



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-390/94-13 and 50-391/94-13

Licensee: Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Docket Nos.: 50-390 and 50-391 License Nos.: CPPR-91 and CPPR-92

Facility Name: Watts Bar 1 and 2

Inspection Conducted: February 1 through February 28, 1994

Inspectors: Albert B. Ruff 3/30/94
G. A. Walton, Senior Resident Inspector, Construction Date Signed

K. D. Ivey, Jr., Resident Inspector

Consultants: R. M. Compton, Nuclear Power Consultants, Inc. (paragraph 4.a)
M. I. Good, Comex Corporation (paragraph 2.e)
W. S. Marini, Pegasus, Inc. (paragraphs 2.c, 2.d, 3, and 4.b)
D. O. Myers, Beckman and Associates (paragraphs 2.a, 2.b, 4.c, and 4.d)

Approved by: P. E. Fredrickson 3/30/94
P. E. Fredrickson, Chief, Watts Bar Construction Branch Date Signed
Division of Reactor Projects

SUMMARY

Scope:

This routine inspection was conducted by an NRC resident inspector and NRC consultants for the review of 10 CFR 50.55(e) reports, follow-up of Three Mile Island Action Plan Items, and follow-up of actions on previous inspection findings.

Results:

This inspection for the closure of open items found that the quality and detail of packages provided by the licensee for each item were adequate for inspector follow-up. However, as a result of reviews on the closure

documentation packages that were provided, deficiencies were identified for the items noted below.

One violation was identified with four examples of failure to follow procedures. These examples involved: 1) the failure to incorporate a field design change notice into workplans (paragraph 2.a); 2) the failure to complete operability testing for qualifying commercial grade equipment (paragraph 2.d); 3) the failure to perform an adequate screening for potential reportability of a problem evaluation report condition (paragraph 2.d); and 4) the failure to identify deficiencies during the performance of platform walkdowns (paragraph 4.a).

One violation was identified with three examples of inadequate corrective action. These examples involved: 1) inadequate corrective actions that did not discover deficiencies for a problem evaluation report. These deficiencies were subsequently identified by the inspectors during this inspection (paragraph 2.a); 2) an inadequate cause determination that resulted in an inadequate extent of condition review and inadequate corrective actions and recurrence controls for a problem evaluation report initiated for deficiencies identified by the NRC during an inspection in 1992 (paragraph 4.a); and 3) the failure to document and correct conditions adverse to quality identified during platform walkdowns conducted for the civil/seismic calculations program.

In addition, the inspectors identified several deficiencies with Significant Corrective Action Report WBCA920106 during the review of a status package for Construction Deficiency Report 50-390/92-12, Installed Temperature Switches Without IE Qualifications (paragraph 2.e). The inspectors concluded that the root cause determination was inadequate and that the documented corrective actions and recurrence controls did not address the correct root cause. In addition, the inspectors raised questions with the procedures and training for root cause analysis. These deficiencies were not cited since the SCAR was still open at the time of this inspection.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *K. Boyd, Site Licensing Program Administrator
- *J. Christensen, Quality Assurance Manager, Construction
- *W. Elliott, Engineering and Modifications Manager
- *N. Kazanas, Vice President Completion Assurance
- *A. Layfield, QA Supervisor, Ebasco Services, Inc.
- *D. Malone, Quality Engineering Manager
- *B. Martocci, Program Manager
- *B. Milhiser, Vice President, Ebasco
- *D. Moody, Plant Manager
- *W. Museler, Site Vice President
- *C. Nelson, Maintenance Support Superintendent
- *P. Pace, Compliance Licensing Supervisor
- *G. Pannell, Site Licensing Manager
- *J. Seeley, Program Manager, Replacement Items Program
- *M. Singh, Modifications Manager
- *J. Vorees, Regulatory Licensing Manager

Other licensee employees contacted included engineers, technicians, nuclear power supervisors, and construction supervisors.

NRC Personnel:

- **K. Ivey, Resident Inspector
- *J. Lara, Resident Inspector
- *P. Rush, NRR Intern
- *K. Van Doorn, Senior Resident Inspector, Operations
- *G. Walton, Senior Resident Inspector, Construction

NRC Consultants:

- R. Compton, Nuclear Power Consultants, Inc.
- M. Good, Comex Corporation
- W. Marini, Pegasus, Inc.
- *D. Myers, Beckman and Associates

- *Attended exit interview
- **Conducted exit interview

Acronyms, initialisms, and abbreviations used throughout this report are listed in the last paragraph.

2. Follow-up of 10 CFR 50.55(e) Reports (92700)

- a. (Closed) CDR 50-390/87-15, 50-391/87-16, Auxiliary Control System Cables Routed Through the Control Building

This deficiency pertained to the inadequate separation between cables in the auxiliary control system and cables used for equipment controlled from the MCR. The auxiliary control system is for shutdown of the reactor from outside of the MCR. The licensee determined from a review of a SQN CDR that cable routing was such that a fire within the cable spreading room could result in the loss of both MCR and auxiliary control system functions.

The licensee issued a final report for the deficiency on January 24, 1989. The issue was reviewed by the NRC and the results documented in IR 50-390, 391/91-23. The NRC review at that time concluded that the licensee's corrective actions for the condition were appropriate and the issue could be closed for Unit 1 after the completion of the proposed design change to reroute cables to meet separation criteria. The licensee subsequently completed DCN P-01219 to reroute 13 cables utilizing paths that would not compromise separation criteria.

The inspector reviewed revision level D of the DCN (P-01219-D) and the implementing WPs, and selected two safety-related cables for field routing verification. The cables selected were 1V1038B and 1V1040B from WP D-01219-09. The inspector utilized the CCRS for cable 1V1038B, Revision 12, effective January 13, 1992, for the walkdown. This routing applied to both cables. Based on visual observation, the inspector determined that the cable routing did not match the latest design output document (CCRS). The cables had been routed by WP D-01219-09 to Revision 11 for cable 1V1038B in CCRS.

The inspector's walkdown of the existing cable routing showed that the cables were routed outside the control building in accordance with the intent of the CDR corrective actions. However, revision 12 of the affected cables in the CCRS, which was initiated by the licensee during a work package preparation walkdown, specified a different conduit for the cables going into an electric panel because of interferences. The cables still exited from the same point on the cable tray for both revisions and, therefore, did not compromise separation.

The licensee stated that the observations of discrepancies between cable routing per WP D-01219-09 and design output as revision 12 in the CCRS for the affected cables, were valid and further stated that the discrepancy was caused by inadequate implementation of FDCN F-20882-A. This FDCN, which initiated revision 12 in the CCRS for the affected cables, had not been properly implemented as part of WP D-01219-09 for cable installation and WP D-01219-08 for conduit installation because advanced authorizations for work

against the FDCN were not performed or documented. Advanced authorizations for FDCNs are permitted by plant procedures and constitute implementing some of the work proposed by an FDCN before it is approved. The CCRS was changed to revision 12 for the affected cables after the FDCN was approved.

