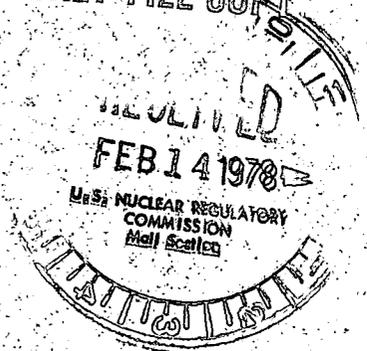


TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

REGULATORY DOCKET FILE COPY

FEB 6 1978



Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 1217
230 Peachtree Street, NW.
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNIT 1 - REPORTABLE DEFICIENCY - CRACK
IN UNIT 1 REACTOR CAVITY BULKHEAD - NCR 1018R - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE
Inspector Wright on January 6, 1978, in accordance with
10 CFR 50.55(e). Enclosed is our final report on this
deficiency.

Very truly yours,

J. E. Gilleland
Assistant Manager of Power

Enclosure

cc: Dr. Ernest Volgenau, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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WATTS BAR NUCLEAR PLANT UNIT 1
REACTOR CAVITY BULKHEAD

NCR 1018R

FINAL REPORT - ENCLOSURE

Description of Deficiency

Following the fabrication of a section of the reactor cavity bulkhead in unit 1, a crack was discovered during a routine inspection in a 1-1/2-inch thick horizontal plate. The crack was in the heat affected zone of a fabrication weld for the barrier between the reactor cavity and the primary coolant pipe chase in an area just below one of the four reactor coolant cold leg nozzles. This crack was caused by high stresses induced in the area of the crack by welding of other joints on the reactor cavity bulkhead. The crack occurred following completion of the weld adjacent to the crack. See the horizontal plate adjacent to the 3/4-inch bevel weld on detail J-J on TVA drawing 48W932 (attached).

Safety Implications

Had this deficiency remained uncorrected, this crack would have weakened the barrier between the reactor cavity and the reactor coolant pipe chase. A failure in this barrier during a postulated main coolant pipe break could change anticipated blowdown flowpaths which might result in asymmetric loads on the unit 1 reactor vessel, which are higher than presently considered in the RPV supports analysis. Off design loads on the reactor vessel may have impaired the ability of the reactor to reach and maintain a safe shutdown.

Corrective Action

Cracks of the type described in this nonconformance are not uncommon when welding complicated steel structures. The crack in the reactor cavity to reactor coolant pipe chase barrier will be weld repaired. All adjacent welds that might induce stresses in the area of the crack will be completed as a first step in the repair. After the crack has been eliminated by grinding, the ground out area will be weld repaired using welding procedure SM-U-1, found in General Construction Specification G29c. Following the weld repair, the area will be visually and magnetically inspected to verify the adequacy of the repair and to ensure that additional cracks did not occur.