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

August 27, 1982

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - FAILURE OF MAIN STEAM LINES BECAUSE OF MAIN FEEDWATER OVERFILL - NCR BLN NEB 8004 - SEVENTH INTERIM REPORT

On March 19, 1980, Bruce Cochran, 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 April 17, September 23, and December 29, 1980, June 25 and December 28, 1981, and March 31, 1982. Enclosed is our seventh interim report. We expect to submit our next report by November 19, 1982. We consider 10 CFR Part 21 to be applicable to this nonconformance.

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

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, DC 20555

Mr. James McFarland (Enclosure)
Senior Project Manager
Babcock & Wilcox Company
P.O. Box 1260
Lynchburg, Virginia 24505

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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
FAILURE OF MAIN STEAM LINES BECAUSE OF MAIN FEEDWATER OVERFILL
NCR BLN NEB 8004
10 CFR 50.55(e)
SEVENTH INTERIM REPORT

Description of Deficiency

A preliminary safety concern, PSC 35-79, was initiated within B&W, Lynchburg, Virginia, which presents the concern that a potential exists for overfilling steam generators by excessive addition of main feedwater (MFW) or auxiliary feedwater (AFW).

Excessive feedwater addition, as used here, is defined as a condition which would exist if feedwater (main or auxiliary) is continually added to the steam generators in an unplanned fashion at a rate greater than the core heat generation capability for converting it to steam. Overfill, the condition addressed in this preliminary safety concern, may be defined as a limiting case of excessive feedwater addition which allows liquid spillage into the steam lines.

It is estimated that the time to overfill the integral economizer once-through steam generators (IEOTSG) provided on the Bellefonte Nuclear Plant is approximately 2 to 4 minutes with MFW and between 7 to 15 minutes with AFW.

Potential results of overfill could be:

1. Steam line deformation and failure due to water accumulation.

2. Steam generator blowdown because of steam line failure with the potential for core return to power from a safe shutdown condition, excessive steam generator tube stress, exceeding reactor vessel NDT limits, or containment overpressurization.

Interim Progress

TVA and B&W met on July 1, 1982, at B&W, Lynchburg, Virginia, to discuss the main feedwater (MFW) concern. B&W had previously given TVA the additional data needed to enable TVA to evaluate B&W's mini-report on MFW overfill. TVA did evaluate the report and used input from the report to do pipe force calculations to determine if the main steam lines (MSL) could withstand the forces generated by the MFW overfill. TVA's preliminary results indicate that the MSL appear to be able to withstand the MFW overfill event. Further detailed calculations are needed, however, before a final conclusion can be reached. TVA is working on these detailed calculations and will provide additional information in the next report.