

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

JUN 25 8 22 AM '82
June 22, 1982

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

50-438

Dear Mr. O'Reilly:

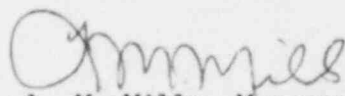
BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - ATTACHED PIPING POTENTIAL SAFETY
CONCERN - NCR BLN NEB 8008 - FIFTH INTERIM REPORT

On November 21, 1980, R. W. Wright, 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 December 19, 1980, April 2 and July 17, 1981, and February 17, 1982. Enclosed is our fifth interim report. We consider 10 CFR Part 21 to be applicable to this nonconformance. We expect to submit our next report by October 14, 1982.

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
ATTACHED PIPING POTENTIAL SAFETY CONCERN
NCR BLN NEB 8008
10 CFR 50.55(e)
FIFTH INTERIM REPORT

Description of Deficiency

Babcock and Wilcox (B&W), Lynchburg, Virginia, has uncovered an apparent disconnect between the assumptions relative to pipe breaks in the loss-of-coolant accident (LOCA) analysis and the structural analysis of certain connecting pipes in the affected or broken loop. The LOCA analysis does not assume a consequential failure of piping caused by a LOCA pipe break. Certain piping and instrumentation connections to the Reactor Coolant System (RCS) may not be adequately designed to maintain function or to resist consequential failures as a result of the LOCA break in the Reactor Coolant System. Consequential failures of these piping connections could represent an inconsistency with the ECCS analysis performed for Bellefonte.

Interim Progress

B&W has performed an investigation on the 205 FA plant where the high energy lines which could be subjected to major displacements, jet impingement, and/or pipe whip from a spectrum of LOCA pipe breaks were listed. A comparison was made of the connecting lines which were designed for the appropriate displacements and loadings from LOCA breaks. This investigation significantly reduced the number of piping connections of concern. However, some potential problem areas were identified.

These problem areas were categorized into three groups as listed in the fourth interim report. The current status for each item within these groups is as follows (for items with completed analyses, see fourth interim report):

1. Pipe supplied by B&W to be analyzed by B&W to show either acceptability or need for corrective fix.
 - Primary Piping Cold Leg - Analysis complete
 - Surge Line - Analysis complete
 - Spray Line - B&W has submitted the results of their spray line analysis. TVA is reviewing B&W's data for its effect on TVA's analysis of attached piping.
 - Incore Piping - B&W is still investigating. B&W's schedule for submitting incore data is September 1, 1982.

2. TVA-supplied piping for which B&W has supplied the required input to TVA for the piping analysis.
 - Core Flood Line - Analysis complete
 - Low Pressure Injection and Decay Heat Drop Lines - Analysis complete
 - Steam and Feedwater Piping - Analysis complete
3. TVA-supplied piping for which B&W has generated input for TVA use in structural analysis.
 - High Pressure Injection and Instrument Lines - Analysis complete

As stated in the fourth interim report, B&W also advised TVA that the safety analyses for steam line break (SLB) accidents did not consider any simultaneous or consequential failure of the RCS as a result of the original SLB. B&W has submitted data which TVA is considering for use in evaluating attached piping effects because of SLBs and feedwater line breaks (FLBs). In preparing this data, B&W considered the simultaneous or consequential failure of RCS primary piping as a result of a main SLB by comparing moments corresponding to primary piping LOCAs. B&W's comparison showed primary piping moments because of an SLB to be enveloped by existing design specifications. Since the primary piping has been shown to meet allowable stress limits for loads in excess of the SLB, B&W concluded that a direct calculation of stresses because of an SLB is not necessary. B&W has not performed a FLB analysis because the model used to analyze the SLB located both SL and FL nozzles at the same node. Since asymmetric cavity pressure and thrust are lower for the FLB, B&W concluded that the use of SLB data to evaluate structural effects of the FLB is conservative.