



Tennessee Valley Authority Post Office Box 2000, Spring City Tennessee 37381

JAN 06 1995

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) - UNIT 1 AND 2 - NRC INSPECTION REPORT NOS. 50-390, 391/94-72, AND 50-390, 391/94-66 - REPLY TO NOTICE OF VIOLATIONS AND SUPPLEMENTAL RESPONSE TO NRC INSPECTION REPORT NO. 50-390, 391/94-55 - VIOLATION 50-390/94-55-02, EXAMPLE 5

The purpose of this letter is to provide a reply to Notice of Violations 390, 391/94-72-01 and 390, 391/94-72-02 cited in the subject inspection reports dated November 10, 1994 and November 16, 1994. The first violation identifies five examples of inadequate corrective actions taken to address known deficiencies and prevent repetition. The second violation identifies four examples of completed work that was not accomplished in accordance with procedural requirements. The fourth example was identified by the resident inspector during Inspection 50-390, 391/94-85.

As described in the enclosed response to the individual items, many of the violation examples resulted from personnel error. TVA's efforts to improve performance in this area have been discussed in recent management meetings and TVA's letter dated November 14, 1994.

Enclosure 1 to this letter addresses the specific examples identified by Notice of Violation 390, 391/94-72-01. Enclosure 2 addresses the specific examples identified by Notice of Violation 390, 391/94-72-02. Enclosure 3 contains a list of commitments made by this submittal.

This letter also includes a response to NRC letter dated October 20, 1994, requesting a supplemental response to NRC Notice of Violation 50-390/94-55-02, Example 5, which involves improperly verifying torque wrench settings.

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The submittal schedule for this response was communicated with Region II staff and subsequently documented in a TVA letter dated December 23, 1994. If you should have any questions, contact P. L. Pace at (615)-365-1824.

Sincerely,



Dwight E. Nunn  
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Watts Bar Nuclear Plant

Enclosures

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ENCLOSURE 1  
RESPONSE TO NOTICE OF VIOLATION  
390, 391/94-72-01

DESCRIPTION OF VIOLATION 390, 391/94-72-01

"10 CFR 50, Appendix B, Criterion XVI, and Tennessee Valley Authority Nuclear Quality Assurance Plan TVA-NQA-PLN89-A, Revision 4, require in part that measures be established to assure that conditions adverse to quality, such as deficiencies and nonconformances are promptly identified and corrected in accordance with documented plans, and corrective actions shall be verified and documented by the appropriate organization. The measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Site Standard Practice SSP-3.04, Corrective Action Program, revision 13, paragraph 2.3, requires the development of corrective actions to correct the conditions and prevent recurrence. Paragraph 2.5 requires the implementation and/or monitoring of the approved corrective action. Paragraph 2.9 and Appendix E require that significant corrective action reports involving hardware corrective action not be closed until field work is complete and verified.

Site Standard Practice SSP-3.06, Problem Evaluation Reports, Revision 15, paragraph 2.3, requires that specific actions and interim measures to correct adverse conditions and prevent recurrence be developed. Paragraph 2.4.A requires that corrective actions be implemented.

Contrary to the above, established corrective actions to correct known deficiencies and prevent repetition were inadequate in that the following were identified:"

EXAMPLE 1

"On August 27, 1994, Significant Corrective Action Report WBP880636SCA was closed with incomplete corrective action to install seismic restraint clamp bars on instrument racks, as specified in Design Change Notice (DCN) C-03053-A. Specifically, Design Change Notice C-03053-A remained open pending engineering review and incorporation of Design Change Notice F-29143-A which provided a change to the clamp bar orientation. Subsequent engineering review determined that the orientation provided in Design Change Notice F-29143-A was inadequate and could not be approved for incorporation into Design Change Notice C-03053-A. Consequently, additional engineering design and field modification will be required for completion of the installation of the clamp bars."

TVA RESPONSE, EXAMPLE 1

TVA agrees with the violation example.

REASON FOR THE VIOLATION, EXAMPLE 1

This violation example occurred due to a decision to allow the closure of corrective action program documents based on documented completion and verification of the physical work with the field (F) DCN still in an open status (i.e., final engineering approval of the F-DCN not performed). This decision was based on the high success rate of F-DCN closures without rejection. The corrective action program procedures were ambiguous about permitting closure of corrective action documents with supporting documentation actions remaining open.

CORRECTIVE ACTIONS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED, EXAMPLE 1

Personnel involved in the preparation, review, approval, and verification of corrective action documents and NRC open items have been instructed to not allow closure if outstanding work remains open.

DCN F-29143-A was returned to the responsible organization to correct the subject clamp bars in accordance with the original design.

TVA has revised Site Standard Practice (SSP)-3.04, "Corrective Action Program,"; SSP-3.06, "Problem Evaluation Reports,"; and Business Practice 374, "NRC Open Item Closure," to require that closure personnel ensure that the base DCNs have been properly statused and the F-DCNs closed.

Corrective actions for this violation are being tracked by Significant Corrective Action Report (SCAR) WBPSCE940059.

CORRECTIVE ACTIONS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION, EXAMPLE 1

To determine the extent of condition, an evaluation has been conducted in conjunction with the reverification of Conditions Adverse To Quality (CAQs) closed within the last year to identify any closures with open F-DCNs. Those items closed before the F-DCN was approved are being reviewed to ensure the disposition did not alter the issue resolution. Additional corrective actions resulting from the extent of condition review will be tracked by SCAR WBPSCA940059.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED, EXAMPLE 1

Full compliance will be achieved by February 28, 1995.

