

TENNESSEE VALLEY AUTHORITY

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JUN 09 1988

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

Gentlemen:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

WATTS BAR NUCLEAR PLANT (WBN) - REGION II INSPECTION REPORT NOS. 50-390/88-01
AND 50-391/88-01 - REPLY TO A NOTICE OF VIOLATION 390, 391/88-01-01, FAILURE
TO FOLLOW PROCEDURES, AND VIOLATION 390, 391/88-01-02, CABLE TRAY INSTALLATION

Enclosed is our response to Kenneth P. Barr's letter dated April 29, 1988, to
S. A. White, which transmitted the subject inspection report, citing
activities at WBN that appear to be in violation of NRC regulations.
Enclosure 1 is our response to the Notice of Violation (NRC Inspection Report
Nos. 50-390, 391/88-01-01 and 50-390, 391/88-01-02). Enclosure 2 contains a
list of commitments made by TVA in this response.

A supplemental response to violation 390, 391/88-01-01 will be submitted by
August 16, 1988. The response to violation 390, 391/88-01-02 will be updated
to provide more specific details by November 11, 1989, when sufficient
progress has been made to completely identify the extent of the problem and
its corrective actions.

If there are any questions, please telephone C. J. Riedl at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


R. Gridley, Director
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Regulatory Affairs

Enclosures
cc: See page 2

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cc (Enclosures):

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2
TVA RESPONSE TO VIOLATIONS 390, 391/88-01-01 AND 390, 391/88-01-02
REFERENCE: NRC INSPECTION REPORT NOS.
50-390/88-01 AND 50-391/88-01

Violation 390, 391/88-01-01, "Failure to Follow Procedures"

10 CFR Part 50, Appendix B, Criterion V, as implemented by TVA's Quality Assurance (QA) Topical Report, TVA-TR75-1A, Rev. 9, Sections 17.1.5 and 17.2.5, "Instructions, Procedures, and Drawings", requires that activities affecting quality be accomplished in accordance with instructions, procedures, or drawings.

QA Topical Report Table 17E-1 states that the Nuclear Quality Assurance Manual (NQAM) delineates responsibilities, requirements, and commitments for the QA Program during design and construction.

NQAM, Part I, Section 2.16, Rev. 3, "Corrective Action", Paragraph 10.5, requires that these condition adverse to quality reports (CAQRs) classified as "potentially generic" be reviewed by the potentially affected organization within 70 calendar days from the origination date of the CAQR.

Contrary to the above, CAQRs SQP [SQN] 871347, SQP 871003, SQP 871066, SQP 871743, SQP [SQT] 871304, and BFP 871056 were classified as potentially affecting Watts Bar and did not receive generic review within 70 calendar days from the origination date of the CAQR.

This is a Severity Level IV violation (Supplement II) and applies to units 1 and 2.

Admission or Denial of Violation

TVA admits the violation occurred as stated.

Since the CAQR program was implemented, approximately 72 percent of the CAQR reviews for applicability to WBN were not completed within the 70-day timeframe required by NQAM, Part 1, section 2.16.

Reason for the Violation

The following reasons caused this violation:

- The organizations responsible for providing CAQRs for generic review failed to transmit CAQRs within 30 or 40 days of the origination date as required.
- There was insufficient management attention to ensure adequate priority and resources were applied to meet CAQR timeframes.
- Reviewing organizations onsite failed to perform generic reviews within 30 days, or 70 days from the CAQR origination date, because of a lack of management attention to meeting the timeframes.

- No procedural requirement exists to escalate late generic reviews; however, the NQAM, Part I, section 2.16, requires that timeframes be evaluated on a trend basis to determine the need for corrective action.
- Because all timeframes were based on the origination date, a missed schedule early in the process impacted the subsequent timeframes so that they were also late.

For the six CAQRs (SQN 871347 D1, SQP 871003, SQP 871066 R2, SQP 871743 R1, SQT 871304, and BFP 871056) specifically identified in the violation, the lack of management attention to meeting timeframes is the primary reason the generic reviews were not completed within the required timeframe.

