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

Report Nos.: 50-390/95-38 and 50-391/95-38

Applicant: 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 Units 1 and 2

Inspection Conducted: May 21 through June 17, 1995

Inspectors: G. A. Walton 7-6-95
G. A. Walton, Senior Resident Inspector Date Signed
Construction

W. C. Bearden, Resident Inspector, Watts Bar
J. F. Lara, Resident Inspector, Watts Bar

Contractors: R. M. Compton (paragraph 12.14)
M. I. Good (paragraphs 12.6, 12.7, 12.12, 12.13)
W. S. Marini (paragraphs 12.4, 12.10)
D. O. Myers (paragraphs 12.1, 12.2, 12.5, 12.8, 12.9, 12.11)

Approved by: P. E. Fredrickson 7/6/95
P. E. Fredrickson, Chief Date Signed
TVA Construction Branch
Division of Reactor Projects

SUMMARY

Scope:

This routine resident inspection was conducted in the areas of containment cooling special program, construction work activities, splice replacement program, review of closed design change notices, review of corrective action documents, construction inspection program reconstitution review, review of applicant's integrated design inspection, employee concerns, walkdown verification for damaged, loose, or missing hardware, and open item status review.

Enclosure 2

Results:

One violation with two examples was identified involving failure to follow procedures regarding design change control and corrective action (paragraphs 4.0 and 12.14).

Two inspector follow-up items were identified involving issuance of containment cooling operating procedures and the adequacy of the use of non-metallic barrier for internal panel separation (paragraphs 2.5.1 and 5.1).

Corrective actions associated with one previous violation were reviewed. This Unit 2 violation will remain open pending NRC evaluation of the Unit 2 PM program as specified in Generic Letter 87-15, Policy Statement on Deferred Plants, issued November 4, 1987 (paragraph 12.8).

Work controls and quality control involvement associated with coating applications in the containment were good. Additionally, the area turnover process is going well. Ongoing walkdowns should identify most damaged, loose, or missing hardware deficiencies in the areas prior to turnover. Quality control involvement in the process is very good.

The report documents the completion of the NRC Manual Chapter 2512 construction inspection reconstitution document review and, where appropriate, the inspection results for Inspection Procedure 50100. Based on the document review and inspection, the reconstitution of this construction inspection procedure is considered complete.

Corrective actions associated with Construction Deficiency Report CDR 50-390, 391/91-29, Pressure Locking and Thermal Binding of Gate Valves, were reviewed. TVA verification activities were reviewed and considered adequate by the NRC inspector, and the construction deficiency report is considered closed. However, recent NRC initiatives regarding pressure locking of valves require that further NRC review occur prior to fuel load. The NRC will review the completion of ongoing work in this area during the performance of Temporary Instruction 2515/129, Pressure Locking of PWR Containment Sump Recirculation Gate Valves, dated March 18, 1995.

The Containment Cooling Special Program was reviewed and determined to be adequately implemented.

In addition, quality assurance effectiveness was addressed. These reviews indicated that quality assurance assessments of the Containment Cooling SP have been effective. Quality Assurance review of open items closures was also reviewed, with satisfactory results with one exception. That exception, as discussed in paragraph 12.10, describes the failure by several levels of management and QA verification to reveal that a supplemental closure package for an NRC violation contained inaccurate corrective action completion status.

REPORT DETAILS

1.0 PERSONS CONTACTED

1.1 Applicant Employees:

*T. Arrington, Project Manager, Stone and Webster Engineering Corporation
*R. Baron, Acting Nuclear Assurance and Licensing Manager
*R. Beecken, Maintenance/Modifications Manager
K. Boyd, Site Licensing Program Administrator
*T. Dean, Compliance Licensing Engineer
*W. Elliott, Engineering and Modifications Manager
*D. Herrin, Licensing Engineer
*D. Kehoe, Site Quality Manager
*D. Koehl, Technical Support Manager
*D. Malone, Quality Assessment Manager
C. Nelson, Maintenance Support Superintendent
*P. Pace, Compliance Licensing Supervisor
*R. Purcell, Plant Manager
*J. Scalice, Vice President
B. Schofield, Site Licensing Manager
*M. Singh, Plant Completion Group
S. Tanner, Special Projects Manager
J. Vorees, Regulatory Licensing Manager

