

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

DEC 7 1983
December 5, 1983

BLRD-50-438/83-35

BLRD-50-439/83-31

U.S. Nuclear Regulatory Commission
Region II

Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

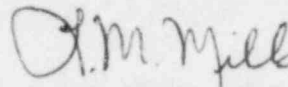
BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - B&W PLANT INTERNAL BOLT FAILURES
- BLRD-50-438/83-35, BLRD-50-439/83-31 - SECOND INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Linda Watson on May 13, 1983 in accordance with 10 CFR 50.55(e) as NCR R-30. This was followed by our interim report dated June 13, 1983. Enclosed is our second interim report. We expect to submit our next report by July 24, 1984.

If you have any questions, 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, 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

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
B&W PLANT INTERNAL BOLT FAILURES
BLRD-50-438/83-35, BLRD-50-439/83-31
10 CFR 50.55(e)
NCR R-30
SECOND INTERIM REPORT

Description of Deficiency

The Babcock and Wilcox (B&W) Owners Group has opened issue R-30 "Internals Bolting Failures" documenting a potential safety concern with B&W plants. Specifically, there have been failures of A-286 bolts used in various reactor internals applications at Oconee-1, Rancho Seco and Crystal River-3. Although B&W contends that the problem is not applicable to Bellefonte, TVA has questioned B&W's determination and is awaiting a reply from B&W. Until such time that R-30 is determined to not be a concern at Bellefonte, TVA considers the condition to be a potentially reportable nonconformance. Consequently, this NCR is intended to track the potential concern for Bellefonte.

Interim Progress

B&W's review of the Bellefonte reactor internals joint design identified five joints that utilize A-286 bolting material. These joints are:

1. Plenum lug to cover.
2. Vent valve to core support assembly.
3. Core support lug.
4. Plenum cylinder to upper grid.
5. Column weldment to upper grid.

Peak stress levels for these joints were estimated by multiplying the sum of the long-term preload and operating stress levels by an estimated stress concentration factor. The resulting peak stress levels for joints 1 and 2 are well below the actual yield. Joint 3 has low stress but the high stress concentration factor under the bolt head results in a relatively high peak stress value. The peak stresses for joints 4 and 5 are much greater than the actual yield stress.

B&W has performed a preliminary review of the safety implications assuming failure of the two overstressed joints (4 and 5). The results of this review indicate that the plant could be safely operated and/or shut down for detailed inspection without endangering the health and safety of the public. Regardless of this, TVA believes that replacing these bolts with bolts of another material (such as alloy X750 HTH) before plant operation will ultimately reduce plant downtime and personnel radiation exposure. While the bolts for joints

1, 2, and 3 may provide satisfactory service for the life of the plant, TVA believes that it is prudent to replace these bolts with bolts of another material (such as alloy X750 HTH) and of a design which may be inspected without disassembly of the equipment to verify integrity.

TVA has requested B&W to proceed with replacement of all A-286 bolts for the five joints listed above. We will provide a final report upon review and approval of the corrective action plan and/or final determination of the safety significance of the deficiency.