## EXAMPLE 2

"Corrective actions for 10 CFR 50.55(e) reportable condition 50-390, 391/86-24 (nonconformance report 6536) required the revision of construction specifications and site procedures to define proper connectors for Class 1E medium voltage splice applications. These revisions resulted in General Engineering Specification G-38, Installation, Modifications, and Maintenance of Insulated Cables Rated Up To 15,000 Volts, Revision 13, paragraph 3.4.1.1.q, requiring appropriate size connectors as specified in Appendices A and B. These specify the required splice connectors to be used in Class 1E medium voltage (6900V) applications.

On October 14, 1994, the recurrence controls associated with the construction deficiency report were determined not to be effective in that work activities associated with Workplans D-11050-55, -56, -57, -58, and KP06978A-5 were not accomplished in accordance with the workplan instructions and above procedure requirements. As a result, 75 Class 1E 6900V splice connections were made using connectors rated for 600V."

## TVA RESPONSE, EXAMPLE 2

TVA agrees with the violation example.

## REASON FOR THE VIOLATION, EXAMPLE 2

This violation example occurred due to a combination of two factors: (1) field engineering personnel did not obtain Nuclear Engineering approval for use of the alternate connectors; and (2) requirements for selecting the type of connector installation tool and crimping die to be used were ambiguous. This resulted in Thomas & Betts (T&B) type 53500 connectors being used in 6900V applications.

Work plan requirements for selecting splice connectors and their installation tools/dies are based on Maintenance Administrative Instruction (MAI)-3.3, "Terminating, Splicing, and Testing of Insulated Cables Rated up to 15,000 Volts." MAI-3.3 was developed based on the requirements contained in General Engineering Specifications G-38. MAI-3.3 requires that Nuclear Engineering approval be obtained to use vendor information.

MAI-3.3 contains lists of approved connectors and their application, and a statement that connectors are to be selected using the latest manufacturer's data and installed in accordance with tooling approved by the manufacturer for that application. MAI-3.3 did not specifically list the T&B type 53500 connectors for use in applications above 600V. Field engineering personnel used T&B type 53500 connectors because T&B catalog data and correspondence to TVA indicated that these connectors could be used in applications up to 15 kV. However, the T&B correspondence was not approved by Nuclear Engineering for this particular application.

## CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED, EXAMPLE 2

G-38 and MAI-3.3 were revised to provide clearer instructions for selecting connectors and their associated tools and dies. Also, clearer instruction is provided to only use connectors that are specifically approved by Nuclear Engineering.

TVA has evaluated use of the T&B type 53500 connectors in 6900V applications and determined that they are acceptable if properly installed.

Quality Control (QC) management has directed QC inspectors to verify that the MAI-3.3, Attachment 10's correctly specify the design requirements.

TVA management held a series of stand down meetings with field engineering personnel. In the meetings, management expectations for ensuring that procedures are followed and taking time to "do-it-right" were stressed.

TVA compiled a list of 6900V cables and splice locations where the condition described above might exist. This list was used to evaluate the extent of condition for the misapplication of the T&B type 53500 connectors. During this extent of condition review, similar issues involving other type connectors/lugs and their installation were also identified. These issues include the following: 1) Use of T&B 54500 series 2 way connectors which have been used subsequent to the G-38 revision that became effective on September 15, 1986, 2) Use of Burndy type YS connectors specified by DCN M-11050 without installation instructions being provided in MAI-3.3, and 3) T&B 15kV 2-way connectors not being installed in accordance with manufacturer's instructions. Findings and conclusions regarding the acceptability of these conditions during Integrated Test Sequence (ITS) and long term operation were provided to NRC in a letter dated November 18, 1994. As discussed with Region II personnel, additional information about this issue is being provided under separate cover.

Significant Corrective Action Report WBSA940063 was initiated to address concerns about using T&B type 53500 connectors in 6900V applications.

Additional examples of improper crimping operations have recently been identified. As a result of these findings, QA has restricted selected types of crimping operations that can be performed at WBN. Corrective actions for this issue are under development and are being included as part of SCAR WBSA940063.

#### CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS, EXAMPLE 2

A memorandum will be issued to field engineering personnel requiring that they review the response to this violation to ensure that they are aware of the need to closely follow procedures and obtain formal Nuclear Engineering (NE) authorization where appropriate.

TVA will revise SSP-2.10, "Vendor Manual/Information Control," to clarify requirements for using vendor information, such as vendor catalogs not controlled by the vendor technical manual process. This revision will be an extensive re-write to make the procedure more "user friendly."

#### DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance will be achieved by February 28, 1995.

### EXAMPLE 3

"The corrective actions for Problem Evaluation Report WBNPER930495 Revision 1, in part, required the following interim measures for Seismic Category I manholes containing Class 1E cables:

Remove Manhole Debris. For manholes found flooded, remove water and repair sump pump system to operating condition.

As of October 1, 1994, conditions adverse to quality were not promptly identified and corrected in that the established corrective actions for WBNPER930495, Revision 1, were not implemented. This resulted in 9 of 24 Category I manholes with inoperable water removal systems."

### TVA RESPONSE, EXAMPLE 3

TVA agrees with the violation example as stated.

### REASON FOR VIOLATION, EXAMPLE 3

TVA reassessed PER WBNPER930495 and TVA's response to Notice of Violation (NOV) 50-390/93-90-01, 50-391/93-90-01 and concluded that both the programmatic and hardware issues identified therein were not adequately addressed. A detailed barrier analysis was used to determine the underlying cause for this violation. The barrier analysis uncovered several contributing causes which are addressed in detail in Significant Corrective Action Report (SCAR) WBSA940057.

In summary, the following three principal problem areas were identified during the root cause analysis: inadequate measures to preclude excess water from getting into the manholes; inadequate general area housekeeping; and inadequate measures to ensure that equipment needed to remove excess water remains available.

TVA further evaluated the contributing causes and major problem areas to identify the underlying root cause for this violation example. Based on this evaluation, TVA determined that the underlying root cause was a general lack of accountability and ownership by responsible personnel.

### CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED, EXAMPLE 3

Extensive corrective actions have been taken for this issue, which are fully described in SCAR WBSA940057. The specific corrective action measures are not repeated in this violation response due to the large number of individual items needed to fully address the violation example and related issues. Accordingly, the principal corrective actions being taken are summarized below.

Electrical manholes containing 1E electrical cables have been inspected, cleaned, and the excess water removed. Operable sump pumps have been returned to service (e.g., hand switch placed on the "auto" position, electrical power restored where practical, pump plugged in).

Repairs to most of the inoperable sump pumps have been completed. The remaining pumps are being repaired on an accelerated schedule pending availability of replacement parts.

The Site Vice President has set specific standards for site ownership, cleanliness, and housekeeping. These standards have been communicated to the responsible site personnel. Meetings were held to emphasize the importance of meeting these standards and the consequences if the standards are not met.

TVA established and communicated the responsibility and method for electrical manhole access control. Locking devices are being installed on manhole covers to provide a means of positive access control.

Improvements have been made to the electrical manhole Preventative Maintenance (PM) instruction. The following are examples of improvements incorporated:

- Clarified the method of identifying the as-found and as-left conditions of the sump pump handswitch and manhole structures and components.
- Identified the power feed to the sump pumps.
- Identified components to be inspected for damage and corrosion.
- Provided specific instructions for documenting and removing debris and foreign material.
- Specified contingency actions for inoperable equipment and responsibilities to implement contingency measures.

TVA has completed evaluations of surface grade conditions that may cause flooding and of sources of in-leakage through the concrete. Work is in progress or planned to resolve identified surface grade concerns and seal potential sources of in-leakage through the concrete.

#### ACTIONS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS, EXAMPLE 3

Extensive corrective actions to prevent recurrence are being taken for this issue. These actions are summarized above and described fully in SCAR WBSA940057. The remaining specific corrective action measures being taken to prevent recurrence are not repeated in this violation response due to the number of individual items needed to fully address the violation example and related issues. The principal remaining preventive measures are summarized below.

Periodic manhole inspections are being conducted. The frequency will be based on the ability of the hardware improvements to preclude/detect flooding.

TVA is evaluating the following to determine where hardware improvements can be reasonably implemented:

- Effects of past flooding on plant equipment including conduit duct banks and support structure corrosion.
- Detection of sump pump failure or manhole flooding.

#### DATE OF FULL COMPLIANCE

Full compliance will be achieved by April 28, 1995.

#### EXAMPLE 4

"On October 11, 1994, it was determined that previously-identified corrective actions were not adequate to properly disposition adverse conditions. NRC inspectors found an additional example of improperly torqued mounting bolts on safety-related differential pressure transmitter 1-PDT-3-122A. Based on field observations of TVA-Watts Bar torque verification, the inspectors estimated that the two mounting bolts for the transmitter were torqued to 7 foot pounds and 15 foot pounds, respectively. The vendor manual requirement for mounting bolt torque was 35 foot pounds."

#### TVA RESPONSE, EXAMPLE 4

TVA agrees with the violation example.

#### REASON FOR THE VIOLATION, EXAMPLE 4

The reason for the violation is that updates in vendor manual installation requirements were not yet back-fitted to field installed equipment. At the time the differential pressure transmitter was installed, the vendor manual supplied with the transmitter did not specify torque values. When new transmitters of the same manufacturer and model number were later procured, a later version of the applicable manual was received. The later version of the vendor manual contained specific torque values.

Under the Vendor Manual Upgrade Project, TVA correlated the previously installed transmitters to the new vendor document. However, a review of the updated requirements was not made because the transmitter's seismic qualifications were being addressed separately as part of the Equipment Seismic Qualification Corrective Action Program (ESQ CAP). This reasoning was not clearly explained in Vendor Information Project documentation. Site Standard Practice (SSP) 2.10, "Vendor Manual/Information Control," does not require documenting the impact of new vendor information on previous applications or actions taken as a result of any impact.

#### CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED, EXAMPLE 4

An engineering evaluation was performed showing that the as-installed condition would perform its intended function. However, the transmitter in question has been re-torqued to the present vendor manual requirements.

In the Final Report for Construction Deficiency Reports (CDRs) 50-390/85-61 and 50-391/85-57, TVA committed to inspect and rework, as necessary, all instruments in seismic category I structures to satisfy mounting requirements. The CDR activities are tracked by the ESQ CAP and have not been completed. Therefore, correction of other transmitter mounting issues will be addressed and scheduled through the ESQ CAP activities.

#### CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION, EXAMPLE 4

The revision to SSP-2.10 described previously will include additional requirements for documenting vendor technical manual review results and the justification for the adequacy of previous applications or actions taken as a result of any new vendor requirements/changes.

A review will be performed of other interfaces between the Vendor Information CAP and other CAP programs to verify that any similar assumptions were also valid.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED, EXAMPLE 4

With respect to the pressure transmitter identified in this example, TVA is in full compliance. The above corrective steps for this example will be completed by February 28, 1995.

SUPPLEMENTAL INFORMATION ADDRESSING NRC LETTER DATED OCTOBER 20, 1994

Notice of Violation 390/94-55-02, Example 5, cited pressure transmitters mounted by threaded connections not installed in accordance with site engineering approved vendor drawings/manuals. By letter dated October 20, 1994, NRC expressed concern that, as part of TVA's conclusion about the problem being resolved there was no field inspection to determine the extent of hardware deficiencies. NRC requested a supplementary response to address additional actions to ensure that the extent of condition is correctly determined and corrective action is taken.

TVA considers that the corrective actions described in the Final Report for CDRs 50-390/85-61 and 50-391/85-57 address the concerns discussed in the NRC's October 20, 1994, letter.

