

MAR 19 1976

Docket No. 50-390/391

Tennessee Valley Authority
ATTN: Mr. James E. Watson
Manager of Power
818 Power Building
Chattanooga, Tennessee 37401

REF: Deficiency - Containment Anchor Bolt Nuts

Gentlemen:

Thank you for your letter dated March 9, 1976 which forwarded a final report pursuant to 10 CFR 50.55(e) regarding the above item. Your report will be reviewed and evaluated and, should we require additional information concerning this matter, we will contact you.

Your cooperation is appreciated.

Sincerely,

*Original signed by
D. Thompson*

Dudley Thompson
Acting Director
Division of Field Operations
Office of Inspection and
Enforcement

bcc: w/cpy ltr dtd 3/9/76
PDR
LPDR
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OFFICE ▾	FCEB	C, FCEB	AD, DFO			
SURNAME ▾	GGower:mk	GW Roy	DThompson			
DATE ▾	3/19/76	3/19/76	3/19/76			

FROM:

TENNESSEE VALLEY AUTHORITY

DATE OF DOCUMENT

3/9/76

DATE RECEIVED

3/16/76

NO.

60726

LTR

MEMO

REPORT

OTHER

TO:

IE (BOY)

ORIG:

CC:

OTHER:

ACTION NECESSARY CONCURRENCE

DATE ANSWERED:

NO ACTION NECESSARY COMMENT

BY:

CLASSIF.:

POST OFFICE

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REG. NO.

FILE CODE:

DESCRIPTION: (Must Be Unclassified)

50-390-391

REFERRED TO:

DATE

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DATE

WATTS BAR NUCLEAR PLANT UNIT 2
 REPORTABLE DEFICIENCY CONTAINMENT
 ANCHOR BOLT NUTS HO 1143 P2 FINAL REPT.

OTHER

E.A. MARTFIELD

ENCLOSURES:

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TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

March 9, 1976

Mr. John G. Davis, Acting Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Davis:

WATTS BAR NUCLEAR PLANT UNIT 2 - REPORTABLE DEFICIENCY -
CONTAINMENT ANCHOR BOLT NUTS - HO 1143 F2 - FINAL REPORT

The subject deficiency was reported to J. G. Bryant, NRC-OIE Senior Inspector, on January 9, 1976, and was followed by our February 9, 1976, interim report, J. E. Gilleland to Donald F. Knuth. Enclosed is the final report concerning this deficiency.

Very truly yours,

James P. Gilleland
for J. E. Gilleland
Assistant Manager of Power

Enclosure

CC: Mr. Norman C. Moseley, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 818
230 Peachtree Street, NW.
Atlanta, Georgia 30303

WATTS BAR NUCLEAR PLANT UNIT 2
REPORTABLE DEFICIENCY
CONTAINMENT ANCHOR BOLT NUTS

FINAL REPORT

1. Description of the Deficiency

The reactor containment vessel bottom shell ring is anchored to a concrete foundation mat by 360 3-1/2-inch diameter bolts. These bolts are arranged in two concentric circles inside and outside the bottom shell ring. The bolts are located in pairs at equal distance from the middle surface of the shell ring on radial lines at 2-degree intervals. An embedded anchor plate at the lower end of the bolts is provided to transfer the bolt load to the concrete. The bolts are partially embedded, then pretensioned to 423 kips by elongating the bolts and tightening the top nuts to maintain the elongation. Finally, the anchorage (bolts, nuts, etc.) is embedded in concrete. Details of this embedded anchorage are shown in Figure 1.

During the final inspection, prior to embedment of the unit 2 reactor building structural steel containment vessel anchorage in concrete, a total of twenty top anchor bolt nuts were found with indications which appeared to be surface irregularities.

2. Safety Implication

Should any of the anchor bolt nuts have failed under accident conditions, there would have been a redistribution of the load to the remaining anchor bolts. Had this situation gone uncorrected, the safety of Watts Bar Nuclear Plant would not have been compromised.

3. Corrective Action

Nine of the twenty suspect unit 2 top anchor bolt nuts were determined to have minor surface imperfections. The remaining eleven nuts were removed for detailed examination. Two of the eleven were determined to have only minor surface imperfections and were released for use. The remaining nine nuts which had potentially injurious surface indications were replaced with nuts free of surface indications.

CB&I performed a chemical analysis, a hardness determination, and a metallographic examination on one of the nine nuts. The examination showed that the indications were folded metal with nonmetallic inclusions in the seams and adjoining metals. An additional two nuts, which were considered to have the worst appearing indications, were sectioned and metallographically examined with similar results. Therefore, the surface indications were considered not injurious.

Because of the discoveries on unit 2, the unit 1 top anchor bolt nuts were visually examined. Twenty-one nuts had surface indications, but only eleven nuts had potentially injurious surface indications. These eleven nuts were replaced with nuts free from surface indications.

4. Summary

In summary, the detail examinations have shown that the indications on the twenty nuts (nine from unit 2 and eleven from unit 1) that were removed were not injurious; however, to remove any doubt, these twenty nuts were replaced. In any event, the integrity of the containment vessels would not have been impaired by the anchor bolt nuts.

ELEV 702'-9 3/8"

SHELL

AS REQD FOR CONC

10 5 5 10

BOLTING RING

SA-194 GR 7

V. 699'-0"

ELEV 699'-2 3/8"

GUSSETS 1/2"

BASE PL-31 3/8" x 1"

TYP 3 21/32"

24"

4 1/2"

CHOR PLATE

12" MAX

ELEV 687'-0"