The inspector determined that the licensee missed an opportunity to identify the FDCN discrepancy when it was not captured during the WP completion review process. This process was designed to verify that FDCNs (affecting CCRS) initiated against a completed work package were fully implemented.

Procedure SSP-7.53, Modification Workplans, Revision 11, Section 2.3, Preparing the Workplan, requires an Appendix D, Modification Workplan Implementation Drawings, list to be initiated to identify the drawings or CCRS numbers which depict the scope of work to be included in the WP. Procedure SSP-7.53 also requires an FDCN to be incorporated into a WP, where in Section 2.7.C.1 the responsible engineer is required to list an FDCN number on the Appendix D for the WP so that the field personnel can implement the change. Although the installed cables' routing met the acceptance criterion of WP D-01219-09, the responsible engineer did not incorporate FDCN F-20882-A, AA-02 into WPs D-01219-08 or D-01219-09. These WPs were closed on April 23 and April 30, 1993, respectively. Consequently, another FDCN, as indicated in the following paragraphs, was required to bring the records and installed configuration into agreement. The failure to follow procedures for implementing an FDCN into WPs is a violation of 10 CFR 50, Appendix B, Criterion V, which requires that activities affecting quality be accomplished in accordance with documented instructions or procedures. This item is identified as the first example of VIO 50-390/94-13-01, Failure to Follow Procedures.

The licensee initiated FDCN F-29630-A, AA-01, on February 22, 1994, to change the CCRS to reflect the as-built condition of the plant. FDCN F-29630-A will reinstate conduit 1VC5402B, which contains both cables (1V1038B and 1V1040B), to the conduit drawings, and revise the CCRS to show the routing for the subject cables as revision 11 as called for on WP D-01219-09. The verification of the completion of processing FDCN F-29630-A will be followed up as part of the NRC review of the corrective action for the preceding issue.

During the review of this issue, the inspector noted that the licensee had initiated a PER (WBPER930415) which addressed the same type of problem in the same DCN WPs. The PER, initiated on November 12, 1993, identified that the design output addressed in CCRS was not specified in DCN P-01219-D for cable 1PM1621. Corrective actions specified in the PER included: 1) revising Procedure SSP-7.53 to require CCRS to receive the same reviews as DCAs or FDCNs; 2) revising checklists to include accountability in WPs of FCRs, FDCNs and CCRS; and 3) confirming that changes to

DCNs, such as FDCNs, had been incorporated in certain DCNs within the scope of the PER. The scope list of DCNs for review included DCN P-01219. The PER was closed on January 21, 1994.

The inspector determined that the corrective actions for this PER included the review of DCN P-01219-D (same DCN as discussed in the above violation) for incorporation of FDCNs. This PER did not identify the fact that FDCN F-20882-A and the associated advanced authorizations for work had not been properly incorporated into WPs. The inspector determined that corrective actions for the PER were inadequate and constituted a violation of 10 CFR 50, Appendix B, Criterion XVI, which requires that conditions adverse to quality be identified and corrected. This finding is identified as the first example of VIO 50-390, 391/94-13-02, Inadequate Corrective Action.

Based on the reviews conducted, the inspector determined that the licensee had rerouted auxiliary control system cables outside the control building and that the separation criteria was satisfactory. The CDR issue was resolved and the CDR is closed.

- b. (Closed) CDR 50-390/87-19, 391/87-22, Failure of High-Voltage Cable Insulation on Diesel Generators

This deficiency involved four of the five standby DGs. During performance of a surveillance test on the DGs, the 2A-A DG tripped on overcurrent. Upon investigation, the licensee found that the insulation on the high-voltage cable to the potential transformers in the 2A-A DG exciter cubicle had deteriorated at the transformer termination causing the cable to short-to-ground and trip the DG. The investigation attributed the deficiency to poor design by the DG vendor because of inadequate cable insulation thickness, improper insulation material, and lack of stress relief at the termination. Identified corrective actions were to replace the affected cables on all five DGs.

This issue was reviewed in IR 50-390, 391/93-72 where the corrective actions and generic reviews initiated by the licensee were determined to be adequate. The only remaining action was the completion of field work.

During this inspection, the inspector reviewed associated DCN P-02211-A and FDCN F-17024-A (RIMS T56911010884) that were issued to replace the existing vendor-supplied high-voltage cables. The inspector found that work had been completed as documented on WPs D-02211-01 through D-02211-05. The DCN documented the completed retest requirements. The inspector also verified that field work was complete by inspecting the new cables in the DG control cabinets for all five DGs. No deficiencies were identified. This item is closed.

- c. (Closed) CDR 50-390, 391/88-01, Auxiliary Control Air Compressor Control Circuits Must Be Manually Reset After Loss of Offsite Power

As discussed in IRs 50-390, 391/90-30, 91-15, and 93-01, the originally identified concern, as well as controls to prevent recurrence, was reviewed and considered acceptable. However, two questions regarding ACAS loading and valve stroke times remained to be resolved.

The licensee subsequently supplied the results of a comparison between the loads listed in FSAR Section 9.3, Table 9.3.8, and Design Calculation EPM-AF-080188, System Safety Limits for the ACAS Safety Related Instrumentation, Revision 11. The inspector reviewed the above documents and determined they were in agreement and accurately depicted system loading. The calculation showed adequate air capacity was available to achieve the required valve stroke times.

The inspector noted, however, that the calculation addressed the ACAS as a complete two-unit system but did not address the ability of the Unit 1 portion of the system to perform its intended function while the Unit 2 portion was still under construction. The inspector questioned whether, with the Unit 1/Unit 2 isolation valves closed, adequate header air volume would be available to support the Unit 1 loads during a LOOP until a DG could start and the air compressors would be available. The licensee subsequently amended the above calculation (Revision 12, dated January 26, 1994) to address single unit operation (Unit 1). The inspector determined that the revised calculation adequately demonstrated that the Unit 1 portion of ACAS can independently perform its intended function. This item is closed.

- d. (Closed) CDR 390, 391/92-08, Misclassification of Quality Assurance Level III Material

This CDR identified five instances where QA Level II and III material had been issued from storage and installed in QA Level I applications. These deficiencies were identified during the licensee's performance of Incident Investigation II-W-92-008, which had been initiated due to violations of material control procedures identified in NRC IR 390,391/92-03. The five deficiencies, along with their corrective actions, are discussed below:

Two of the items, an illuminated push button (TIIC ADN-289E) and a breaker spring charging motor (TIIC BPL-195W), were subsequently dedicated for their Quality Level I applications by technical evaluations documented in PEG packages EPEG920019 and EPEG920013, respectively. The inspector reviewed these packages and determined that they adequately justified use of the items in their Quality Level I applications.

Two of the items, terminal lugs (TIIC ARC-848D) and DG oil line check valve (TIIC QRW-777N), could not be qualified for the intended service by technical evaluation and were replaced with Quality Level I components, in accordance with WO 92-05942-00 and WO 92-07036-00, respectively. The inspector reviewed these WOs and determined that the replacement of the installed items with fully qualified components satisfactorily corrected the identified deficiencies.