Corrective Steps Which Have Been Taken and Results Achieved

In an effort to improve timeliness of processing conditions adverse to quality (CAQs) within the Office of Nuclear Power (ONP), the NQAM, Part I, section 2.16, was rewritten to implement the CAQR process. The revision to the NQAM set timeframes for the completion of various stages of CAQRs. These timeframes were established as targets for optimum performance. Some deviation from these targets will always be present in the system. Therefore, the NQAM requires that missed timeframes be evaluated on a trend basis to determine the need for corrective action.

The CAQR program was implemented at WBN in March 1987. In June 1987, WBN site organizations were late on 31 percent of all specified timeframes. ONP developed a timeliness report in June 1987 for each site to monitor all timeframes that are identified by the NQAM, Part I, section 2.16. As a result of additional management attention, timeliness for WBN site organizations has steadily improved with 10 percent late for the month of March 1988. Therefore, from an overall perspective, this approach has been effective.

To ensure that proper management attention is given to timeliness at WBN, CAQR timeframes (with the exception of generic reviews) are presently being discussed in weekly meetings held by the site director. Presently, weekly meetings within various site organizations are held to place emphasis on meeting timeframes. WBN site organizations have assigned managers to coordinate CAQRs and track timeframes. These designated managers report to upper management on areas of needed improvement and the general status of CAQRs within their respective organizations. To ensure that proper management attention is given to timeliness, WBN has implemented a timeliness summary report. This report receives appropriate management attention which will resolve specific problems and prevent buildups of timeliness problems experienced in the past.

The reviews for all of the CAQR examples cited in this violation have been completed.

Corrective Steps Taken to Avoid Further Violation

- Revision 4 of NQAM, Part I, section 2.16, was approved May 16, 1988. When implemented, timeframes for completing generic reviews will no longer be measured from the CAQR origination date. Division of Nuclear Engineering-

Engineering Assurance (DNE-EA) and Division of Nuclear Licensing and Regulatory Affairs (DNLRA) will have 10 days from receipt of the review request to complete their review, versus the current 40 days from the origination date of the CAQR. Potentially affected organizations will have 30 days from receipt of request to complete their reviews, versus the current 70 days from the origination date of the CAQR.

- To ensure that proper attention is given to late generic review responses, a requirement has been established that late responses to generic reviews which are not progressing satisfactorily be escalated by the CAQ coordinator. This will be added to a Quality Notice issued to revision 3 and is implemented in revision 4 of the NQAM, Part I, section 2.16.
- Reporting late generic reviews will be added to the timeliness summary report. This report receives appropriate management attention, which will not completely eliminate all late actions, but will resolve specific problems and prevent buildups of timeliness problems experienced in the past.
- The NQAM currently specifies that timeframes shall be met for completing various stages of CAQRs. As written, each timeframe that is missed may be considered a failure to comply with the NQAM. TVA will make a change to the NQAM to address missed CAQR timeframes, recognizing that on occasion they will be missed, but providing for appropriate management attention and corrective action. This change will require that missed timeframes be trended, and if adverse trends are identified, CAQRs shall be initiated to document the trend and correct the problems. Further clarification will be made on the CAQR timeframes for plants with a construction permit, such that, with the ONP manager's or DNQA director's approval, these schedules may be adjusted to be compatible with staffing and construction completion priorities.

Date When Full Compliance Will Be Achieved

TVA will provide NRC with details of the changes to the CAQR program by August 16, 1988. TVA has recognized that the problem with meeting the required timeframes exists to varying degrees at all TVA nuclear sites. The CAQR program changes should provide the clarification necessary to resolve the problem for all sites. Implementation of the changes to the CAQR program will be complete by August 16, 1988.

Violation 390, 391/88-01-02 "Cable Tray Installation"

10 CFR Part 50, Appendix B, Criterion III, as implemented by TVA's QA Topical Report, Section 17.1.3, "Design Control," requires measures for verifying or checking the adequacy of design, such as by the performance of design reviews, calculations, or suitable testing.

QA Topical Report Table 17D-1, "Quality Assurance Standards for Design and Construction", commits to conforming fully to ANSI N45.2-1971, "Quality Assurance Program Requirements for Nuclear Power Plants".

ANSI N45.2-1971, Paragraph 4.3, requires the following in those cases where the adequacy of a design is to be verified by test:

- The testing is to be identified.
- The testing must demonstrate adequacy of performance under the most adverse design conditions.
- If testing indicates that modifications are necessary, the item shall be modified and retested.