#### EXAMPLE 5

Specific violation text was not provided. Therefore, the following excerpt from Inspection Report 50-390, 391/94-66 will be used as the basis of TVA's response:

"The inspector concluded that the implementation of the corrective action [for Notice of Violation 50-390/93-24-01, "Inadequate Corrective Action for Vendor-Wired, Safety-Related Panels,"] was less than adequate. The inspectors identified numerous procedural, administrative, and documentation discrepancies in [the reviewed] closed WOs. The examples demonstrate substantial weaknesses in the attention to detail and the thoroughness of documentation of the personnel executing these WOs. Of special concern was the failure to deposition inspection findings, the improper changes in WO scope by the field engineers, the failure to specify PMT when required, and the deletion of QC inspection findings by the field engineer without documented justification or concurrence from QC. The number and variety of errors identified during this inspection also indicated inadequate management oversight and review prior to closure of the WOs. The failure to implement corrective actions adequately is a violation of 10 CFR 50 Appendix B, Criterion XVI. This issue is identified as an additional example of Violation 50-390,391/94-72-01."

#### TVA RESPONSE, EXAMPLE 5

TVA agrees with the violation example summarized above.

#### REASON FOR VIOLATION, EXAMPLE 5

The violation resulted from individual failures to provide adequate documentation. The underlying cause is that responsible WBN management (e.g., work group foremen and supervisors) did not provide proper overview of documentation practices and enforce expectations for properly documenting work.

For the examples noted, individuals did not properly:

- Describe the results of inspections in the manner required by the work control program
- Describe how post-maintenance tests would be accomplished
- Describe how inspection findings were dispositioned
- Perform evaluations in the manner specifically described in the work order

In each of the above situations, personnel did not provide sufficient attention to detail in ensuring that the work orders were adequate to exist as "stand-alone" documents. Also, WBN management did not enforce standards for documenting work properly during reviews of the in-process work or post maintenance review process.

#### CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED, EXAMPLE 5

TVA has reviewed the work orders used for documenting and correcting the deficiencies identified during the panel inspections. The work orders have been annotated where appropriate to provide the needed information. Additional

corrective steps for the individual items are discussed below in TVA's response to the individual findings.

For each concern identified by the TVA inspectors, TVA was able to determine that the appropriate action is being taken (e.g., initiation of another work order, completion of the hardware fix, performance of the needed evaluations). Therefore, TVA considers that there are no additional actions needed to review and correct potentially similar documentation issues on other completed work orders.

#### CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS, EXAMPLE 5

A memorandum will be issued to responsible work group foremen and supervisors requiring that they review the response to this violation to make them aware of the type of documentation problems that are unacceptable. As part of TVA's efforts to establish expectations at WBN, increased emphasis is being placed on communicating expectations and holding personnel accountable to ensure that these types of problems do not occur.

Also, TVA will revise the Plant Completions Group (PCG) back-end work order review process to require a specific check to ensure that documentation is satisfactory and the requirements of the work order were implemented as specified.

#### DATE OF FULL COMPLIANCE, EXAMPLE 5

Full compliance will be achieved by January 31, 1995.

#### DISCUSSION OF INSPECTOR FINDINGS, EXAMPLE 5

##### BACKGROUND

Measures to implement proper corrective actions for vendor-wired, safety-related panels have been ongoing for some time. To understand TVA's resolution of this issue, it is important to note that the issue has two basic elements: 1) adequacy of wiring performed by the vendor in a vendor supplied panel; and 2) adequacy of wiring performed by TVA at the interface between the vendor panel and the WBN "hook-up" point.

For the first element, adequacy of vendor-supplied wiring, TVA does not intend to backfit TVA design and quality requirements to the wiring performed by a vendor in a panel supplied under contract. The panel was originally designed, qualified, and supplied in accordance with an approved quality program and is considered acceptable absent evidence to the contrary.

The fact that a vendor's wiring does not meet TVA design and quality standards is not considered evidence that the panel is defective and in need of corrective actions. TVA's policy is to identify and fix those deficiencies in vendor supplied wiring that would have an obvious impact on quality (e.g., damage). Identification, resolution, and reporting of vendor wiring deficiencies that may have an impact on quality are performed in accordance with approved TVA procedures. These procedures include requirements, for example, that any TVA work in a vendor panel to correct identified deficiencies be performed to TVA standards, and that the deficiencies be reported to NRC under the provisions of 10 CFR 50.55(e) if a defect is involved.

For the second element, wiring performed by TVA at the interface point, TVA agrees that this wiring should meet TVA design and quality requirements. Accordingly, TVA has undertaken various activities to ensure that this wiring is acceptable.

When TVA undertook the actions summarized in the inspection report to identify and correct panel wiring deficiencies, initial examinations uncovered situations where vendor supplied wiring inside the panels did not meet TVA design and quality standards. It was not clear to the inspection personnel that these situations were beyond the scope of the corrective actions. The inspection personnel identified and documented conditions that did not meet TVA design and quality standards. As described in the inspection report, TVA agrees that the inspection personnel did not clearly document their findings in some instances.

During TVA engineering and management reviews of the inspector findings, it was determined that situations involving vendor supplied wiring not meeting TVA design and quality standards were beyond the scope of the commitment to fix TVA wiring deficiencies. Accordingly, the vendor supplied wiring issues were considered to be "out-of-scope" and not to be dispositioned in the manner prescribed for resolving TVA wiring deficiencies at the interface. In some of these instances, engineering or management personnel deleted these concerns from those needing resolution without clearly documenting their basis for these decisions.

Based on a review of the issues, TVA considers that the deficiency resolution measures were consistent with the originally intended corrective actions and that there are no technical deficiencies. The conditions documented by the inspection teams that were considered to be out-of-scope involved instances where vendor-supplied wiring did not meet TVA design and quality standards. In situations where unacceptable conditions were identified (e.g., cut conductors), the appropriate corrective actions were taken. However, TVA agrees that documentation of the actions undertaken was deficient in some instances.