The remaining item, a pump vane (TIIC BJM-285M) for a radiation monitor vacuum pump, was contingently dedicated for Quality Level I use by PPSP package 28627. This package stated that final acceptability of the pump vane would be contingent upon successful demonstration of operability by performance of post-installation testing. The inspector requested documentation of the completed testing to review and was informed by the licensee that the testing had not yet been completed. Further review revealed that PPSP package 28627 was signed off (RIMS T38931207859) as complete on September 23, 1993, without completion of the required operability testing. Procedure SSP-10.C, Evaluation of Installed Safety-Related Replacement Items, Revision 1, Section 2.5.5.A, states:

"Commercial grade items intended for Safety-Related applications are acceptable for use in those applications only after the technical evaluation is complete and all the requirements for acceptance are met."

The failure to perform the necessary operability testing prior to closure of the PPSP package is a violation of 10 CFR 50, Appendix B, Criterion V, which requires that activities affecting quality be accomplished in accordance with documented instructions or procedures. This item is identified as the second example of VIO 390/94-13-01, Failure To Follow Procedures.

The licensee issued PER WBP940077 on February 8, 1994, to document the above failure to follow Procedure SSP-10.C. This PER identified two radiation monitors containing pump vanes whose operability was required to have been demonstrated by testing. The inspector reviewed the issued PER for conformance with the requirements of Procedure SSP-3.06, Problem Evaluation Reports, Revision 13. From this review the inspector determined that Procedure SSP-3.06, Appendix D, 10 CFR 50.55(e) Screening Form Guidelines For Potential Reportability Determination, had been incorrectly completed. Question II of the Appendix D form asks the preparer,

"Can you confirm that the affected system or component could have performed its required safety function, if left uncorrected?"

Although the PPSP package stated that operability testing was required to demonstrate the component's ability to perform its intended function, the preparer answered the above question "Yes." The radiation monitors which had unqualified vanes installed were 0-RE-090-126, Main Control Room Normal Air Intake Monitor, and 1-RE-090-131, Containment Purge Air Exhaust Monitor. As stated in design criteria document WB-DC-40-24, Radiation Monitoring, Revision 3, and Technical Specification Table 3.3.6-1, Containment Vent Isolation Instrumentation, and Table 3.3.7-1, CREVS Actuation Instrumentation, the primary safety function of these monitors is to initiate control room isolation and containment ventilation isolation, respectively, upon detection of high radiation levels. However, if the pump vanes did not operate as required, air would not be pumped into the detection chamber of the monitor, any existing high radiation levels would not be detected, and the required isolation functions could not be initiated. The "yes" answer to the above question resulted in a check in the "no" block of Section 10A of the PER form, Potential Reportability. This precluded the PER from being forwarded to the site licensing manager for performance of a formal 10 CFR 50.55(e) reportability review in accordance with procedure SSP-4.05, NRC Reporting Requirements.

In addition, procedure SSP-3.06, Appendix G, Guidelines for Completing PERs, instructions for completing Section 10A, state that the PER is, "... considered potentially reportable if safety-related, Category I(L), or if the issue is indeterminate." Had this instruction been followed, it would have resulted in the Section 10A block being appropriately checked as being potentially reportable since the components in question were safety-related.

The failure to complete the Appendix D screening form and Section 10A of PER WBP940077 in accordance with procedure SSP-3.06 accurately is a violation of 10 CFR 50, Appendix B, Criterion V, which requires that activities affecting quality be accomplished in accordance with documented instructions or procedures. This item is identified as the third example of VIO 390, 391/94-13-01, Failure To Follow Procedures.

As documented in the above referenced II, the scope of the licensee's review encompassed 1557 material issuances between June 5, 1991 and November 7, 1991. As the identified deficiencies represented an error rate of less than 1/2 of 1 percent, the licensee determined that they do not constitute a generic program deficiency. However, to decrease the likelihood of similar deficiencies occurring in the future, a plan was established for providing updated information to assist in determining material selection requirements for specific end-use applications. This plan was originally outlined in a memorandum dated October 2, 1992 (RIMS T25921002852) and is currently contained in Procedure SSP-10.05, Technical Evaluation For Procurement Of Materials And Services, Revision 9, Section 2.12.B.

In addition to the above discussed reviews of the actions taken to resolve the individual deficiencies, the inspector reviewed II-W-92-008 and SSP-10.05, and determined that the licensee's generic applicability determination and implemented recurrence controls are acceptable. Therefore, this item is closed.

e. (Open) CDR 50-390, 391/92-12, Installed Temperature Switches Without IE Qualifications

The CDR final report, dated on October 29, 1992, involved two issues associated with the safety-related, 480V transformer room ventilation subsystem. These issues were: 1) commercial grade pneumatic temperature switches were installed in a safety-related application in the transformer room HVAC temperature control loops; and 2) the A and B trains of the transformer room ventilation system temperature loops were being supplied by a common nonsafety-related air system rather than train A and B essential air systems. Failure or degradation of the temperature control loops could place the 480V transformer rooms in an unanalyzed condition. The deficiencies occurred in 1979 and were discovered while performing FMEA calculations. The licensee identified the deficiencies on September 19, 1992, and issued PER WBP920232 on September 25, 1992; the PER was upgraded to SCAR WBSA920106 on December 1, 1992. During this inspection period, the SCAR was still open pending replacement of the temperature switches. All other corrective actions and recurrence controls for the SCAR were complete.

The CDR listed the cause of the two deficiencies, discussed above, as failure to follow design criteria procedures and administrative control procedures, and a series of drawing revision errors which resulted in a design change being implemented without an adequate failure analysis. Corrective actions were to replace the pneumatic temperature control switches with qualified electrical switches and to review the adequacy of existing single failure analyses calculations for affected safety-related systems. The review of single failure analyses was being conducted as corrective action for SCAR WBP910055SCA, which addressed corrective actions for FMEA calculation deficiencies initially identified by SCAR WBSA910234.

The inspector reviewed documentation consisting of the CDR, PER, SCAR, and licensee internal correspondence relating to the issue. The inspector also reviewed governing procedures and interviewed responsible licensee personnel. During the review, the inspector

identified deficiencies in SCAR WBSCA920106 involving the root cause determination and the lack of documented corrective action to provide appropriate recurrence controls, as follows:

1) Root Cause Determination

SCAR WBSCA920106, Revision 0, Section 5D, Root Cause Analysis, listed the root cause as "JB - design not to requirements" for both the condition of installing non-qualified temperature switches and the condition of supplying HVAC temperature loops with non-essential air. However, the PER, SCAR, and CDR also documented that both conditions resulted from violations of regulations and failures to follow requirements. The SCAR, Section 1H, specifically listed the source of requirements violated, in part, as 10 CFR 50, Appendix B, Criteria IV, Procurement Document Control; Criteria VII, Control of Purchased Material Equipment and Services; Criteria III, Design Control; the WBN Q-list; and WBN design criteria W-DC-40-64.