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

1.2 NRC Personnel:

*W. Bearden, Resident Inspector
*F. Hebdon, Project Directorate II-3 Director, NRR
*J. Jaudon, Deputy Director, RII
J. Lara, Resident Inspector
*M. Peranich, Senior Project Manager
*G. Walton, Senior Resident Inspector, Construction

1.3 NRC Contractors:

R. Compton
M. Good
W. Marini
D. Myers

*Attended exit interview

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

2.0 REVIEW OF CONTAINMENT COOLING SP 100 PERCENT COMPLETION (TI 2512/34)

On December 30, 1993, the applicant reported completion of the Containment Cooling SP to the NRC. However, at that time several open items associated with the SP remained to be completed. On May 25, 1995, the applicant completed an assessment and determined that with the exception of issuance of some operating procedures, the Containment Cooling SP is now complete. This report documents the final NRC implementation review of the SP. One IFI will identify and track completion of the operating procedures.

2.1 Background

As documented in the TVA Nuclear Performance Plan, Volume 4, Revision 1, this SP resulted because the reactor coolant system was not considered as a major heat source after a MSLB because it was assumed that the post-LOCA environment represented the limiting condition for long term temperature effects. However, when the primary system heat load, due to decay heat at hot standby conditions, is considered as a long term heat source, the post-MSLB environment may be the most limiting in the long term. The long term lower compartment temperature will not exceed the peak temperature immediately following a MSLB, but the temperature may exceed the long term qualification limits that have currently been established for safety-related equipment.

The stated root cause of this issue was a combination of two factors:

- Premature termination of the MSLB temperature profile analysis by Westinghouse; and

- Design oversight on the part of the applicant when extrapolating beyond the time covered by the Westinghouse analysis. The Westinghouse analysis for a MSLB was terminated after the initial mass steam release and ice condenser melt-out. It was believed that, after that release and melt-out, the post-MSLB containment temperature profile was declining due to containment spray and air return fan actuation. As a result, the applicant reflected this in the post-MSLB profile. However, after ice bed melt-out, the decay heat emitted by the reactor coolant system pipes and pumps during hot stand-by results in gradually increasing temperatures in sub-compartments of lower containment for ice condenser plants which do not occur during long term post-LOCA cold shutdown.

To correct this identified deficiency and to ensure the operability of equipment important to safety, the applicant has implemented the following actions.

- The long term temperature profile for lower containment was determined for the duration of the design basis MSLB event using the ice condenser and containment spray systems as the safety grade systems for removing containment ambient heat following a MSLB.

- The lower compartment cooler units and associated ducting were upgraded to safety grade, with the exception of the LCC coils. This upgrade

provided a fully qualified means of providing air circulation via the LCC fans and ductwork to sub-compartments of lower containment to prevent hot spots from forming in these compartments.

- In order to ensure the availability of the containment sump for recirculation and spray operation, a containment coatings transport evaluation was performed to confirm that the protective coatings inside containment would affect sump screen performance. These protective coatings have not previously been qualified to the MSLB temperatures because long term, post-MSLB containment spray operation was not assumed.

- The components in lower containment important to safety were qualified to the revised calculated MSLB temperature profile.

2.2 Corrective Actions

The applicant's corrective actions involved the following hardware modifications: four new safety grade fans, fan motors, backdraft dampers, and associated cabling were installed along with seismic upgrading of the existing LCC ductwork and housings to Category I requirements; installation of four new lower compartment RTDs for post-accident temperature indication; and feedwater jet impingement shields constructed to protect the adjacent LCC ductwork in the event of a feedwater line break. Additionally, the applicant required completion of four operating procedures (SIs and SOIs) and closure of all PERs, SCARs, CAQs, ECNs, and CDRs associated with this SP.

2.3 NRC/NRR Evaluation

NRC endorsed the approach for the Containment Cooling SP by SSER, Supplement 7, dated May 21, 1991, which states:

> "The staff has reviewed the assumptions used in TVA's reanalysis of the containment temperature over the extended time period and concludes that they are conservative. On the basis of this reanalysis and the lower containment cooling system modifications, the staff concludes that hot standby is an acceptable mode following a main steamline break and that the containment cooling modifications are acceptable."

2.4 NRC Inspection Activities

The inspector reviewed the 75 percent SP program closure book and documented the findings in IR 50-390/93-56. At the completion of that inspection, the report documented NRC's inspection findings and the status associated with the applicant's completion of the SP.

