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

85 MAY 13 P 8 May 27 1985

BLRD-50-438/82-42
BLRD-50-439/82-38

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:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - EVALUATION OF FLANGE JOINTS - BLRD-50-438/82-42, BLRD-50-439/82-38 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on June 1, 1982 in accordance with 10 CFR 50.55(e) as NCR BLN CEB 8205. This was followed by our interim reports dated July 2 and November 17, 1982, April 18, 1983 and April 10 and October 10, 1984. Enclosed is our final report.

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. W. Hufham by RHS

J. W. Hufham, Manager
Licensing and Regulations

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

ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
EVALUATION OF FLANGE JOINTS
NCR BLN CEB 8205
BLRD-50-438/82-42, BLRD-50-439/82-38
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Flanged joints for ANS safety classes 2 and 3 alternately analyzed piping systems were not qualified in accordance with the ASME Boiler and Pressure Vessel Code, Section III, paragraph NC-3647. The alternately analyzed piping was analyzed using TVA's Office of Engineering (OE) Civil Engineering Branch (CEB) report CEB-76-11, "BLN - Alternate Criteria for Piping Analysis and Support." However, this report did not delineate guidelines or methods for flange verification. Flanged joints are used in a number of safety-related systems such as the essential raw cooling water (ERCW) system and the component cooling water (CCW) system at Bellefonte Nuclear Plant (BLN).

TVA has determined the cause of this deficiency to be that because of known conservatisms in CEB-76-11, flanges were originally thought to be inherently qualified for piping supported in accordance with that criteria. Therefore, flange qualification procedures were not included in CEB-76-11.

Safety Implications

Should the flanged joints on these systems become overstressed and fail during a seismic event, the ERCW and CCW systems' capabilities to adequately dissipate the long-term residual heat from the reactor core after plant shutdown could be impeded. This condition could adversely affect the safe operation of the plant.

Corrective Action

TVA has revised CEB-76-11 to include criteria for qualification of flanges. All flanges located in alternately analyzed piping were identified and have been evaluated for compliance to the revised criteria. As a result of this evaluation, TVA has determined that all identified flanges are qualified to the new criteria except for the pump suction and discharge flanges on chilled water pumps (2VE-MPMP-096-A and -271-A, 1VE-MPMP-213-B and -161-B, and 0VK-MPMP-004-B) for the control building and auxiliary building safety-related air-conditioning. The bolting on these flanges will be changed to "high-strength" bolting which will qualify them.

The revision of CEB-76-11 will prevent recurrence of this deficiency.

All corrective actions for this item will be completed by September 1, 1985.