

TENNESSEE VALLEY AUTHORITY

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DEC 11 1989

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) - NRC INSPECTION REPORT NOS. 50-390, 391/89-13 -
REPLY TO NOTICE OF VIOLATION 390, 391/89-13-02

Enclosed is our response to NRC's letter to TVA dated October 31, 1989, which transmitted the subject inspection report, citing activities at WBN that appear to be in violation of NRC regulations. The response addresses violations 390, 391/89-13-01 and 390, 391/89-13-02.

NRC was notified of a delay in submittal of this response on November 30, 1989. On December 1, 1989, the new schedule of December 7, 1989, was discussed with Ken Barr.

Enclosure 2 identifies commitments made in this submittal.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Mark O. Medford

Mark O. Medford, Vice President
Nuclear Technology and Licensing

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

DEC 11 1989

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ENCLOSURE 1
RESPONSE TO NRC'S OCTOBER 31, 1989
LETTER TO TVA TRANSMITTING NOTICE OF VIOLATION
390, 391/89-13-01 AND 390, 391/89-13-02

VIOLATION 390, 391/89-13-01

Description

10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," requires in part that activities ". . . shall be accomplished in accordance with these instructions, procedures, and drawings."

1. Contrary to the above, in June 1989, the licensee released commercially purchased solder for use without documenting the end use of this material. Administrative Instruction (AI)-5.4, Revision 21, "Material Issue Transfer and Traceability," requires that form TVA 575 identify the initial applicable work control document and any subsequent work control documents for end use identification.
2. Contrary to the above, an unauthorized solder flux material, "RA" type flux, was utilized during the construction of ground braid connections. TVA Specification G-38, Cable Installation, references military standard MIL-STD-454. MIL-STD-454, Section 4.2.1, stipulates that fluxable material shall be type R or RMA as identified in Federal Standard QQ-S-571. Type RA flux is prohibited in the solder construction of ground braid connections.
3. Contrary to the above, at the end of conduit 2-2PM-292-7265-D, measures were not taken to prevent cable damage. TVA Specification G-40, Installing Electrical Conduit Systems and Conduit Boxes, paragraph 3.2.1.2, specifically states "a bushing, chase nipple, or conduit body shall be used at the end of a conduit where it terminates at a piece of equipment or cable tray or the end of the conduit shall be beveled or rounded to approximately a 1/16-inch radius or the end of the conduit shall be fitted with a collar."

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.

Example 1:

Reason for the Violation

This example of violation is attributed to procedural conflicts between AI-5.4, "Material Issue, Transfer, and Traceability," and AI-9.4.1, "Welding Material Control," in the control of brazing material. Solder was originally controlled by AI-5.4 which provides end use traceability on the TVA 575. It

began to be controlled primarily as welding material in accordance with AI-9.4.1 in late 1988. During the period that AI-9.4.1 was in effect, solder was, in at least one case, issued in accordance with AI-5.4, which violated AI-9.4.1 requirements. Welding material end use traceability is maintained in weld documentation. When the procedure change was made, it was not recognized that electrical solder did not have this type documentation and that the TVA 575 needed to reflect the end use. Solder issued in accordance with AI-9.4.1 did not have end use documented on the form TVA 575, but end use was documented on Welding Material Requisition forms (which are not life of the plant quality assurance records). This was the case for the example cited by the inspector.

Corrective Steps Taken and Results Achieved

As noted by the NRC inspector in paragraph 2.a of the inspection report, TVA initiated Condition Adverse to Quality Report (CAQR) WBQ 890412 to document the fact that bulk quantities of the solder material had been issued without proper use of the Storeroom Requisition Form (TVA 575) to designate the equipment where the solder material was to be utilized. The TVA 575 in question, No. A-077101, has been updated to identify end use work control documents. A review of TVA 575s issued for solder between 1980 and the present did not identify any additional problems with end use traceability for safety-related applications. Therefore, TVA has determined this to be an isolated occurrence involving one incorrect solder material issue.

Corrective Steps Which Will Be Taken to Avoid Further Violation

Although the violation was found to be an isolated case, TVA recognizes that this could have been repeated if there had been more soldering activities during the time that AI-9.4.1 controlled electrical solder. Recurrence control has been accomplished through the revision of procedure AI-9.4.1 to exclude solder used in electrical applications and revision of AI-5.4 to specifically include solder used in electrical applications. Solder used in other applications will still be controlled by AI-9.4.1.

Date When Full Compliance Will Be Achieved

TVA is now in compliance with regard to control of solder material issue.

Example 2:

Reason for the Violation

MIL-STD-454 was included in the workplan, but it had not been used on a regular basis and personnel were not familiar with the requirements. In reviewing the military standard for the requirements appropriate to the application, the flux specification was overlooked. Personnel were unaware of the need to consider the type of rosin flux. The workplan did not include precautions for specific requirements applicable to this workplan, requiring interpretation of the standard by personnel performing the work.

This has been attributed to a lack of clarity of the requirements in General Construction Specification G-38, "Installing Insulated Cables Rated Up 15,000 Volts." For situations where an engineering-approved procedure did not exist, G-38 referred to MIL-STD-454 which states that for certain applications only type R or RMA flux of Federal Standard QQ-S-571 should be used. This requirement was applicable as indicated in the inspection report.