- Four nonconforming reports associated with the SP remained open: WBF870061, WBP891099SCA, SCR WBNNEB8654SCA, and WBP900591SCA.

- Two CDR reports remained open on Unit 1, 390/87-22 and 390/87-04.

- No containment cooling CATDs were issued for this SP.

- No open NOVs, URIs, IEBs, or IENs existed on record for this SP. The inspector reviewed the open items list and verified that no open items, except CDRs, exist for this issue.

- No VSR items exist for this SP. The inspector reviewed the VSR list and verified no items regarding containment cooling were identified by the Sargent and Lundy VSR reviews.

- No previously identified open items from other TVA or contractor assessments existed for this SP. No inspections were performed by the inspector regarding internal or external assessments during that inspection.

- No ECSP Class C concerns existed that are associated with the SP.

- One employee concern existed regarding environmental qualification that was not directly tied to the SP; this concern was not reviewed by the inspector at that time.

The inspector found that, at the 75 percent completion stage, the SP adequately addressed the issues.

At the 75 percent completion stage, in addition to the reviews discussed above, the inspector performed visual inspections of hardware associated with cooling unit 1C. The details of items inspected are documented in IR 50-390/93-56. The inspector found the installations were acceptable. In summary, the applicant's Containment Cooling SP was being implemented in a satisfactory manner at the 75 percent completion stage.

2.5 SP Containment Cooling Closure Reviews

2.5.1 Inspection Activities for SP Closure

During this inspection, the inspector walked down the lower containment coolers and associated piping, penetrations, valves, and duct which make up the SP system to validate that the system was complete, operational, and had not been degraded due to construction damage since modifications on the units were completed. Additionally, the inspector completed a review of the items listed above that remained open at the 75 percent stage to assure they were properly closed.

The NRC inspector completed field inspections of both fan cooling rooms on June 2, 1995. Some minor work activities were being done on the units in cooling room 1 in that welds on supports that support the exit duct were being mechanically cleaned of surface rust in preparation for painting. With that exception, no work activities were ongoing and the units appeared complete. The inspector noted housekeeping was an apparent problem in the area because the areas were dusty and numerous pieces of foreign material were located in the immediate area. However, since some construction activities were still ongoing in the area, final cleanup has not occurred. In cooling room 2, the

inspector noted the support welds were cleaned and painted on both cooling units. No work activities were occurring in the area, and the area was clean. The inspector found the units were complete and ready for service.

The status of the open issues not reviewed during the 75 percent inspection are addressed as follows:

- WBF870061SCA: This closed nonconformance report resulted in CDR 50-390/87-22 and was reviewed by the NRC and closed in IR 50-390/94-55.

- WBP891099SCA: This CAQ was closed.

- SCR WBNNEB8654SCA: This SCR resulted in 10 CFR 50.55(e) report 50-390/87-04, Potential Loss of ECCS Inventory Through Air Return Fan. The closure package for this item was reviewed, and this item was closed as documented in paragraph 12.2 of this report.

- WBP900591SCA: The inspector reviewed this CAQ and verified it was closed. Closure occurred on December 10, 1993. Additionally, the inspector reviewed the details of this nonconformance report to verify the nonconforming issues were properly addressed. The CAQ identified that contrary to the requirements of WBEP-5.08, ECN Modification Package E110014, Upgrade Lower Containment Coolers to Perform a Safety Function, did not include requirements to perform revised environmental qualifications (i.e., category and operating time revisions, binder revisions, etc.) on all 1E systems, and support systems required to perform the safety grade cooling functions delineated in the modification package. Because of this, many 1E devices that are required to perform or support this cooling have not been given the proper categorization and are not environmentally qualified to perform post accident. The inspector found that corrective actions were complete and verified as complete.

- Two CDR reports remained open on Unit 1, 50-390/87-22 and 50-390/87-04. CDR 50-390/87-22 was reviewed and closed in NRC IR 50-390/94-55. CDR 50-390/87-04 was closed as discussed above.

