

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

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OCT 31 1986

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WBRD-50-390/86-56
WBRD-50-391/86-53

U.S. Nuclear Regulatory Commission
Region II
Attention: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Dr. Grace:

**WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - INSPECTION OF CATEGORY I AND I(L)
LOCALLY MOUNTED INSTRUMENT BOLTING - WBRD-50-390/86-56, WBRD-50-391/86-53 -
FINAL REPORT**

The subject deficiency was initially reported to NRC-Region II Inspector Art Johnson on June 9, 1986 in accordance with 10 CFR 50.55(e) as NCR W-411-P for unit 1. NCR WBN 6590 documents the same condition for unit 2. Our interim report was submitted on July 17, 1986. Enclosed is our final report.

If there are any questions, please get in touch with J. A. McDonald at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. Gridley
R. Gridley, Director
Nuclear Safety and Licensing

Enclosure
cc (Enclosure):

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

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
INSPECTION OF CATEGORY I AND I(L) LOCALLY MOUNTED INSTRUMENT BOLTING
WBRD-50-390/86-56 AND WBRD-50-50-391/86-53
NCRS WBN 6590 AND W-411-P
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Locally mounted instruments mounted in category I structures at Watts Bar Nuclear Plant (WBN) were installed without performing all of the required inspections as specified by General Construction Specification G-32, and site Quality Control Procedures (QCP), QCP 1.14, "Inspection and Testing of Bolt Anchors Set in Hardened Concrete and Control of Attachments to Embedded Features," QCP 1.42-2, "Bolt and Gap Inspections for Bolt Anchor Assemblies," and QCP 4.13-VTC, "Final Visual Weld Examination."

The required tests were not performed because of a misinterpretation of a note on the installation drawing which stated, "pull test not required." This was misinterpreted to mean that no quality control (QC) tests were required. Also, Division of Nuclear Construction (DNC) engineering failed to recognize applicability of WBN-QCP-1.14, WBN-QCP-1.42-2, and WBN-QCP-4.13-VTC, to the work performed by the engineering units.

Safety Implications

Failure to perform adequate inspection and testing of bolt anchors for seismic categories I and I(L) instruments results in inadequate assurance that the anchors will remain in place under affected design basis accident conditions. With the postulated failure of these concrete anchorages, the instruments would not be adequately supported. This could result in instrument inaccuracy or failure causing an inability to monitor and/or control system operations which could adversely affect the safe operation of the plant.

Corrective Action

TVA has investigated this deficiency and determined that the deficiency is applicable to both units 1 and 2. The deficiency is documented on NCR W-411-P for unit 1 and NCR 6590 for unit 2. Both NCRs have been reviewed and dispositioned by TVA's Division of Nuclear Engineering (DNE) as follows:

Applicable site procedures will be reviewed to ensure that all G-32 requirements are included.

TVA will reinspect locally mounted instruments mounted by bolt anchors set in hardened concrete or welded to embedded features in category I structures.

TVA will determine the compliance of the expansion shell anchors which do not require proof loading with the following requirements from TVA General Construction Specification G-32.

- Ensure the anchors are not installed in concrete block, masonry mortar, or concrete with a compressive strength less than 3000 psi.

- Ensure the anchors are the type and size specified on the support drawing or the allowed equivalent substitution size.
- Check side cover and spacing.
- Check gap between attachment and concrete surface and check bolt length.

Also, TVA will inspect the welds on instrument mountings and attachments to embedments to applicable site procedures.

Any support which does not meet all of the inspection requirements shall be reworked or details on the support will be sent to DNE for evaluation to determine corrective action or to accept-as-is.

Unit 2 Division of Nuclear Construction (DNC) personnel have been retrained in WBN-QCI-1.40, "Records Accountability Program," to ensure test requirements are identified. WBN-QCP-3.06-9, "Instrument Installation and Tagging," has been written to clarify the tests required to seismically qualify hangers used in mounting instruments.

All of the above corrective actions will be completed before fuel load of the respective units.

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