

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

July 31, 1981

AB: 38

YCRD-50-566/81-12

YCRD-50-567/81-10

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

YELLOW CREEK NUCLEAR PLANT "NITS 1 AND 2 - FAILURE TO IMPLEMENT DESIGN
CRITERIA - YCRD-50-566/81-12, YCRD-50-567/81-10 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector
R. V. Crlenjak on April 1, 1981, in accordance with 10 CFR 50.55(e)
as NCR YCN YCP 8103. This was followed by our first interim report dated
May 1, 1981. Enclosed is our final report.

If you have any questions concerning this matter, please get in touch with
D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Jr., Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555



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ENCLOSURE

YELLOW CREEK NUCLEAR PLANT UNITS 1 AND 2 FAILURE TO IMPLEMENT DESIGN CRITERIA YCRD-50-566/81-12, YCRD-50-567/81-10 10 CFR 50.55(e) FINAL REPORT

Description of Deficiency

While construction employees at the site were preparing to install the spent fuel rack embedments anchor bolts, they discovered that the design would not adequately prevent leakage of spent fuel pool water past the embedment anchor bolt nut and washer (see figure 1), because the design does not allow seal welding to the anchor bolt. The potential leakage path presented by the embedment design violates the NRC Regulatory Guide (RG) 1.13 recommendations. Further if leakage were to occur, no method for early detection and quantification of the leakage other than by lowering in the pool level is available. This lack of detection and quantification methods represents a violation of TVA design criteria. Although Combustion Engineering (CE) designed and supplied TVA with the spent fuel pool embedments, they were not cognizant of requirements specific to TVA design criteria. Thus TVA's review of the CE design should have recognized the violation of TVA design criteria.

Safety Implications

The spent fuel rack embedments are designed to accept the loads, including safe shutdown earthquake loading, from the spent fuel racks. Since the embedments are also part of the pool boundary, they must meet the leakproof requirements of the spent fuel pool. If the subject deficiency had remained uncorrected, the potential existed for borated water from the spent fuel pool to leak from the pool into the concrete beneath the pool. This leakage would require more frequent filling of the pool, thus resulting in a decrease in the effective pool makeup rate should additional leakage occur. The amount of leakage, via the embedments, would not impair the ability of the pool cooling system and pool makeup water system to maintain the required shielding water level. Therefore, this deficiency does not directly affect the safety of operations of the plant. However, TVA believes that this deficiency must be corrected in order to meet established NRC guidelines.

Corrective Action

CE and TVA have jointly developed a recommended design to alleviate the deficiency in the design of the spent fuel rack embedments. The proposed redesign calls for countersinking the embedment bolt and nut into the embedded plate and machining the top of the bolt to be flush with or lower than the top surface of the embedded plate, so that the liner plate can be lapped over the bolts and seal welded to the embedded plate (see figure 2). To meet TVA's design criteria for leakage detection, a channel will be machined between the bolt locations and the liner seal weld around the entire embedded plate.

This channel will be routed off the side of the plate into the leakage channel system beneath the pool liner. TVA and CE have agreed to proceed with the recommended design changes. The needed documentation has not been revised to implement the design changes. TVA expects to approve the revised documentation by January 4, 1982. The rework described above will be completed by June 1, 1982. To prevent recurrence, Design Project Branch chiefs have been instructed to reaffirm to their staffs the need to review vendor submittals against TVA design criteria to assure design requirements are satisfied.