- Employee Concern ECP-91-WB-377-F1: This item was opened January 4, 1991, and closed February 27, 1991. The issue dealt with a concern that some of the lower fan units, including motors, were not procured to EQ, 10 CFR 50.49 requirements. The applicant responded to the concern that the motors were required by the ECN modification package and by the associated TVA contract, 89N-C-75214A, with American Filter to be environmentally qualified. The applicant determined that the fan units were procured correctly but, on receipt at TVA, there were specific attributes documented as unsatisfactory on quality control inspection reports, (e.g., R90-3254, 3167, and 4077). One of those attributes was the lack of documentation. Conditional releases, Example R90-3167 which addressed three motors, were used to release the assemblies for installation. Since then, all unsatisfactory attributes, including the required quality assurance documentation, have been resolved and the results documented on engineering evaluation forms. In conclusion, the

applicant determined the equipment was procured to EQ requirements and was inspected upon receipt when the documentation concern was found. The applicant speculated the concern probably occurred during the resolution of the receipt inspection reports that identified inadequate documentation. The inspector's review of the ECP file found the issues were adequately resolved and closed.

The inspector reviewed the following assessment reports of the Containment Cooling SP.

- QA Assessment Report NA-WB-95-0108 conducted from May 15 through May 24, 1995

  This assessment evaluated the open items that remain incomplete at this time. The applicant's tracking number, NC0870368014, remains open to track completion of Surveillance Procedures 1-SI-30-50, 51, 52, 53 (18 Month Channel Calibration of Lower Containment Temperature Loop) and Procedure SOI-30.3 (Containment HVAC and Pressure Control). These procedures are written in draft form with a scheduled completion before System 30 turnover. System 30 is scheduled for turnover on July 16, 1995. With the exception of the above items, the assessment determined that all other items associated with the SP have been completed.

- QA Assessment Report NA-WB-93-0100

  The inspector reviewed this assessment report that discussed QA's findings relative to the Containment Cooling SP. This assessment reviewed work documents and other CAP/SP interface activities to assure that they are appropriately addressed and verified that QA records documenting activities are developed and retrieved.

- PAC/AQ Review of the Containment Cooling SP

  The inspector reviewed the applicant's results of the PAC/AQ inspection of the Containment Cooling SP. The PAC/AQ evaluation was completed April 17, 1992, and concluded that no programmatic concerns were identified with the applicant's implementation of the Containment Cooling SP.

- Containment Cooling SP Record Plan

  The inspector reviewed the applicant's record plan identified as Containment Cooling Special Program Record Plan (Revision 3), Element 21. This plan identifies the records produced to implement the SP and includes references to calculations, DCNs, and design criteria specifications.

Based on the above reviews, the inspector determined that the level of QA oversight of the Containment Cooling SP activities had been adequate to verify that all related activities had been completed. The inspector determined the applicant has adequately implemented the Containment Cooling SP as described in the program approved by the NRC. One outstanding item is the issuance of

the above described operating procedures. IFI 50-390/95-38-02, Issuance of Operating Procedures, is identified to track the applicant's completion and issuance of these procedures. With that exception, the inspector determined the applicant's SP program was adequately implemented and, within the areas reviewed by the inspector, no violations or deviations were identified. This SP is considered complete and no further inspections are planned for this SP.

3.0 CONSTRUCTION ACTIVITIES

Various construction activities were reviewed by the inspectors during the inspection period to evaluate the work effort to applicable procedures, codes, and standards. The results of the more significant inspection efforts are summarized below.

3.1 Review of Coating Applications in Containment

The applicant completed the initial application of coating on the containment floor inside the crane wall. On June 5, 1995, QC inspection of the completed activities was in progress. Independently of the QC inspection, the inspector completed a walkdown of the area and reviewed one of the WPs. While on the inspection, the inspector noted some minor coating repairs were in process; however, the general surface of the coating looked acceptable. The inspector met with one of the QC inspectors and discussed the method used to verify wet film coating thickness and QC plans for final inspection of the coatings.

The inspector reviewed WP 92-12839-01 for the ongoing work activities associated with the coating application. The inspector noted the applicant applied two coats on the containment floor, both coats having been manufactured by Keene & Long. One coat was Keene & Long 5000 and the other coat was Keene & Long 6129. The inspector reviewed 575 requisition forms 933496 (Keene & Long 5000) and 933496 (Keene & Long 6129) and verified they were QA-qualified materials.

3.2 WO 94-24887-82, Inspection of Penetration 1-PENT-293-0027-A (OB)

This WO pertained to the inspection and repair of any cable damage at containment electrical penetration 1-PENT-293-0027-A on the OB side. The scope of the inspection involved the inspection of the field cables which are spliced to the vendor wire pigtails. At the time of the inspection, the applicant was in the process of repairing a damaged wire. The inspector observed the repair of the green conductor of cable 1V7175A. The repair method being used consisted of the application of Raychem NWRT-1 tape which was authorized by DCN W-35557-C pending completion of environmental qualification testing. The inspector verified that the tape was being applied in accordance with the vendor's instructions as included in the W-DCN. The red mastic and black tapes were observed to be half-lapped as heat was being applied. The white conductor of cable 1V7175A also required repair. This repair was not observed.