The inspector determined that, for the first issue (non-qualified temperature switches), the original design appeared adequate and the root cause of "design not to requirements" was incorrect. The SCAR documented that WBN-DC-40-36.1, Design Criteria for the Classification of Heating, Ventilating, and Air Conditioning Systems, dated February 11, 1975, required that the shutdown board transformer room ventilation system be Seismic Category I; therefore, it was the installation that was "not to requirements," not the design. The root cause appeared to be failure to procure qualified switches and/or failure to adhere to design criteria. The inspector concluded that failures to adhere to requirements resulted in the deficient hardware installations.

The inspector determined that, for the second issue (non-essential air supplying redundant train temperature loops), the root cause of "design not to requirements" was also incorrect. The SCAR documented that incorrect implementation of FCR I-566 resulted in changing the essential air supply to the temperature indicators and switches to non-essential air and removing the train A and B designations from the temperature loops. The FCR was written to remove only the essential air from associated HVAC dampers. The SCAR also documented that an adequate failure analysis for the change was not done. The root cause for this condition appeared to be failure to implement FCR I-566 properly, failure to revise drawings correctly, and/or failure to perform an adequate failure analysis.

2) Corrective Action

The emphasis of SCAR WBCA920106, Revision 0, Sections 5F (Corrective Action), and 5G (Recurrence Control) was correction of specific hardware deficiencies. The corrective actions did not address failure to follow requirements/procedures, failure to follow design criteria, procurement of improper material, making multiple errors during FCR implementation and drawing revisions, and failure to perform an adequate failure analysis during FCR implementation.

The inspector held meetings with the licensee management, QA, licensing, modifications, and NE personnel to discuss the identified deficiencies. As a result of the discussions, the licensee revised the root cause for the first issue to a "misapplication or interpretation of design inputs" and "inadequate independent review" with a "basic cause" of failure to develop procedures that implement regulatory requirements related to the identification of structures, systems, and components that are within the QA program. For the second issue, non-essential air to temperature loops, the inspector noted that the licensee had not revised the root cause of "design not to requirements."

The inspector reviewed Procedure SSP-3.04, Corrective Action Program, Revisions 10, 11, and 12; Procedure SSP-12.09, Incident Investigation and Root Cause Analysis, Revision 11; and lesson plan CAT012, Root Cause Analysis and Human Performance Enhancement System, Revision 0. The inspector held additional meetings with personnel responsible for performing root cause analysis and discussed the lesson plan with training personnel. Procedure SSP-3.04 requires that a root cause analysis be conducted in accordance with Procedure SSP-12.09; however, Procedure SSP-12.09 contains no definitive guidance on how to perform a root cause analysis. The procedure lists several types of root cause analyses that could be used and requires personnel to have attended a root cause training course. The inspector identified that the CAT012 lesson plan, Revision 0, dated April 10, 1991, had not been updated to reflect revised TROI causal factor codes which were dated December 21, 1993. The inspector noted that the lesson plan was informally changed by corporate personnel in November 1993, to include an emphasis to check with the corrective action program staff for the assignment of cause codes. From discussion with the individual who performed the revised root cause determination for SCAR WBCA920106, the inspector determined that student handout notes were used for the determination.

The inspector identified additional discrepancies in the SCAR including making changes to the in-process SCAR without having previous reviewers re-sign for the changed information; marking the hardware disposition as not applicable when the SCAR required a hardware disposition decision; not documenting the reportability

determination on a copy of the SCAR as required (a determination had been completed); and other administrative errors.

The inspector concluded that the root cause evaluation for the second issue was inadequate. As a result, adequate corrective actions and recurrence controls were not documented. In addition, the inspector identified several errors in SCAR processing and documentation. The inspector determined that root cause evaluations should be procedurally addressed and supported by an up-to-date training program to ensure consistency in root cause evaluation results. Although the root cause analysis and programmatic corrective actions had been completed, the SCAR was still open at the time of this inspection. Therefore, no enforcement action is being proposed for these deficiencies.

This CDR will remain open pending the completion of field work, resolution of the NRC identified SCAR discrepancies, and review of the adequacy of the root cause analysis process.

Within the areas reviewed, three examples of a violation for failure to follow procedures and one example of a violation for inadequate corrective action were identified.

3. Follow-up of TMI Action Plan Items (92701)

(Open) TMI Action Item II.F.2, Instrumentation for Detection of Inadequate Core Cooling

This item was an NRC proposed license condition to provide instrumentation to indicate the approach to or existence of inadequate core cooling through measurement of subcooling margin, incore thermocouple temperature, and reactor vessel level parameters. This item was previously reviewed in IRs 50-390, 391/85-59 and 91-04.

The licensee's initial information transmittals of 1981 and 1982 were revised by letter dated January 24, 1992 (RIMS T04920124901). This letter stated that the original Westinghouse 7300 series RVLIS system was to be replaced by the new Westinghouse ICCM-86 system and that this modification was described in FSAR Amendment 69. Subsequently, in SSER 10, dated October 1992, the NRC staff concluded that: 1) the licensee's commitments to install and test the ICCM-86 system prior to initial fuel load were acceptable; 2) the licensee's commitment to complete final calibration and scaling of ICC instrumentation prior to initial criticality was acceptable; and 3) the ICCM-86 system, as proposed, met the guidance of NUREG-0737 Item II.F.2 and was, therefore, acceptable.

Information provided by the licensee showed that the installation of the new ICCM-86 system was in process. Therefore, this item will remain open pending completion of the following actions:

- Installation of the ICCM-86 system and associated hardware, prior to initial fuel load;

- Performance of preliminary calibration and scaling, prior to initial fuel load;
- Performance of preoperational testing, in accordance with FSAR Chapter 14, Section 14.2-1, prior to initial fuel load;
- Performance of final calibration and scaling, prior to initial criticality; and
- Submittal of the implementation letter to NRC as requested in a letter from NRR dated July 24, 1992.

Within the area reviewed, no violations or deviations were identified.

4. Actions on Previous Inspection Findings (92701, 92702)

- a. (Closed) URI 50-390/92-02-02, Inaccuracies in Platform Walkdown Inspections

This issue involved an NRC inspection of the boric acid batching tank access platform which identified that walkdown WCG-1-833 had incorrectly documented three component locations and dimensions. This walkdown was performed as part of an assessment of the civil/seismic calculations program and utilized procedure TI-2007, Engineering Walkdown of Main Structural Steel Platforms/ Miscellaneous Steel to Support the Civil Calculations Program. This program, resulting from identified design and construction deficiencies, included the selection of platforms subject to the worst case conditions and generation of a bounding licensing design basis for all plant platforms. These worst case calculations became the alternate QA records for acceptance of plant hardware. The platform in question, and all others discussed below, constituted worst case evaluations.

After review of the conditions identified in the URI, the licensee confirmed the discrepancies and issued PER WBPER920022. The inspector reviewed the disposition and supporting documentation for PER WBPER920022 and performed a verification inspection of a platform that had been walked down by personnel other than the two performing the PER subject walkdown.