Corrective Steps Taken and Results Achieved

CAQR WBP 890414 was written to address the use of RA type flux rather than type R or RMA of Federal Standard QQ-S-571 as required by MIL-STD-454. Type RA flux is nonconductive and noncorrosive in the solid state. The flux begins to soften at approximately 160°F and melts at about 200°F. In the liquid state the flux becomes conductive. This would only be a problem in printed circuit board applications where circuits are in close proximity and flux residue has not been removed. While researching this issue, TVA found that activating agents in the flux which enhance the cleaning action burn off during the soldering process, and did not find any indication that the noncorrosive properties of the flux change when heated.

Based on post maintenance and periodic testing required, equipment qualification verification, and post-solder cleaning requirements, the use of RA rosin should not compromise the integrity of the components soldered. TVA will verify the integrity of any IE equipment which has circuit boards and is located in an environment, normal or post accident, which can generate internal temperatures greater than 160°F. The following actions will accomplish this verification:

1. TVA will review the records on this equipment to determine if soldering has been performed, then inspect the joint to verify post-solder cleaning has been performed.
2. If an inspection reveals post-solder cleaning was not performed, TVA will clean the joint to remove all traces of flux residue.

Corrective Steps Which Will Be Taken to Avoid Further Violation

Soldering was stopped until appropriate requirements were added to the workplan and personnel performing soldering were trained.

G-38 has been revised to directly specify wiring/component termination requirements when using solder connections. Type RA flux is now permitted except in applications where the connection cannot be readily cleaned or in applications exceeding 160°F where stranded or braided wire is used (unless specified by the vendor). G-38 no longer refers to the military standard for use in the absence of engineering-approved procedures.

Additionally, the G-38 revision requires that personnel performing soldering be trained.

Changes to the workplan and clarifications to G-38 are considered to provide adequate recurrence control.

Date When Full Compliance Will Be Achieved

TVA is now in compliance for current soldering activities. Review of previous installations will be completed by fuel load for each unit.

Example 3:

Reason for the Violation

As noted in the inspection report, paragraph 7.b, item 5, it was determined that the subject conduit was not acceptable as installed, and TVA issued CAQR WBP 890427. This example of failure to follow procedure is the result of inattention to the detail of the procedure governing installation and documentation of electrical conduit and supports.

Corrective Steps Taken and Results Achieved

Conduit 2-2PM-292-7265-D will be reworked to install the missing bushing where the conduit enters junction box 2-JB-292-1636-D. Cables will be inspected and reworked, if required, on workplan FA000AZ. One cable in conduit 2-2PM-292-7265-D, 1-2PM-62-7-D is a Unit 1 cable. TVA will add this inspection attribute to the corrective action plans for the cable damage CAQRs WBP 890492 and WBP 890331 to identify the extent of this condition in the plant and the need for additional corrective action.

Corrective Steps Which Will Be Taken to Avoid Further Violation

Since the time of original installation of the subject conduit, TVA has instituted "Attention to Detail" classes. This training is included in the training requirements matrix for the appropriate personnel involved in this deficiency.

Date When Full Compliance Will Be Achieved

TVA will correct identified hardware deficiencies before fuel load of each unit.

VIOLATION 390, 391/89-13-02

Description

10 CFR Part 50, Appendix B, Criterion XVII, "Quality Assurance [QA] Records," requires in part that ". . . Inspection and test records shall, as a minimum, identify the inspector. . . ."

Contrary to the above, required QA records do not clearly identify inspectors who performed quality control inspection activities during the cable installation inspection activities performed in 1979.

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, but would like to provide the following clarification. In July 1983, TVA identified the failure to procedurally control the signature log used to review QA records. Deviation Report CB-83-05-01 was initiated to document this deficiency. Quality Control Instruction (QCI)-1.08, Revision 8, was issued on October 25, 1983, as a result of the deviation to add control for the signature log. It should be noted after further review of the example cited by NRC, the TVA inspector was identified and the certifications for this individual were located.

Reason for the Violation

Before 1983, TVA failed to address the need for control of signature logs. This contributed to the lack of traceability from the records to a certified individual.

Corrective Steps Taken and Results Achieved

QCI-1.08 was issued on October 25, 1983, to control the use of signature logs. Quality Methods Instruction 806.5 is presently being implemented to control the use of the signature log. All QA personnel are required to have their signature in the official log, which is maintained as a QA record. Informal signature logs were used by each unit in the period preceding October 1983; however, these have proven to be incomplete. TVA believes that it is not necessary to backfit the requirements for signature logs because it is possible, although cumbersome, to identify inspectors and determine the proper certifications by the use of personnel certification records and personnel/payroll information.

Corrective Steps Which Will Be Taken to Avoid Further Violation

Procedural control, as outlined in the preceding paragraph, will prevent further occurrence.

Date When Full Compliance Will Be Achieved

TVA is presently in full compliance.

ENCLOSURE 2

LIST OF COMMITMENTS

For violation 390, 391/89-13-01:

1. TVA will identify any IE equipment which has circuit boards and is located in an environment, normal or post accident, which can generate internal temperatures greater than 160°F.
2. TVA will review the records on this equipment to determine if soldering has been performed, then inspect the joint to verify post-solder cleaning has been performed.
3. If an inspection reveals post-solder cleaning was not performed, TVA will clean the joint to remove all traces of flux residue.
4. Conduit 2-2PM-292-7265-D will be reworked to install missing bushing where the conduit enters junction box 2-JB-292-1636-D.
5. Cables will be inspected and reworked, if required, on workplan FA000AZ.
6. TVA will add an inspection attribute to verify measures taken to prevent cable damage at conduit ends to the corrective action plans for the cable damage CAQRs WBP 890492 and WBP 890331.

These commitments will be completed before fuel load of each unit.

For violation 390, 391/89-13-02, TVA makes no new commitments.