During this inspection, the inspector also performed an inspection of vendor wire pigtail extension splices. The observed splices included those installed between the penetration Kapton insulated wires and pigtail extension wires.

These vendor splices were installed to facilitate termination to the field cable. The inspector verified that the splices were insulated with Raychem heat shrink tubing and contained a seal length of greater than two inches. Eight splices were inspected, and no deficiencies were identified. The inspector noted that, due to the repair of field cables, a previously installed, protective polyolefin tubing had been removed from some of the penetration wires. However, these were to be reinstalled upon completion of the ongoing work and prior to closing the penetration box with a permanent protective cover.

No deficiencies were identified during the review of the work activities.

3.3 WO 95-05682-16, Rework Pressurizer Acoustic Monitors

This WO pertained to the rework of the acoustic monitors installed on top of the pressurizer to monitor the three code safety and two PORV relief lines. The subject acoustic monitors were being replaced due to identified bend radius problems on the associated cable splices and identified damage to the hard line cable close to the temperature accelerometer. The modification also included the installation of a new larger input and output termination boxes.

The inspector observed the installed deficiencies prior to the commencement of the rework activities. Subsequently, the applicant completed the installation of the new stainless steel boxes to eliminate field cable MTR violations. The inspector verified that the installed input and output boxes were as shown on DCN F-36312-A. The inspector observed the work activities associated with the cable installations. The activities observed included swabbing of the affected conduits and installation of cable 1M2767 through conduit 1M4042 and 1M4043. The inspector verified that the cable type (WTK-8) and contract (75670A-01) being installed were accurately reflected in the cable installation sheets (CCRS). A QC inspector was observed present during the work activities.

No deficiencies were identified during the review of the on-going work activities.

3.4 Plant Tours

During a tour of the pressurizer compartment area, the inspector identified that water was draining out of an embedded pipe in the reactor building crane wall in the pressurizer cubicle. The water was dripping onto a electrical junction box. Through a review of drawing 47W915-4 and DCN W-34011-A, the pipe was identified to be associated with the hydrogen collection header system. This condition was brought to the attention of the applicant and determined to be due to condensation. The water was removed, and the inspector did not have any further concerns.

In the same general area, the inspector noted that WR tag C258694 was hung on the pressurizer vapor temperature element 1-TE-068-0324-G and was dated May 9, 1995. The WR documented a damaged braided flexible conduit at the TE. On June 2, the inspector reviewed the MTS data base and determined that the WR had not been input into the MTS. The inspector met with applicant

representatives to discuss the delay in getting the WR into MTS. At the time of the NRC review, the WR was being reviewed by NE as part of the WR clearinghouse review. Each WR submitted is subjected to a review to determine if the WR described condition requires corrective actions. This review can include additional reviews by NE organizations. There is no prescribed time limit for the processing and evaluation of WRs undergoing this review. During this inspection period, NE completed the review of WR C258694 and issued WO 95-10808-00 on June 6. The WO was verified for incorporation into MTS. No deficiencies were identified during this review.

4.0 SPLICE REPLACEMENT PROGRAM

As documented in IR 50-390/95-33, paragraph 3.0, the NRC reviewed the applicant's methodology for the identification of cables and splices to be inspected as part of the corrective actions for SCAR WBSCA950002. The methodology reviewed was used to identify the components within the Unit 1 containment. With some exceptions, the inspector was able to verify that splices and terminations associated with EQ end devices were being inspected. The only exceptions were those that the applicant had already identified through the review of splice request sheets, and four splices inside containment associated with RCS hot and cold leg temperature elements. During this inspection period, the inspector performed additional reviews of the four splices associated with the RCS hot and cold leg temperature elements.

As the applicant progressed in the implementation of the cable, splice, and termination inspections, a data base was being updated to identify all the cable splices located in harsh environments. The data base identified the cable splice identification number, cable, location, associated end device, and other information. The inspector was presented with the listing of all splices identified through May 4, 1995. The applicant informed the inspector that four EQ end devices did not have their associated cable splices identified in the data base. That is, the splices did not have unique splice identification numbers. The four end devices associated with RCS TEs and WO originally issued to replace the splices are listed below.