10 CFR Part 50, Appendix B, Criterion V, as implemented by the QA Topical Report, Sections 17.1.5 and 17.2.5, "Instruction, Procedures and Drawings", requires that activities affecting quality be accomplished in accordance with instructions, procedures, or drawings.

TVA Design Criteria WB-DC-20-21.1 requires cable tray fittings and supports to be qualified by:

- conformance to NEMA Standard VE1-1971, Section 5.05 or
- requirements specified by the cable tray manufacturer or
- analysis or testing.

TVA drawings 48W970-1 thru -5 and 45W869-Series drawings specify the installation details for cable trays attached to the steel containment vessel.

1. Contrary to the above, cable tray fittings and supports were not properly qualified for the as-built plant. Examples include:
 - a. adjustable horizontal connectors (ZNK) have not been qualified.
 - b. adjustable riser connectors (ZNB) have not been qualified for use in the vertical position. ZNB connectors are installed in the plant in the vertical position.
 - c. ZNB connectors have been qualified for use in the horizontal position when used within 12 inches of a support. Many ZNB connectors used in the plant are greater than 12 inches from the nearest support.
 - d. offset fittings have not been qualified.
2. Contrary to the above, the as-installed configuration of cable trays do not match design drawings. An example is that drawing 45W869-2 fails to show the location of all ZNB connectors on Cable raceway 4A1916 in the Reactor Building Annulus.

This is a Severity Level IV violation (Supplement II) and applies to units 1 and 2.

Admission or Denial of the Violation

TVA admits the violation occurred as stated.

Reason for the Violation

PART 1:

While the application of fittings and connectors were not always specified in accordance with design criteria requirements, they typically were specified in applications and configurations similar to qualified configurations. These configurations were specified on design output drawings based on engineering judgement made at the time of the original design. Although this judgement was (and still is) considered to be technically correct, TVA failed to document engineering judgement pertaining to qualification at the time the design for these fittings, connectors, and supports was issued. The undocumented engineering judgement resulted in designs which do not comply with the design criteria with no documented basis for exceptions.

PART 2:

Appropriate administrative emphasis was not placed on controlling documentation of construction-identified field changes necessary for the installation of the cable trays. This resulted in field changes that were either not documented or were not incorporated into the design drawings.

Quality Control Procedure (QCP) 3.04, revision 0, "Installation, Inspection, and Documentation of Cable Tray Systems," was used for field verification of the as-installed configuration. Cable tray fittings and connectors were not considered as essential attributes and, therefore, were not specifically detailed in the procedure.

Corrective Steps Which Have Been Taken and Results Achieved

CAQRs WBP 880040 for unit 1 and WBP 880041 for unit 2 have been issued to address the lack of qualification documentation of the cable tray fittings, connectors, and supports. CAQR WBP 880167 has been issued to address the fact that the as-installed configuration of the cable trays do not match the design drawings.

The corrective action plan for these CAQRs is as follows:

An engineering walk through will be performed to determine cable tray fittings and support configurations to be evaluated. An acceptance criteria will be determined from new analysis and tests performed for these selected configurations. The acceptance criteria will also take into consideration any vendor information, contractor data, and currently available TVA data. From the engineering walk through and the established acceptance criteria, bounding configuration will be determined and evaluated to determine the limits of acceptable configurations. The cable tray and cable tray support drawings will then be revised to reflect the acceptable configurations for cable tray fittings (ZNB, ZNK, etc.) in all category I structures including appropriate bolting details. Where required, field modifications will be made.

Engineering evaluation has begun on the cable tray fittings in the Reactor Building annulus region. Preparation of calculations has been initiated to assess qualification of the existing fittings. Preliminary results indicate that the configurations of the ZNK and ZNB fittings used in the annulus are acceptable. The lack of full thread engagement on the ZNB fittings and the orientation of the hinge pins on the ZNK fittings are still being evaluated.

Corrective Steps Taken to Avoid Further Violation

PART 1:

Procedures are in place now that require the documentation of engineering judgement and the basis for which that judgement was made--Nuclear Engineering Procedure (NEP) 3.1, "Calculations." No further recurrence control actions are required.