The following provides TVA's response to the individual deficiencies discussed in Inspection Report 50-390,391/94-72:

#### INSPECTOR FINDING

"Numerous conditions documented by the inspection teams (craft and QC) were not dispositioned and documented by NE as required by paragraph II.C of Attachment C of the WOs. For example, in WO 93-24113-00 the teams documented various conditions including jumpers and resistors installed, multiple lugs/conductors per terminal, daisy chains, and solid wires in insulated lugs with no disposition by NE. In addition, a cut conductor that was identified in WO 93-23552-00 was not dispositioned by NE in the WO but was dispositioned and reworked on a Procedure MAI-3.3 data sheet. "Resistors installed" was noted in three locations in WO 94-24105-00, but NE provided no documented disposition. Subsequent to the identification of this error by the inspector, TVA issued WBPER940489 to document and disposition these deficiencies."

#### TVA RESPONSE

TVA agrees that some of the concerns documented by the inspection teams did not

have an engineering disposition documented in Attachment C as specified. In most situations the concerns identified in the original work order were being resolved in another work order. In these situations, the NE evaluation is included in the "new" work order. The documentation provided in the original work orders did not always provide a reference to the "new" work order. In other instances, an engineering evaluation was improperly included in another part of the work order rather than including it in an Attachment C.

- WO 93-24113-00 - several of the items identified by the inspectors were "out-of-scope" concerns not requiring rework or repair. These items were transferred to other work orders. The reference to the "new" work orders was not shown. The NE review and disposition of these concerns is being documented in the "new" work orders rather than in work order 93-24113-00. The appropriate references have been added to the original work order.
- WO 93-23552-00 - the conductor damage evaluation was not specifically included in Attachment C. The conductor damage was repaired per MAI-3.3. An engineering review of the damage was documented in the MAI data sheets attached to the work order.
- WO 94-24105-00 - the items identified by the inspectors were "out-of-scope" concerns. These items were transferred to other work orders. The reference to the "new" work orders was not shown. The NE review and disposition of these concerns has been documented in the "new" work orders rather than in work order 93-24105-00. The appropriate references have been added to the original work order.

#### INSPECTOR FINDING

"One damaged conductor identified on WO 93-23552-00 was dispositioned to be cut and relugged but was not reworked. The licensee also documented this error on WBP940489."

#### TVA RESPONSE

A review of the damaged conductor shows that it was properly reworked; however, TVA agrees that the documentation in the work order for this situation was not correct. TVA believes that the data sheets documenting that the work was performed were lost (the subject WO was in excess of 150 pages). TVA initiated WBP940489 for this issue and concluded that it was the result of an isolated human error. The work order was amended to document the work performed.

#### INSPECTOR FINDING

"In WO 94-24105-00 the inspection team's entries describing resistors installed on three terminal boards (pages 95, 102, and 109) were lined out by a field engineer two weeks after the inspection without any written justification or the concurrence of inspection team personnel."

### TVA RESPONSE

The entries about the resistors were lined out by a responsible foreman rather than a field engineer. However, TVA agrees that better documentation should have been provided. The work order was amended to document the reasons for lining out the inspection team entries.

### INSPECTOR FINDING

"In WOs 93-24064-00, 93-23733-00, 93-23715-00, and 93-23715-02, Step II.E of Attachment B documents NE's safety evaluation of identified deficiencies; this was marked N/A. WO 39-23715-02, Step II.D, which documents that the deficiencies were communicated to NE, was also marked N/A. The field engineer has annotated in the "work performed log" that NE had stated that the safety evaluation would be performed at a later date. However, at the time of the inspection the WOs were reviewed, closed, and vaulted without the performance and documentation of the safety evaluation required by the WO. After the inspector identified this error, TVA forwarded the inspection results for WO 93-23715-02 to NE for evaluation. TVA stated this vaulted WO would be supplemented to reflect that information was provided to NE.

In addition, the safety evaluations provided in WOs 93-23552-00, 93-23555-00, and 93-23556-00 were not evaluations but simply dispositions to tighten the loose connections."

### TVA RESPONSE

TVA agrees that the documentation in the above work orders is not adequate to describe the reasons for the actions taken. It was not TVA's intent to perform a safety evaluation on a work order by work order basis. Rather, a composite safety evaluation was to be performed on the deficiencies after the work was done. Completion of the safety evaluation was not necessary to close the work orders (i.e., the safety evaluation is an engineering action that does not relate to ensuring that the reworked/repared components perform properly). As a result, the actions taken to close and vault these work orders were appropriate.

For WO 93-23552-00, the responsible individual did not provide information about the deficiencies to Engineering as required. This information was subsequently provided to Engineering.

### INSPECTOR FINDING

"For WOs 93-24113-00, 93-23556-00, 93-23866-00, 93-23555, and 93-24105-00, Section 3 of the WACF ("PMT transferred to:") and Section 6.0 of the WO text ("PMT Requirements") both were annotated "No PMT Required" although work was performed that significantly disturbed or changed electrical terminations. Rework performed by these WOs included lifting, relugging, and relanding leads; and landing of unterminated vendor wires. TVA stated that the circuits involved in the above examples would have been tested by future preoperational tests. However, the vaulted quality documentation in the above cases do not indicate the status of testing for the system or circuits being reworked (completed or yet to be performed), nor identify the preoperational test that

would verify the adequacy of those circuits. Both the WACF and the text of the WO provide instructions to document the PTI performing the PMT, or the document or group the PMT requirements were transferred to.

In addition, for the unlanded conductors (WOs 93-24113-00 and 93-23715-02), there were no documented evaluations of how or when the unlanded conductors got that way, whether these conditions had gone undetected through the test program, or assurance that they would have been identified by subsequent testing and by what test."