Cable	EQ End Device	Component	Work Order
1PM590D	1-TE-068-0001-D	Loop 1 Hot Leg TE	93-11751-61
1PM594D	1-TE-068-0018-D	Loop 1 Cold Leg TE	93-11751-66
1PM777E	1-TE-068-0043-E	Loop 3 Hot Leg TE	93-11751-21
1PM870E	1-TE-068-0065-E	Loop 4 Hot Leg TE	93-11751-19

The inspector was informed that each of the above EQ end devices contained conductor splices inside a respective ECSA assembly. These splices did not have identification numbers since they were installed in 1985 which was prior to the applicant's practice of providing identification numbers. The inspector questioned the basis for not replacing the installed splices as stated in the applicant's Cable Issues CAP and corrective actions for CDR 50-390/85-31. The applicant's final report for this CDR, dated December 3, 1991, stated that TVA would replace all 10 CFR 50.49 cable spliced terminations identified in Calculation WBPEVAR8904055, Class 1E Splice List - Unit 1, Common, and Unit 2 Required for Unit 1 Safe Shutdown.

The inspector was informed that the subject four splices and an additional EQ splice associated with the RHR Pump A-A discharge temperature TE (1-TE-074-0014-G, WO 93-13527-00) located in the auxiliary building were not replaced because they were installed inside an ECSA and, therefore, no moisture would be experienced by the splices. This determination was documented in each of the respective WOs which were originally issued to replace the splices. For example, the splice associated with 1-TE-068-0001-D was originally identified to be reworked in WO 93-11751-61. However, the WO was subsequently closed without reworking the splice based on the following basis:

> "W.O. can be closed. ... the Raychem sleeve used to insulate the splices in the conduit nipple (RTD leads to Conax seal) attached to the conduit seal assembly is for electrical insulation purposes only. It is not for sealing purposes and does not fall under the intent of DCN Q-17111-A. This requirement is waived since terminations are in a controlled environment due to the Conax seal."

This basis was signed by a WO planner and an NE engineer. The WO stated that the subject splices did not fall under the intent of DCN Q-17111-A. The Q-DCN is a listing of all splices required to be replaced based on the results of Calculation WBPEVAR8904055. Since the cables and end devices associated with the above five splices were included in the Q-DCN, the inspector concluded that they were within the intent of the DCN. The inspector also questioned the basis for using a WO to document the intent and waiving of DCN requirements.

Procedure SSP-9.03, Plant Modifications and Design Change Control, Revision 8, Step 2.2.A.4, states that approval of a DCN by the site engineering manager or designee constitutes final design. Subsequent revisions such as changes during implementation require the same level of technical review and approval as the original DCN. Changes to the scope of DCN Q-17111-A through the use of WOs 93-11751-61, 93-11751-66, 93-11751-21, 93-11751-19, and 93-13527-00 is identified as Example 1 of a violation of 10 CFR 50 Appendix B, Criterion V, VIO 50-390/95-38-01, Failure to Follow Procedures for Design Control and Corrective Action Program.

During this review, the inspector also noted that WP-5032 (implemented in 1985) documents installation of the above five splices with a 1/2 inch seal length on a determination that there was not a need to provide moisture intrusion protection. The inspector could not determine that this justification was included in the applicant's EQ binder for the subject TEs. Additionally, the splice connection was made through the use of a parallel connection. The current revision of Specification G-38, Installation, Modification, and Maintenance of Insulated Cables Rated Up to 15,000 Volts, Revision 14, does not identify parallel connectors as being approved by engineering. Additionally, the WP documents installation of Raychem heat shrink material WCSF-115 which has a use range of .11-.23 inches when installed in harsh environments. However, the Conax lead which is spliced to the RTD has a nominal OD of 0.08 inches. These issues will be further evaluated during the review of the applicant's corrective actions to the above violation.

