

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

BLRD-50-438/81-56

BLRD-50-439/81-58

84 OCT 29 October 25, 1984
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U.S. Nuclear Regulatory Commission
Region II

Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - REACTOR COOLANT SYSTEM SUPPORTS
AND RESTRAINTS - BOLT TORQUES - BLRD-50-438/81-56, BLRD-50-439/81-58 -
SEVENTH INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
R. V. Crlenjak on August 24, 1981 in accordance with 10 CFR 50.55(e) as
NCR BLN NEB 8111. This was followed by our interim reports dated
September 24 and December 7, 1981; March 10, June 7, and December 13,
1982; and June 29, 1983. Enclosed is our seventh interim report. We
expect to submit our next report on or about June 29, 1985. We consider 10
CFR Part 21 applicable to this deficiency.

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

L. M. Mills, Manager
Nuclear Licensing

Enclosure

cc (Enclosure):

Mr. Richard C. DeYoung, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. H. B. Barkley
205 Plant Project Services
P.O. Box 10935
Lynchburg, Virginia 24505

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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
REACTOR COOLANT SYSTEM SUPPORTS AND RESTRAINTS - BOLT TORQUES
NCR BLN NEB 8111
BLRD-50-438/81-56, BLRD-50-439/81-58
10 CFR 50.55(e)
SEVENTH INTERIM REPORT

Description of Deficiency

Babcock & Wilcox (B&W), Lynchburg, Virginia, specified ASME SA540 Class 1 and 2 material and a preload of 70 percent of ultimate tensile strength for many of the Reactor Coolant System (RCS) anchor bolts for supports and restraints. These materials have a minimum yield strength of 150 ksi and 140 ksi, respectively. Recently, it has been documented that stress corrosion cracking (SCC) is a potential failure mode for high yield strength (≥ 120 ksi) low alloy steel bolting material subjected to appreciable steady state loads (generally preload in the case of supports and restraints) and typical reactor containment corrosive environments (humid air or borated water on occasion) for extended periods of time.

B&W notified TVA (in an August 19, 1981 B&W letter to TVA) that they had reported to the NRC, under the requirements of 10 CFR Part 21, concerns that B&W has with regard to stress corrosion cracking of high strength bolting material.

Interim Progress

The RCS support and restraint bolting material is ASME SA540 Classes 1 and 2 with a minimum specified yield strength of 150 ksi and 140 ksi, respectively. Utilizing the component support bolting screening criteria established by the Atomic Industrial Forum/Metals Property Council (AIF/MPC) Task Group on Bolting (submitted to the NRC as Appendix I, Task 14, of the Task Group's bolting program enclosed with Richard M. Eckert's letter from the AIF to R. H. Vollmer dated July 19, 1983) results in the conclusion that generic evaluation of the support and restraint bolting is not warranted as the minimum specified yield strength of the material is not greater than 150 ksi. Also, since TVA has not experienced failures of the support and restraint bolting, case-by-case evaluation via a plant-specific plan is similarly not warranted.

However, since the minimum specified yield strength of the SA540 class 1 bolting is at the dividing line according to the screening criteria, TVA will perform a case-by-case review of the class 1 bolting in accordance with the following rationale:

Step 1 - A certified material test report (CMTR) will be located for each heat of SA540 class 1 used in RCS support and restraint bolting applications.

Step 2 - In light of the relatively demanding nature of the SA540 material specification (i.e., minimum and maximum hardness requirements, hardness testing frequency which is regarded as sufficient to provide statistically significant information, impact testing requirements, etc.) it has been judged that some exemption of this material from evaluation of stress corrosion cracking (SCC) susceptibility is reasonable and may be based on CMTR review. This review will follow the seven-point CMTR review criteria established by APTECH Engineering Services. Materials which meet the criteria will be exempt from further review.

Step 3 - Material which does not meet the requirements of step 2 will be evaluated considering the results of EPRI's Generic Joint Integrity Program (reference J. V. Williams letter to R. Vollmer dated June 6, 1984, which provided the NRC with an update on the AIF/MPC Task Group Program on bolting).

A need for further action associated with this nonconformance report will be determined following completion of this review and TVA will provide additional information at that time.