#### TVA RESPONSE

For each of the work orders discussed above, TVA considers that it was appropriate to specify that a PMT was not required because subsequent startup testing would adequately test each of the panels. However, inadequate information was provided in the work order to describe the manner in which retest requirements would ultimately be met. The standard wording used in the work orders did not provide clear directions for specifying when use of the "no retest required" statement, by itself, was appropriate. TVA has revised the standard wording used in PCG work orders to clarify documentation of PMT requirements.

TVA could not determine when or how the unlanded wires got that way. For WO 93-23195-00, preoperational testing performed in July 1994 (PTI-082-01) would have resulted in the unlanded wire being detected. For WO 93-23715-00, the wire was a spare vendor wire that was not needed for the component to perform properly. The wire was not connected to a TVA field connection.

#### INSPECTOR FINDING

"Unclear or conflicting information and inaccurate changes and work documentation were identified in a number of the WOs:

- Paragraph 3.03 on all of the WOs was a "yes" or "no" signature step indicating whether maintenance or repairs were performed on the WO. This step was typically marked "no" although numerous repairs and rework was performed, including the replacement of terminal blocks, cutting and replacing lugs, and repairs to damaged cable and conductors. However, WO 93-23733-03, Step 3.03, was marked "yes" although the rework was identical to that performed on other WOs (cutting off and replacing improperly crimped lugs that had been documented on an unsatisfactory QC IR). TVA informed the inspector that the intent of this step was to indicate whether repairs or maintenance had been performed that was not governed by specific instructions in the WO or by generic minor maintenance instructions typically attached to WOs as a form 599. However, the step as stated was unclear and misleading. This condition is generic to most WOs.
- Paragraph 3.15 on all of the WOs was a signature step to verify that gasket material was reusable or replaced as necessary. This block was inconsistently signed off or marked N/A for similar or identical installations. For example, on DG 1A-A, WO 93-23715-00, and DG 2B-B, WO 93-24064-00, this step is marked N/A. However, this panel door does have a gasket. For the same panels on

DG 1B-B (WO 93-23733-00) the step was initially marked N/A (one week after the work was signed off as complete) but later re-signed as satisfactory by the craft and the field engineer. TVA informed the inspector that this was a standard step in the computerized electrical WO data base and applies only to 10 CFR 50.49 (EQ) equipment exposed to harsh environments and thus did not apply to the DG panel. However, there is no indication of this limitation in site procedures or in the step printed in the WOs. Thus, performers are presented with a conflict between meeting the "intent" of a step and verbatim compliance. The changes to the WO listed above demonstrated that performers were confused by this step in the WO.

- In WO 93-23556-00, two different wires were alternately shown as loose on one page and acceptable on another (pages 16 and 81). Only one wire was reworked. After this discrepancy was identified by the inspector, TVA reinspected both conductors and confirmed that neither was loose. TVA stated that the vaulted WO would be supplemented to correct this error.
- The work descriptions and documentation for the four identical DB panels were inconsistent, unclear, and contained typographical errors regarding the areas to be inspected. The scope and work descriptions indicated that all cubicles were to be examined to ensure that all TVA-to-vendor interface points were inspected. The inspection team for WO 93-24064-03 determined that the pyrometer and neutral cubicles did not contain TVA-to-vendor interfacing terminal blocks and thus these cubicles did not come within the scope of the WO. This information was documented in the WO. However, WOs 93-23733-03, 93-24034-03, and 93-23715-03 for the same panels for the remaining three DGs did not indicate (in the work log or on the data sheets) whether these cubicles had been inspected or not. Further, the work description for WO 93-24064-03 identified A-A cubicles to be inspected, instead of B-B cubicles located in Panel 2-PNL-82-B-B. TVA/Watts Bar stated the WOs would be supplemented to correct these discrepancies."

#### TVA RESPONSE

Item 1 - The signature step indicating whether minor maintenance or repairs are performed is generically used in WBN work orders. This step is inserted to document correction of minor deficiencies that are discovered during the course of implementing the work order, which are not specifically described in the work order. The step was appropriately marked "no" in the work orders used to correct minor wiring deficiencies because these work orders were specifically written to discover and correct these types of minor deficiencies. While TVA agrees that the step may appear confusing, TVA considers that its use by trained personnel has been satisfactory.

Item 2 - TVA agrees that implementation of step 3.15 to verify the acceptability of the gasket material has been inconsistent and may result in confusion. The step was generically inserted as a "good construction practice" for junction boxes, motor housings, valve covers, etc., that may contain some type of environmental seal. TVA will initiate the appropriate action to clarify use of the step to verify the acceptability of the gasket material

(e.g., restrict its use to only those applications where a gasket is used or clarify the intent of the step in the work orders).

Item 3 - TVA agrees that the documentation was inconsistent between the wire log and the data sheets. The vaulted work order was corrected. The use of the wire log has been discontinued at WBN.

Item 4 - TVA agrees that the documentation was inconsistent, unclear, and contained typographical errors. A clarifying note has been added to WOs 93-23733-00, 93-24034-00, and 93-23715-00 to indicate that no inspections were required. The typographical error in WO 93-24064-00 was corrected.

ENCLOSURE 2  
RESPONSE TO NOTICE OF VIOLATION  
390, 391/94-72-02

"10 CFR 50, Appendix B, Criterion V, and Tennessee Valley Authority Nuclear Quality Assurance Plan TVA-NQA-PLN89-A, Revision 4, require in part that activities affecting quality be prescribed by documented instructions or procedures and shall be accomplished in accordance with these instructions or procedures.

Site Standard Practice SSP-7.53, Modification Workplans, Revision 11, Section 2.6, requires plant features be installed per the workplan work instructions and design controlled output documents or approved design change documents.

