this matter, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure
cc: Mr. Victor Stello, Jr., Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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ENCLOSURE
BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
NCR CEB 79-18
10 CFR 50.55(e)
SEISMIC RESPONSE FOR PRIMARY BRANCH
LINES MAY NOT BE CONSERVATIVE
SEVENTH INTERIM REPORT

Description of Deficiency

Babcock and Wilcox (B&W) specification 1391 provides TVA with response spectra for use in TVA primary system branch line analyses. Revisions 1 and 2 of this specification provided safe shutdown earthquake (SSE) spectra at a single damping value with instructions for TVA to use one-half of the SSE data as the one-half SSE (operating base earthquake) response spectra. The damping value used to generate the response spectra was a composite modal damping value. Although B&W stated the composite value was in accordance with applicable regulatory guides, the value was conservative only for all pipe sizes under SSE loadings. It was not conservative for all piping sizes under one-half SSE loadings. TVA interpreted the spectra as being in accordance with the applicable criteria for all pipe sizes under all loadings and performed system analyses accordingly.

A proposed revision 3 reflected refinement of spring rates along with other design changes and provided new SSE and one-half SSE response spectra for several damping values. TVA review of the revision 3 data indicates the revisions 1 and 2 one-half SSE spectra may not be conservative for branch piping less than 12 inches in diameter.

Interim Progress

The Civil Engineering Branch (CEB) recently received the 1391 specification revision 3 for review. Based on B&W's calculation for the 1391 primary loop specification, TVA has reanalyzed most of the attached piping to incorporate the changes. Some of the movements have increased, some new spectra have been added, and one set of spectra for the pressurizer has increased significantly over the values presented in the B&W calculation. CEB is working with B&W to try to reduce the increased response spectra. Teledyne Engineering Services and PMB, Incorporated, are reviewing their analysis of the new spectra and movements to determine the effect it will have on completed analyses. Some reanalysis is anticipated. Our review will be completed by the next report and a plan developed with B&W to reduce the pressurizer spectra.