From the NRC reviews conducted and discussed below, the inspector concluded that: 1) NRC-identified deviations from design drawings and procedural walkdown inspection criteria for the Boric Acid Batching Tank Access Platform were not identified by the walkdown program; 2) the cause and extent of condition determinations, recurrence controls, and corrective actions delineated in PER WBPER920022 to address these deviations were inadequate; and 3) deficiencies identified by the inspector during an independent walkdown of the Fuel Handling Area Exhaust Fan Platform were not identified by the licensee's walkdown program. The inspector

further concluded that licensee identified adverse conditions related to the conduct of the walkdown program were not documented and dispositioned as required by the licensee's corrective action program.

The following deficiencies were identified by the inspector during the review of this item:

1) Cause Determination

The licensee determined the root cause of the NRC findings to be the technical inexperience of two members of one walkdown team. Each member had a college degree but less than one year of design experience. Based on the PER documentation, the inspector concluded that the cause determination was not adequately supported in that it provided no basis for the conclusion that the cause was only inexperience. The determination did not address activities performed by others during, and prior to, the period in question or address other root cause considerations such as inadequacies in training, procedures, or oversight.

To verify the licensee's determination that the observed discrepancies were limited to the performance of one walkdown team, the inspector performed a reverification inspection of portions of a walkdown (WCG-1-832) performed by another team. This team had completed the walkdown using the same procedure (TI-2007, Revision 0) approximately three weeks prior to the walkdown that was the subject of PER WBPER920022. This platform was a seismic Category I structure supporting exhaust fans in the fuel handling area of the auxiliary building. Utilizing the criteria from procedure TI-2007, the NRC inspector identified the following discrepancies between the installed hardware and design drawing 48N1210, Miscellaneous Steel Access Platforms, which had not been identified during licensee's walkdown WCG-1-832.

- a) All three high strength bolts connecting Pc 8 to Pc 11 were not tight. Procedure TI-2007, Appendix C1, paragraph B.i, states walkdown personnel are to verify bolt tightness.
- b) The center bolt of three high strength bolts connecting Pc 11 to wall attachment was not tight.
- c) Beam to wall connections for Pc 1 and Pc 24 did not have slotted holes as specified on drawings 48N1210-10 Plan View, Revision 13, and 48N1210-1, Wall Connections, Revision 14.

- d) Pc 32 and Pc 33 were 1/4-inch angle, but sheet 4 of WCG-1-832 showed Pc 32 and Pc 33 to be 3/16-inch angle. Procedure TI-2007, Appendix C1, paragraph A.3, requires walkdown personnel to verify that the structural shape installed is the shape specified on the design drawing.
- e) Pc 11 to wall connection had slotted holes but had no washers under the bolt heads as specified in procedure TI-2007, Appendix C1, paragraph B.h.3).
- f) Several minor dimensional discrepancies ranging from 1/2 to 1 inch which were outside the measuring tolerance of 1/4 inch specified in procedure TI-2007, Appendix C1.

Based on the results of the independent NRC walkdown, the inspector concluded that the cause determination for PER WBPER920022 was inadequate.

2) Corrective Actions Specified

The PER specified corrective actions, and the results included the following:

- a) Perform a 100 percent reverification of walkdown data collected by the personnel responsible for the discrepancies identified by the NRC. The licensee reviewed approximately 30 walkdowns performed by the two members of the team responsible for the initial discrepancies and identified additional discrepancies.
- b) Review the qualifications of all Ebasco civil/seismic walkdown personnel to identify those without appropriate field experience. All other personnel were determined to have had adequate field experience.
- c) Perform a 10 percent sample reverification of the walkdown results gathered by personnel who did not meet field experience requirements. No action was deemed necessary.
- d) Revise Procedure TI-2007 to delete a college education alone as acceptable qualification for walkdown personnel. The licensee reviewed the qualification statements in approximately 20 civil/structural walkdown procedures and concluded that, with two exceptions, they were adequate. Procedure TI-2006, Engineering Walkthrough and Evaluation of Plant conduit and Conduit Supports, Revision 1, was revised, and Procedure TI-2013, Walkdown of ASME Small Bore

Piping (2 Inch and Smaller) for Specific Attributes, Revision 1, was placed on administrative HOLD.

- e) Revise walkdown documentation as required and review calculations to assure that all identified discrepancies did not have an adverse impact on calculation results. The licensee revised the applicable calculations and determined that, although errors had an adverse effect on loads and other considerations, they did not affect final calculation results.

The inspector concluded that the PER-specified corrective actions were inadequate. The PER did not require reverification or sample reverification of the work performed by other walkdown teams or other types of walkdowns (other procedures) conducted prior to and during the time period of the subject walkdown. The PER corrective action did not address walkdown training programs or lessons learned sessions for other walkdown personnel. One PER corrective action statement was to review the qualifications of walkdown personnel to "identify those without appropriate field experience." It was unclear to the inspectors what criteria the responsible parties (TVA contractors Ebasco and EQE) used to perform this action.

3) Corrective Actions Taken

Based on review of the PER documentation, the inspector concluded that the corrective action taken did not match the specified corrective action, the extent of condition, or recurrence control statements. In each of these parts of the PER, the stated fundamental issue was the lack of "field experience." For example, the PER corrective action statements and supporting closure letters refer to the term "appropriate field experience." The PER extent of condition determination states that similar discrepancies could exist if "people who did not have field experience performed walkdowns" and that the corrective actions would identify walkdowns done by "personnel without appropriate field experience." In addition, the PER recurrence control section states that "procedures will be revised to also require field experience." However, the walkdown procedure requirements for personnel qualification, both prior to and after this adverse condition was identified, were stated to be "design experience with field interface." Therefore, although a lack of field experience was determined to be the cause of this adverse condition, none of the 20 civil/seismic walkdown procedures were subsequently revised to require direct field experience. Further, changes to personnel qualification requirements in Procedure TI-2006 made as a result of this PER actually decreased the level of

"field" experience required to "six months of design experience with field interface."

Further, a letter from a TVA contractor used to support closure of this PER stated that "related experience may take place in either a field or office environment with equal benefit," and did not definitively state that their personnel met the procedural qualification requirements. The conclusion in this letter appeared to be in direct conflict with the conclusions stated throughout the PER, that a lack of field experience was the cause of this adverse condition.

4) Recurrence Control

The corrective action for recurrence control was to delete college education only as a qualification to perform walkdowns. Based on the inspector's findings (discussed above), the inspector concluded that the specified recurrence control was inadequate to address the stated apparent cause. It did not define or provide any guidance regarding a minimum required amount or type of "field experience."

5) Extent of Condition

The inspector concluded that the PER extent of condition determination was inappropriate and inadequate in that it did not assess the quality of work performed prior to the identification of the walkdown discrepancies. The determination was instead based on reverifications of work performed after the walkdown with the discrepancies noted by the NRC. Further, this section erroneously stated that the reverification results were documented in RIMS document T80920227851. Although this document, an Ebasco letter, described the actions taken in response to an Ebasco surveillance, it did not document or describe the results of reverification activities.