Contrary to the above, completed work was not accomplished in accordance with procedural requirements as evidenced by the following:"

EXAMPLE 1

"General Engineering Specification G-38, Installation, Modification, and Maintenance of Insulated Cables Rated Up to 15,000 Volts, Revision 13, Section 3.4.1.1.p, and Modification Addition Instruction MAI-3.3, Cable Terminating, Splicing, and Testing for Cables Rated Up to 15,000 Volts, Revision 12, Appendix A, Section A3.2, require that splices made in manholes shall be waterproofed by the use of nuclear grade Raychem heat shrink tubing.

On October 14, 1994, Class 1E medium voltage splices installed in manholes 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27 were determined not to be installed with a nuclear grade Raychem heat shrink tubing to provide waterproofing. The following medium voltage splices were installed in the manholes (WBN-SPL-):

9201	9202	9203	9204	9197	9198	9199	9200	9105	9193
9194	9195	9196	9189	9190	9191	9192	12381	12382"	

TVA RESPONSE, EXAMPLE 1

TVA agrees with the violation example.

REASON FOR THE VIOLATION, EXAMPLE 1

This violation example occurred because of personnel error. In locations where waterproofing is required, G-38 and MAI-3.3 contain a specific requirement to use Raychem Corporation WCSF type N heat shrinkable tubing or obtain formal authorization to use another type of oversleeve. Field engineering personnel selected Raychem type HVS and HVS Y splice kits for the above splices. These kits contain a waterproofing oversleeve that is approved for wet applications by Raychem. Field engineering personnel used the oversleeve supplied with the kits and did not obtain formal Nuclear Engineering approval to use the supplied oversleeve rather than the WCSF type N heat shrinkable tubing.

CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED, EXAMPLE 1

TVA management held a series of stand down meetings with field engineering personnel. In the meetings, personnel accountability and management expectations for ensuring that procedures are followed and taking time to "do-it-right" were stressed.

TVA has evaluated the use of Raychem HVS and HVSY kits and determined them to be acceptable for use without the type N oversleeve in manhole applications. Therefore, the installed HVS kits have been determined to be acceptable for this use. The basis for this acceptability has been provided to the NRC resident inspectors for their review.

MAI-3.3 and G-38, which contained the requirement to waterproof splices with nuclear grade Raychem heat shrink tubing, have been revised to allow use of the HVS and HVSY kits as an acceptable method for performing mild environment waterproof medium voltage splices.

CORRECTIVE STEPS THAT WILL BE TAKEN AVOID FURTHER VIOLATIONS, EXAMPLE 1

A memorandum will be issued to responsible field engineering personnel requiring that they review the response to this violation to ensure that they are aware of the need to follow procedures/specifications explicitly or obtain formal, documented approval to deviate from the procedure/specification.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED, EXAMPLE 1

Full compliance will be achieved by January 31, 1995.

## EXAMPLE 2

"Engineering Administrative Instruction EAI-3.05, Design Change Notices, Revision 19, Section 5.1.8.c, requires that prior to closure of a design change notice all site engineering documents requiring changes are identified and that the appropriate incorporation status is correctly shown on the design change notice forms. Section 5.9.1.6 of the same procedure requires that engineering documents, including design basis documents, and supporting documents affected by the design change are updated within 45 calendar days of the work completion date of the design change.

On October 14, 1994, General Engineering Specification Exception G-38-WBN-21 was determined not to have been updated to reflect the field design changes specified in Design Change Notice F24759-A. This change notice revised the location of cable splice WBN-SPL-9105 from junction box O-JB-292-6364A, located in the auxiliary building, to manhole 22. Field Change Notice F24759-A was closed on April 8, 1994."

## TVA RESPONSE, EXAMPLE 2

TVA agrees with the violation example.

## REASON FOR THE VIOLATION, EXAMPLE 2

This violation example occurred because of personnel error. Responsible individuals did not list the G-Specification exception as a reference in Design Change Notice M11050. General Engineering Specification G-38, exception 21 was a one-time exception for the installation of cable splices that required the use of an open flame heat source for solder application. Exception 21 included a reference to the planned location of the cable splices (junction box O-JB-292-6364A) which was not germane to the exception.

Due to space limitations in the originally planned splice location, the splice was relocated to manhole 22. The relocation was properly documented; however, personnel failed to reference exception 21 as an input to the controlling DCN. As a result, exception 21 to G-38 was not updated with information about the new location.

## CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED, EXAMPLE 2

TVA has revised G-38, exception 21 to document the location of the subject splice. TVA has also reviewed the associated Class 1E workplans and determined no other similar condition exists for this exception.

The personnel involved with this issue have been counselled regarding the importance of proper documentation.

## CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS, EXAMPLE 2

This exception involved unusual circumstances and appears isolated. TVA will confirm this by review of other G-38 exceptions to determine if similar conditions exist. If this review does not identify additional examples, TVA

will consider this condition isolated with no further action required. If additional corrective actions are determined to be necessary, they will be documented as part of Significant Corrective Action Report WBSA940063 and the response to this violation will be updated.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED, EXAMPLE 2

With regards to the identified example, TVA is in full compliance. The SCAR will be completed by February 28, 1995.

EXAMPLE 3

"Standard Drawing E12.5.9, Cable Splicing of Installed Cables in Cable Trays, Revision 0, required the installation of enclosures for Class 1E splices installed in cable trays. Workplans D-11050-55, D-11050-56, D-11050-57, and D-11050-58 required the implementation of Drawing Change Authorization M-11050-61. This drawing change authorization required the implementation of Standard Drawing E12.5.9.

On October 14, 1994, work activities were determined not to have been accomplished in accordance with workplan instructions in that the requirements of Standard Drawing E12.5.9 were not implemented as evidenced by the lack of a solid metal barrier between the adjacent cable splices, solid top or bottom tray cover, fireboard installed at either end of the splices, and silicone foam installed at the ends of the splices between fireboard material. The following splices were installed in cable trays without the required enclosures (WBN-SPL-):

9113 9115 9108 9110 9106 9102 9098 9100"

TVA RESPONSE, EXAMPLE 3

TVA agrees with the violation example.

