

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

JUL 26 1989

WBRD-50-390/89-06
WBRD-50-391/89-06

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-390
50-391

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - INADEQUATE QUALIFICATION FOR
CABLE SUPPORTS AND FITTINGS - WBRD-50-390/89-06, WBRD-50-391/89-06 - INTERIM
REPORT

The subject deficiency was initially reported to NRC Region II Inspector
Joe Brady on June 22, 1989, in accordance with 10 CFR 50.55(e) as Condition
Adverse to Quality Reports (CAQRs) WBP 880040 and WBP 880041. Enclosure 1 is
our interim report. Enclosure 2 contains the commitment made in this report.
We expect to submit our final report on or about April 30, 1990.

NRC Region II Inspector Ken Barr was notified on July 24, 1989, that the
response to this deficiency would be submitted by July 28, 1989.

If there are any questions, please telephone G. R. Ashley at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

W. J. Ray
Manager, Nuclear Licensing
and Regulatory Affairs

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

JUL 26 1989

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 INADEQUATE QUALIFICATION FOR CABLE TRAY SUPPORTS AND FITTINGS CAQR WBP 880040, CAQR WBP 880041, AND CAQR WBP 880167

INTERIM REPORT

Description of Condition

Documented qualification for some cable tray fittings, connectors, and supports has not been located. CAQR WBP 880040 addresses unit 1 deficiencies and CAQR WBP 880041 addresses unit 2 deficiencies. Also, concerns related to discrepancies between as-built cable tray configurations and design drawings have been identified. This deficiency (as-built configuration versus design drawings), originally documented as CAQR WBP 880167, has been superseded with revision 5 to WBP 880040. Revision 5 of WBP 880040 now addresses the extent of the condition covered in WBP 880167. A brief description of these deficiencies are as follows:

- (a) The design criteria WB-DC-20-21.1 does not mention the dead weight of attachments or cable drops, nor are there calculations that show that actual loads on specific cable tray runs are less than the standard design load.
- (b) Cable trays for WBNP were qualified by using calculations for Sequoyah Nuclear Plant (SQN). A 5 percent damping ratio should be used in accordance with WB-DC-20-21.1 for safe shutdown earthquake (SSE) instead of 7 percent as used at SQN for an SSE.
- (c) The axial seismic load in the cable tray run riser connector between supports was not considered in the cable tray qualification test.
- (d) Existence of design criteria for cable trays is indeterminate.
- (e) Calculations are not available, nor did the load capacity testing program for cable tray adjustable connectors take into account the interaction between the longitudinal and shear forces.
- (f) Calculations nor testing are available for the type of cable tray splices used at WBN. No calculations are available for notches in splice plates.
- (g) Nuts on the bolts used to connect the tray support clips and splice do not have full engagement.
- (h) Tray nodes for tray segments do not have the correct separation.

Each of the potentially safety-significant deficiencies in CAQR-WBP 880040 can be categorized under the three programmatic deficiencies listed in the corrective action program (CAP) plan for cable tray and cable tray supports. These are reproduced below, with the apparent root causes for each programmatic deficiency also given.

- Lack of documented design qualification for cable tray hardware.

This deficiency was caused by:

Inadequate control and documentation of engineering judgment which specified cable tray fittings in unqualified applications.

Engineering did not completely implement the design criteria.

Inadequate interdisciplinary review.

- Installed configurations not complying with design output documents.

This deficiency was caused by the following:

Lack of emphasis on maintaining and controlling documentation of construction-identified field changes necessary for installation of cable trays and supports. This resulted in field changes that were not approved and documented or incorporated into design drawings.

Failure to consider as essential and, accordingly, to require adequate installation and inspection documentation on miscellaneous attributes such as tray covers, fitting bolts, and fitting types.

- Lack of documentation to verify previous reinspections.

This deficiency was caused by failure to prepare and follow a procedure for the walkdowns used to obtain or reverify configuration attributes.

Safety Implications

Investigations resulting from CAQR WBP 880040 have identified deficiencies which could potentially result in failure of safety-related cables during an earthquake. This could adversely affect the safety of the plant.

Interim Progress

CAQR WBP 880040 has been included in the scope of Cable Trays and Cable Tray Supports CAP. The CAP addresses unit 1 only; however, the corrective actions for the unit 2 CAQR (WBP 880041) are expected to be the same as for unit 1. The CAP plan consists of the following actions:

- Develop a complete design basis for cable tray, cable tray fittings and hardware, and cable tray supports.
- Develop design output consistent with the complete design basis.

- Revise construction, maintenance, and quality assurance procedures and train affected personnel.
- Develop and implement a critical case evaluation of existing cable tray installations. The number of critical cases to be evaluated will depend on the assessment of walkthrough data.

The recurrence control measures for the programmatic deficiencies are as follows:

- Lack of documented design qualification for cable tray hardware:

Nuclear Engineering Procedure (NEP)-3.1, "Calculations," has been issued requiring documentation to support engineering judgments.

NEP-3.2, "Design Input," has been issued which addresses revision and maintenance of the Design Basis Document.

Employees are trained to revised design criteria and NEPs.

Interface review requirements have been strengthened through issue of the revised NEPs.

- Installed configurations not complying with design output documents:

Procedures are in place which allow the plant configuration to be changed only on the basis of Nuclear Engineering (NE) approved drawings. A request must be submitted to and written approval obtained from NE before deviating from previously approved NE output documents.

For construction issues, affected implementing procedures will be revised to add inspection requirements to verify that correct fittings and connectors are installed consistent with design output documents. Personnel will be trained to the requirements of the revised procedures.

- Lack of documentation to verify previous inspections:

Procedures are in place for the performance of walkdowns. Walkdowns will be performed in accordance with Administrative Instruction (AI)-1.16. Any request for walkdown by NE must be handled through walkdown procedures.

The actions stated above are the same as those identified in the Cable Tray and Cable Tray Supports CAP.

TVA is continuing to evaluate these conditions and will submit a final report on or about April 30, 1990.

ENCLOSURE 2
LIST OF COMMITMENTS

TVA will submit a final report on or about April 30, 1990.