Procedure TI-2007, Revision 0, IC-89-400 and IC-89-413, requires the documentation of discrepancies between the installed configuration of platforms and the inspection criteria specified in Procedure TI-2007 and design drawings. The failure to identify adverse conditions during the performance of Procedure TI-2007 walkdowns of the Boric Acid Batching Tank Access Platform and the Fuel Handling Area Exhaust Fan Platform is a violation of 10 CFR 50, Criterion V, which requires that activities affecting quality be accomplished in accordance with documented instructions or procedures. This is identified as the fourth example of VIO 50-390, 391/94-13-01, Failure to Follow Procedures. The URI (50-390/92-02-02) is closed.

The TVA NQAP TVA-NQA-PLN89A, Revision 3, definition of adverse conditions includes hardware problems involving noncompliance with drawing requirements. Section 10 of the NQAP requires that adverse conditions be promptly identified and resolved, and be corrected in accordance with documented plans. Procedure SSP-3.04, Corrective Action Program, specifies that Procedure SSP-3.06, Problem Evaluation Reports, fulfills the requirements to identify and track to closure the actions necessary to correct adverse conditions and provide recurrence control, if required, for adverse conditions documented on PERs. The failure to take appropriate and effective corrective action in PER WBPER920022 is a violation of 10 CFR 50, Criterion XVI, Corrective Action. This is identified as the second example of VIO 50-390/94-13-02, Inadequate Corrective Action.

As a result of the examination of various documents related to this issue, the inspector identified the following additional nonconformance in the processing and disposition of adverse conditions in WBN walkdown programs:

- 1) Of the 37 conditions identified by the walkdown team in WCG-1-832 as not being within established criteria, 29 had not been clearly dispositioned in analysis calculation WCG-1-866, or by any other referenced documents. A table in the calculation entitled "Deficiencies Identified in Walkdown" listed only eight of the discrepancies noted by the walkdown team. The licensee stated that, although not specifically or uniquely dispositioned in the analysis calculation, all noted discrepancies had been addressed either because they were bounded by assumptions in the analysis (undersized welds and clip angles for instance) or because they were not noted to be a failure in the analysis.

The TVA NQAP, Section 10, Corrective Action, states that adverse conditions are to be promptly identified and resolved/dispositioned, and dispositions of "accept-as-is" must be independently reviewed and approved. The adverse conditions noted above were not formally dispositioned and thus, adverse conditions that were essentially accepted-as-is (because no formal dispositions were provided) did not receive independent review and approval.

- 2) Further physical evidence of improper disposition of identified adverse conditions showed that no action had been specified to correct a structural steel bolt connecting platform members 21 and 28 that had been noted in walkdown calculation WCG-1-832. One of the bolting connections for these structures was engaged by only two threads into the nut. The inspector observed in the field that this adverse condition had not been corrected. Subsequent to this observation the licensee issued WR C242489 to inspect all bolted connections on this platform.

- 3) SCAR WBP900050SCA, initially issued as a CAQR in February 1990, documented adverse trends with respect to the independent verification process for engineering walkdowns and inadequate training of walkdown personnel. Corrective actions for this SCAR included revisions to the way verifications of walkdown accuracy were performed. The inspector reviewed the verification documentation for several civil/seismic procedures that were addressed in PER WBP920022, including Procedure TI-2005, Equipment Seismic Qualifications Walkthrough, Revision 3. This procedure required recording the results of data, technical monitoring in a log, trending of results, and issuance of a summary report containing all discrepancies with the designation of their significance level and resolution as well as recommendations for improvement. Although the licensee produced a log showing the components inspected and the results of the monitoring, this log did not contain the information reflected in the log form provided in Procedure TI-2005 such as the resolution of discrepancies and the signatures of the lead and supervisory engineers. Further, the licensee was unable to produce any trending evaluation or summary report as required by the procedure.
- 4) Corrective actions for SCAR WBP900050SCA also included retraining personnel to revised Procedure SSP-9A, Administration of Walkdown Documents, with a focus on the importance of attention to detail. The inspector reviewed the retraining documentation for the four personnel involved in the walkdowns of the boric acid batching tank access platform and the fuel handling area exhaust fan platform. All four had completed the retraining 9 to 35 days prior to completion of these platform walkdowns. Based on the deviations noted by the subsequent NRC inspections of these platforms, the inspector concluded that the training and the SCAR corrective action had not been effective.
- 5) In May 1992, the licensee initiated a walkdown verification program to address the total WBN walkdown effort. This program had the stated objective of establishing an adequate level of confidence in engineering walkdown data to confirm that the resultant calculations or design input assumptions were not adversely affected by walkdown errors. The walkdown verification program identified and screened 105 walkdown procedures and determined that 20 would be subjected to a reverification (by NE). This review identified that over six percent of the attributes reverified (250 of 4000) had been erroneously documented in the existing walkdown documentation. Based on an engineering evaluation of the identified errors, the licensee concluded that none of the affected calculations would fail as a result of these errors and that no further action was required. The results of this program were

documented in a final report issued on November 1, 1993. The inspector identified the following concerns related to the conduct and disposition of the walkdown verification program:

- The program identified an error rate of over six percent in the documentation of as-built conditions that were inputs to calculations for establishing a new licensing basis for plant hardware. However, these failures to follow procedures, which are adverse conditions as defined in the licensee's corrective action program, were not documented or resolved using the licensee's established corrective action program as delineated in procedure SSP-3.04.
- These adverse conditions were handled by a one-time "program" and not through the existing licensee corrective action program which would have required the determination of causes and the implementation of any needed recurrence controls.
- The licensee's disposition and supporting analysis for these identified errors (in the final report) only addressed the impact of the adverse conditions on the calculations. The disposition did not identify the root cause of the failures to follow procedure and did not provide any recurrence control.

- 6) Another instance where corrective action for identified discrepancies was poorly executed and documented involved embed plate 48N1225-2A-54 and Procedure TI-2024, Walkdown of Embedded Plates. The actions taken for a data verification monitoring discrepancy, which was classified as "major" by the licensee for this plate, was written on the data verification monitoring checklist form. This disposition included a statement, signed on September 18, 1991, that the team involved had been informally reinstructed on the walkdown procedure. Further required action, dated September 23, 1991, included direction to re-examine/reverify other walkdowns performed by the team responsible for this plate walkdown. A statement that the reverification of all packages was complete was signed off on October 15, 1991.

The inspector reviewed the two other walkdown packages worked by this team, completed on August 29 and September 3 and 4, 1991. The inspector observed that there were numerous corrections initialed by the original team members dated September 19, 23, and 26, indicating that these other two walkdowns had also been deficient, but that the original team was allowed to correct these mistakes prior to "independent reverification." Other than the

single statement on the Data Verification Monitoring Checklist that the reverification had been completed, there was no evidence that documented the date of the reverification, the personnel performing the reverification, the findings, any resulting impact, or the final disposition of the issue.