PART 2:

TVA has implemented a Design Change Improvement Program at WBN in which greater administrative control has been placed on field-identified changes. A Design Change Notice (DCN) will be used for identification, request, evaluation, resolution, and approval of necessary changes or clarifications to engineering documents. Their primary use will be to resolve installation problems encountered during construction or design change implementation. For completion of major modifications, an Engineering Change Notice (ECN) modification package will become the primary means to maintain design control. It is a standalone document which provides design requirements, design bases, installation guidelines, and verification requirements for a plant modification. Drawing Change Authorizations (DCAs) are prepared as part of the ECN modification package to provide a method of revising issued drawings or detailing design information not on the issued drawing. Drawing and document revisions necessary to reflect design changes will be issued after the modification is completed, verified, and accepted before the ECN package or DCN is closed. The use of ECNs and DCNs will provide the necessary controls for field-identified changes.

When installation or design change implementation problems occur, the responsible site organization is to initiate a DCN. Construction Engineering Procedure (CEP)-1.13 requires that field work shall not be performed related to the change until the change is formally approved. Work may be performed before formal approval if advance engineering authorization is given and documented on an A-DCN. Unauthorized work is considered to be a CAQ and will be documented on a CAQR.

For verification of as-installed cable tray configuration, QCP 3.04 will be revised by August 31, 1988, to include verifying correct installation of fittings and connectors.

Date for full Compliance

TVA will be in full compliance by fuel load of each respective unit. An updated report will be provided by November 7, 1989, to provide you the details of the corrective actions.

ENCLOSURE 2

LIST OF COMMITMENTS

Violation 390, 391/88-01-01

The following is a listing of the commitments made in this response:

- Revision 4 of NQAM, Part I, section 2.16, was approved May 16, 1988. When implemented, timeframes for completing generic reviews will no longer be measured from the CAQR origination date. Division of Nuclear Engineering-Engineering Assurance (DNE-EA) and Division of Nuclear Licensing and Regulatory Affairs (DNLRA) will have 10 days from receipt of the review request to complete their review, versus the current 40 days from the origination date of the CAQR. Potentially affected organizations will have 30 days from receipt of request to complete their reviews, versus the current 70 days from the origination date of the CAQR.
- To ensure that proper attention is given to late generic review responses, the requirement that late responses to generic reviews which are not progressing satisfactorily be escalated by the condition adverse to quality (CAQ) coordinator. This will be added to a Quality Notice issued to revision 3 and as implemented in revision 4 of the NQAM, Part I, section 2.16.
- Reporting late generic reviews will be added to the timeliness summary report. This report receives appropriate management attention, which will not completely eliminate all late actions, but will resolve specific problems and prevent buildups of timeliness problems experienced in the past.
- The NQAM currently specifies that timeframes shall be met for completing various stages of CAQRs. As written, each timeframe that is missed may be considered a failure to comply with the NQAM. TVA will make a change to the NQAM to address missed CAQR timeframes, recognizing that on occasion they will be missed, but providing for appropriate management attention and corrective action. This change will require that missed timeframes be trended, and if adverse trends are identified, CAQRs shall be initiated to document the trend and correct the problems. Further clarification will be made on the CAQR timeframes for plants with a construction permit, such that, with the ONP manager's or DNQA director's approval, these schedules may be adjusted to be compatible with staffing and construction completion priorities.
- TVA will provide NRC with details of the changes to the CAQR program by August 16, 1988. TVA has recognized that the problem with meeting the required timeframes exists to varying degrees at all TVA nuclear sites. The CAQR program changes should provide the clarification necessary to resolve the problem for all sites. Implementation of the changes to the CAQR program will be complete by August 16, 1988.

Violation 390, 391/88-01-02

The following is a listing of the commitments made in this response:

- An engineering walk through will be performed to determine cable tray fittings/connectors and support configurations to be evaluated.
- Acceptance criteria will be determined by DNE.
- DNE will determine the limits of acceptable field configurations.
- Bounding configurations will be determined by DNE and evaluated to determine the limits of acceptable configurations.
- Cable tray support drawings will be revised by DNE to reflect revised acceptable configurations.
- Cable tray drawings will be revised by DNE to reflect revised acceptable configurations including appropriate bolting details.
- Construction will perform any necessary field modifications.
- Provide updated report to NRC by November 7, 1989, to provide details of corrective actions.
- DNQA will revise QCP 3.04 by August 31, 1988, to include cable tray fittings and connections as essential attributes for inspection.