REASON FOR THE VIOLATION, EXAMPLE 3

The violation example occurred due to personnel error. The workplan writer and reviewer failed to check the requirements of standard drawing SD-E12.5.9, which resulted in the omission of barrier installation instructions in the implementing documents.

CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED, EXAMPLE 3

TVA has counselled the involved workplan writer and reviewer with emphasis on DCAs providing notes to construction, verification of references, and translating those notes into special work instructions.

DCN F-33082-A and workplan D-11050-74 have been initiated to install the enclosures and the barriers.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS, EXAMPLE 3

A memorandum will be issued to modifications workplan writers and reviewers requiring that they review the response to this violation to ensure that they are aware of the need to include pertinent information in design documents and workplans, and to reiterate the requirements of Standard Drawing SD-E12.5.9.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED, EXAMPLE 3

Full compliance will be achieved by April 24, 1995.

ADDITIONAL EXAMPLE (During Inspection 390, 391/94-82)

Standard Drawing SD-E12.5.9, detail A shows a cable mounted enclosure for cable tray splices that requires engineering approval for use of the detail. DCN F-20648-A was issued providing a field fabrication and mounting detail for an enclosure similar to that shown in SD-E12.5.9, detail A. However, this detail does not refer to the standard drawing, indicating engineering approval, nor does the detail identify the standard drawing requirement for Kaowool installation at the splice box ends.

TVA RESPONSE TO THE ADDITIONAL EXAMPLE

TVA agrees with the additional example.

REASON FOR THE ADDITIONAL EXAMPLE

This violation example occurred because of a combination of personnel errors. Personnel responsible for preparing FDCN F20648-A and the associated work plan did not reference Standard Drawing SD-E12.5.9. The FDCN was initiated for fabrication and location of the splice box only. As such, the FDCN did not contain the Kaowool installation requirements delineated in Standard Drawing SD-E12.5.9. Field personnel used the FDCN for installation without checking to ensure that the drawing requirements were included.

CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND RESULTS ACHIEVED, ADDITIONAL EXAMPLE

Work Request C333002 has been initiated to install Kaowool in accordance with the requirements of Standard Drawing SD-E12.5.9 for the box described in this example.

As part of the cable tray walkdown program, an attribute has been added to inspect cable trays for splices including those in enclosures attached to the cable tray. To aid in this inspection, Design Change Notice (DCN) Q33747 has been issued to require the field to contact Nuclear Engineering when these splices are identified.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

A memorandum will be issued to field and design personnel requiring that they review the response to this violation to ensure that they are aware of the need to include pertinent information in design documents and workplans, and to emphasize the requirements of Standard Drawing SD-E12.5.9.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance will be achieved by April 24, 1995.

ENCLOSURE 3

LIST OF COMMITMENTS

Notice of Violation (NOV), 390, 391/94-72-01, Example 1

Corrective actions resulting from the extent of condition review will be tracked by SCAR WBPSCA940059. The corrective actions for this SCAR will be completed by February 28, 1995.

NOV 390, 391/94-72-01, Example 2

A memorandum will be issued to field engineering personnel requiring that they review the response to this violation to ensure that they are aware of the need to closely follow procedures and obtain formal Nuclear Engineering authorization where appropriate.

TVA will revise SSP-2.10, "Vendor Manual/Information Control," to clarify requirements for using vendor information, such as vendor catalogs not controlled by the vendor technical manual process. This revision will be an extensive re-write to make the procedure more "user friendly."

The corrective actions for these issues will be complete by February 28, 1995.

NOV 390, 391/94-72-01, Example 3

The corrective actions described in SCAR WBSCA940057 will be implemented. These corrective actions will be complete by April 28, 1995.

NOV 390, 391/94-72-01, Example 4

The revision to SSP-2.10 described above will include additional requirements for documenting vendor technical manual review and the justification for the adequacy of previous applications or actions taken as a result of any new vendor requirements/changes.

A review will be performed of other interfaces between the Vendor Information (VI) CAP and other CAP programs to verify that any similar assumptions were also valid.

These corrective actions will be completed by February 28, 1995.

NOV 390, 391/94-72-01, Example 5

A memorandum will be issued to responsible work group foremen and supervisors requiring that they review the response to this violation to make them aware of the type of documentation problems that are unacceptable.

TVA will revise the Plant Completions Group back-end work order review process to require a specific check to ensure that documentation is satisfactory and the requirements of the work order were implemented as specified.

TVA will initiate the appropriate action to clarify use of the "standard" work order step to verify acceptability of gasket material (e.g., restrict its use to only those applications where a gasket is used or clarify the intent of the step in the work orders).

These corrective actions will be completed by January 31, 1995.

NOV 390, 391/94-72-02, Example 1

A memorandum will be issued to responsible field engineering personnel requiring that they review the response to this violation to ensure that they are aware of the need to follow procedures/specifications explicitly or obtain formal, documented approval to deviate from the procedure/specification. This action will be complete by January 31, 1995.

NOV 390, 391/94-72-02, Example 2

The response to this violation example will be updated in the event that additional recurrence control actions are necessary. The recurrence control actions are being established per Significant Corrective Action Report WBSA940063. The SCAR will be completed by February 28, 1995.

NOV 390, 391/94-72-02, Example 3 and Additional Example from Inspection 390, 391/94-82

A memorandum will be issued to workplan writers and reviewers, and field and design personnel requiring that they review the response to this violation to ensure that they are aware of the need to include pertinent information in design documents and workplans, and to emphasize the requirements of Standard Drawing SD-E12.5.9.

Work request C333002 will be implemented to install Kaowool in accordance with the requirements of Standard Drawing SD-E12.5.9.

These actions will be complete by April 24, 1995.