- 7) ANSI N45.2, Section 11, states that where a sample is used to verify the acceptability of a group of items, the sampling procedure shall be based on recognized standard practices and shall provide adequate justification for the sample size and selection process. Licensee Procedure EAI-8.04, Reverification/Reinspection Sampling, Revision 2, provides a detailed process for NE to implement a sampling methodology for reverification efforts such as was specified in the civil/structural walkdown procedures. However, these walkdown procedures did not reference Procedure EAI-8.04 or provide equivalent performance details. The inspector noted that the established corrective action program, as delineated in Procedures SSP-3.04 and SSP-3.06, specified the use of established sampling techniques delineated in specific site procedures.
- 8) None of the walkdown procedures reviewed referenced the corrective action program as implemented by Procedure SSP-3.04. The walkdown procedures did not provide any specific guidance or threshold levels where identified walkdown discrepancies needed to be formally documented in the corrective action program. Further, Procedure SSP-9A only required that discrepancies noted during reverifications be reported to the walkdown team supervisor, which is in conflict with the Corrective Action Program as implemented by SSP-3.04. It should be noted, that SSP 3.04 does not acknowledge the walkdown program as an element of the corrective action program. In summary, deficiencies noted in the performance of an engineering program that are verifying hardware installation compliance with requirements, and are establishing the new licensing basis of the plant (alternate QA records), are being addressed outside of the plant corrective action program.
- 9) Ebasco QA Surveillance Report S-118, issued in March 1991, identified concerns related to the accuracy verification processes in issued walkdown procedures. As part of the response to this surveillance, a sample of six packages generated between June 3, 1991, and February 28, 1992, in accordance with Procedure TI-2012, Heating, Ventilating, and Air Conditioning; Duct and Duct Support Critical Case Walkdowns, Revision 1, were selected and reverified by Ebasco Engineering. Discrepancies were identified in all six packages; three were classified on the discrepancy forms as major and three were classified as minor. The inspector

found no evidence of any formal disposition of these adverse conditions, technically or programmatically, and there was no documented justification for not taking further action when it was determined that all six packages in the sample had discrepancies and three of six were classified as "major."

The TVA NQAP TVA-NQA-PLN89A, Revision 3, definition of adverse conditions includes hardware problems involving noncompliance with drawing requirements. Section 10 of the NQAP requires that adverse conditions be promptly identified and resolved, and that they be corrected in accordance with documented plans. Procedure SSP-3.04, Corrective Action Program, specifies the acceptable methods for implementing the corrective action program at WBN. The failure to take appropriate and effective corrective action to correct adverse conditions identified during the performance of civil/structural walkdowns is a violation of 10 CFR 50, Criterion XVI, Corrective Action. This is identified as the third example of VIO 50-390/94-13-02, Inadequate Corrective Action.

b. (Closed) URI 50-390/92-18-01, Workplan Material Control

This item involved four concerns pertaining to the control of material associated with WP D-17696-02, as follows:

- 1) The WP indicated that the work was a safety-related Class 1E installation, when it was not;
- 2) Material was installed that was not entered on the WP;
- 3) 575N Form #389707 was not included in the WP;
- 4) There was a lack of material control in that unused material was not accounted for or returned to the warehouse after the work was finished.

From the review of the licensee's closure package for this item and WP D-17696-02, the inspector determined that this item involved a nonsafety-related installation. The scope of the WP was to install conduit and supports in a seismic category structure. The conduits installed were not safety-related; However, their supports were safety-related. Each item was resolved as follows:

- 1) The designation of the WP as safety-related was appropriate even though a portion was not safety-related.
- 2) The material listed on 575N #389707 was bulk commodity material (conduit bushings and grounding straps). According to Procedures SSP-7.53, Modification Workplans, Revision 11, Section 2.5.E, and SSP-10.04, Material Issue, Control, and

Return, Revision 18, Section 2.3.2, this type of material is not required to be listed on the WP material list.

- 3) Procedure SSP-7.53, Section 2.5.E.1, has no requirement for the 575N Forms to be included in the WP, only that 575N numbers be listed on the material list. However, as stated above, this type of bulk commodity material does not require the 575N number to be listed.
- 4) All unused material listed on 575N form #389707 was returned to the warehouse. This was verified complete in PER WBPER920157 which was closed in August 1992.

To assure that in-plant control of WP material will continue to be maintained in accordance with procedure SSP-10.4, modifications personnel conduct regular surveillance of areas designated for in-plant storage and ensure that any identified discrepancies are immediately corrected.

Based on the reviews conducted, the inspector concluded that all of the concerns addressed by this item were acceptable and did not constitute violations of NRC requirements. In addition, the inspector accompanied modifications personnel during their surveillance on two occasions (December 1993 and February 1994) and independently walked through in-plant storage areas. During these walkdowns, the inspector verified that material was being stored, identified, and controlled in accordance with the procedure. This item is closed.

c. (Closed) IFI 50-390/93-35-04, 391/93-35-01, Equipment Labeling

The item involved several plant DCNs which specified design standard DS-E1.2.2, Electrical Equipment Nameplates, Revision 10, for tagging/labeling of electrical equipment. However, Procedure SSP-2.52, Replacement and Upgrade of Plant Component Identification Tagging and Labeling, Revision 4, authorized plant operations to designate the noun names for plant equipment. The licensee intended to resolve the conflict by changing the design standard with DCN S-27985-A.

The licensee conducted a review of other engineering design standards against the processes described in Procedure SSP-2.52 and found no other examples of the conflict identified in this IFI.

The inspector reviewed DCN S-27985-A. This DCN removed the reference to NE for responsibility for the nameplates for electrical equipment and instead referenced Procedure SSP-2.52 as the controlling document.

The inspector determined that the site program for equipment identification consisted of two major areas: 1) designation of

the component identification number; and 2) designation of the noun name description of components. The CID remains the responsibility of NE, and the noun names are the responsibility of operations as defined in both engineering procedures and in Procedure SSP-2.52. The CID is the alpha numeric identification that is assigned to each component regardless of whether the component receives a noun name. Operations designates the noun names in order to assure consistency between control room nomenclature, operating procedures, emergency procedures and surveillance instructions.

No deficiencies were identified during the inspector's review of other plant design specifications or the following site procedures: 1) MAI-4.4A, Instrument Line Installation, Revision 6; 2) MAI 4.4B, Instrument and Instrument Panel Installation, Revision 4; or 3) SSP-2.52, Replacement and Upgrade of Plant Component Identification and Labeling, Revision 4.

No deficiencies were identified during this inspection and this item is closed.

The inspector noted that IFI 50-390, 391/90-24-03, Adequacy of Labeling, identified inconsistencies on the name tags between several System 82 DG pumps. IFI (90-24-03) is open pending the resolution of inconsistencies in noun names on tags and the nomenclature compiled in the EMS.

- d. (Closed) VIO 50-390/93-85-01, Failure to Verify Post-Test Valve Lineups

This item involved restoration from hydrostatic testing of the Unit 1 CVCS discharge header. The licensee did not fully implement Procedure MAI-4.7A, Hydro Testing of Pipe, during the restoration from testing in that the valve lineups specified in the work implementing document were not performed or verified. The inspectors determined and documented several valves that did not match the post-test positions. The licensee initiated PER WBPER930472 to resolve this condition.

The licensee responded to this violation in a letter dated February 10, 1994, and stated that corrective actions had been achieved to correct the violation and prevent recurrence. The licensee's corrective actions consisted of revising Procedure MAI-4.7A (Revision 10) to remove the responsibility of SUT to verify operations realignment of valves and requiring the operations staff to determine the restoration configuration of plant system valves after testing. The licensee maintained that the post-test valve alignments were not necessary for many systems that were not turned over to operations, in which case operations could "N/A" the valve lineup. Other corrective actions stated that responsible SUT staff associated with the testing program were trained to the new procedure requirements.

The inspector reviewed the licensee's response to the violation as well as the actions completed for PER WBP930472 and other associated documentation. Revision 10 changes to procedure MAI-4.7A were reviewed in detail to ensure that the testing program provided assurance that plant configuration control was maintained in the event that operations chose to N/A a system restoration valve lineup after a hydrostatic test. The type of configuration concerns involved in a restoration are reinstallation of pressure gauges that were removed, and removal of blind flanges, test pumps, or jumpers installed.

The inspector reviewed hydrostatic tests associated with WO 94-03760-00, Hydro of Component Cooling System Sample Tubing; WO 93-23301-19, Pressure Test of System 003 Instrument Panels; WO 94-03726-00, Hydro of Welds Associated With the Raw Cooling Water System, and WO 93-05688-00, Hydro Test of CVCS Discharge Piping. The inspector determined that for each plant configuration change, appropriate documentation was in place which assured that the system was restored to or remained in the pre-test configuration. The documentation for these restorations remained as permanent records and were filed with the work documents. This documentation included such controls as data sheet 5 from Procedure MAI-4.4A, Instrument Line Installation, which verified that each compression fitting that is separated for testing is restored and verified; data sheet 5 from Procedure MAI-4.2B, Pipe Installation, which verified that flanged joints that are separated during testing are restored properly and verified including documentation of cleanliness controls of Procedure TI-27; and Appendix R-2 of SSP-6.02, Maintenance Management System, which is the configuration control log for configuration changes initiated during the performance of a work document. Each of these plant programs requires two-party verification of restoration that does not rely on the restoration lineup sheets contained within the post-test lineups. These configuration control programs are a required part of the WO program described in Procedure SSP-6.02. Other programs required by Procedure SSP-6.02 include documentation of lifted leads and the installation and removal of temporary supports.

The inspector found no requirement for specific system valve alignment for systems that were not under operations control or did not constitute a personnel or equipment hazard. Operations will perform complete valve alignments during the system turnover process. Operations is responsible for ensuring that systems in temporary operation are restored to proper alignment after testing. The inspector found that each hydrostatic test performed on systems verified the proper valve alignment before each test.

The inspector reviewed licensee training records and verified that responsible SUT personnel were trained. The inspector verified that hydrostatic tests conducted after the February 10, 1994, implementation of corrective actions contained the procedure

MAI-4.7A, Revision 10, Test Lineup/Temporary Modifications Sheet, as committed. This item is closed.

Within the areas reviewed, one example of a violation for failure to follow procedures and two examples of a violation for inadequate corrective actions were identified.

5. Exit Interview

The inspection scope and findings were summarized on February 28, 1994, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report.

<u>Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
II.F.2	Open	TMI - Inadequate Core Cooling Monitor (paragraph 3)
390/87-15 391/87-16	Closed	CDR - Auxiliary Control System Cables Routed Through the Control Building (paragraph 2.a)
390/87-19 391/87-22	Closed	CDR - Failure of High-Voltage Cable Insulation on Diesel Generators (paragraph 2.b)
390/88-01 391/88-01	Closed	CDR - Auxiliary Control Air Compressor Control Circuits Must Be Manually Reset After Loss of Offsite Power (paragraph 2.c)
390/92-02-02	Closed	URI - Inaccuracies in Platform Walkdown Inspections (paragraph 4.a)
390/92-08 391/92-08	Closed	CDR - Misclassification of Quality Assurance Level III Material (paragraph 2.d)
390/92-12 391/92-12	Open	CDR - Installed Temperature Switches Without 1E Qualifications (paragraph 2.e)
390/92-18-01	Closed	URI - Workplan Material Control (paragraph 4.b)

390/93-35-04 391/93-35-01	Closed	IFI - Equipment Labeling (paragraph 4.c)
390/93-85-01	Closed	VIO - Failure to Verify Post- Test Valve Lineups (paragraph 4.d)
390/94-13-01 391/94-13-01	Open	VIO - Failure to Follow Procedures (paragraphs 2.a, 2.d, and 4.a)
390/94-13-02 391/94-13-02	Open	VIO - Inadequate Corrective Action (paragraphs 2.a and 4.a)

6. List of Acronyms, Initialisms, and Abbreviations

ACAS	Auxiliary Control Air System
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
CAQR	Condition Adverse to Quality Report
CCRS	Computerized Cable Routing System
CDR	Construction Deficiency Report
CFR	Code of Federal Regulations
CID	Control Identification
CREVS	Control Room Emergency Ventilation System
CVCS	Chemical and Volume Control Systems
DCA	Drawing Change Authorization
DCN	Design Change Notice
DG	Diesel Generator
DS	Design Standard
EAI	Engineering Administrative Instruction
EMS	Equipment Management System
FCR	Field Change Request
FDCN	Field Design Change Notice
FMEA	Failure Modes and Effects Analysis
FSAR	Final Safety Analysis Report
HVAC	Heating, Ventilation, and Air Conditioning
IC	Instrument Change
ICC	Inadequate Core Cooling
ICCM	Inadequate Core Cooling Monitor
IFI	Inspector Follow-up Item
IR	NRC Inspection Report
LOOP	Loss Of Offsite Power
MAI	Modification and Addition Instruction
MCR	Main Control Room
NE	Nuclear Engineering
NQA	Nuclear Quality Assurance
NQAP	Nuclear Quality Assurance Plan
NRC	Nuclear Regulatory Commission
NRR	NRC Office of Nuclear Reactor Regulation

NUREG	Nuclear Regulatory
PEG	Procurement Engineering Group
PER	Problem Evaluation Report
PPSP	Previous Procurement Substantiation Package
QA	Quality Assurance
RIMS	Records Information Management System
RVLIS	Reactor Vessel Level Instrumentation System
SCAR	Significant Corrective Action Report
SN	Sequoyah Nuclear Plant
SSER	Supplemental Safety Evaluation Report
SSP	Site Standard Practice
SUT	Start-Up and Test
TI	Technical Instruction
TIIC	TVA Item Identification Code
TMI	Three Mile Island
TROI	Tracking and Reporting of Open Items
TVA	Tennessee Valley Association
URI	Unresolved Item
VIO	Violation
WBN	Watts Bar Nuclear Plant
WO	Work Order
WP	Workplan