During the above reviews, the inspector noted that there were originally ten splices which were dispositioned as not requiring rework by means of a WO. However, the other five splices were subsequently reworked due to required modifications. The inspector reviewed the WO documentation for the above splices and identified a concern regarding the adequacy of one of the installed splices. WO 94-25370-02 documentation indicated that the OD measurement for the TE conductors were 0.11 inches while the other three TEs had wire ODs of 0.65 inches average. The inspector questioned the accuracy of the documented wire OD associated with splice 11394 since the four TEs were of the same model and part number. The applicant performed OD measurements of TE conductors stored in the warehouse and determined that another TE element contained wires with similar OD measurements. The installed and stored TE were both purchased in the same contract (#36693A). This information was provided to the inspector on June 20, and a review of the conductor measurements and EQ binder WBNEQ-ITE-003 was performed. It was concluded that there was sufficient basis to conclude that the splice OD measurements were accurate for TE 1-TE-068-0060-E as indicated in WO 94-25370-02.

Within the areas reviewed, one example of a violation for failure to follow procedures in design control was identified.

5.0 CONTROL ROOM PANEL INSPECTIONS

As documented in IR 50-390/95-33, Nuclear Assurance Assessment NA-WB-94-0144 documented the results of field inspection of a sample of 251 cables for cable bend radius and also inspection of cables as part of a commitment for URI 50-390/92-22-01. Inspection attributes included identification, size/type, location, crimps, training radius, and separation. Deficient conditions identified included wire termination/crimp installation deficiencies which were documented in PER WBPER950001. The PER documented 57 conditions of improper crimping and other wiring deficiencies primarily in the control room panels. Using field engineers, the applicant performed additional scoping inspection of all panels in the control room and identified other deficiencies including inadequate cable separation, inadequate cable supports, and spare and abandoned cables being inadequately taped. Corrective actions for the PER as well as other open PERs which document deficiencies in the control room panels were in progress. The deficiencies associated with terminal lugs included the following:

Category	Condition
01	Overcrimped insulation
02	Insulation crimped in barrel with conductor
03	Conductor not fully inserted in barrel
05	No crimp dot code visible
09A	Overcrimp (wrong die used)
09B	Undercrimp (wrong die used)
10	Crimp not centered on lug barrel
11	Conductor strands not inserted in barrel
12	Conductor not crimped in barrel
13	Incorrect lug size for conductor size
14	Crimp on backside of barrel

As part of the applicant's evaluation of the identified termination and crimping deficiencies, qualification testing was underway at the applicant's Central Laboratories Services in Chattanooga, TN. The applicant was performing tests on various wire crimping configurations based on the identified deficiencies in the control room panels. The wire configurations to be tested were identified as categories 3, 9A, 9B, 10, 12, and 13. The other categories will be either reworked or accepted for use. The applicant duplicated the identified installed configurations, and, on June 6, the inspectors visited the applicant's lab in Chattanooga, TN, to witness some of the ongoing testing. The applicant's qualification testing was described in a test plan entitled Secureness, Static Heating, and Pullout Tests of AMP PIDG Insulated Terminal Lugs, Revision 0, dated May 26, 1995. The scope of the tests was to perform secureness, static heating, and pullout tests in accordance with methods described in UL 486A, Standard for Wire Connectors and Soldering Lugs for Use with Copper Conductors. The inspector reviewed the test plan and acceptance criteria for each of the three tests and determined that the criteria appropriately incorporated the acceptance criteria provided in UL 486A.

Each test sample was subjected to the test sequence of secureness, static heating, and pullout tests. The inspector witnessed testing of wire samples for the secureness and pullout tests. Since static heating tests were not being performed at the time of the NRC inspection, the inspector examined the test setup configuration for this test. Listed below are the preliminary tests results of the tests witnessed.

Test Sample	Category	Test Witnessed	Criteria Met ?
31A	03	Pullout	Yes
31B	03	Pullout	No
32A	03	Pullout	Yes
32B	03	Pullout	Yes
77A	12	Secureness	Yes
77B	12	Secureness	Yes

As noted above, the acceptance criteria for the pullout test for test sample 31B was not met. Sample 31B was a number 10 AWG conductor which was to be tested at a pullout force of 80 pounds. In accordance with the UL 486A criteria, the force exerted on the conductor was to be held for a minimum of 60 seconds. At the 29 seconds mark, the conductor began to slip from the terminal lug and the test was stopped. The failure was to be evaluated by the applicant. No deficiencies were identified during the review of the applicant's testing activities.

During this inspection period, the inspector performed reviews of the ongoing applicant inspection of the control room panels. WO 95-02647-06, Inspect Control Room Panel WBN-1-PNL-278-M6, required an inspection of the control room panels as part of corrective actions for PER WBPER950025 and SCAR WBSCA950004. The WO scope requires the inspection of the panels for various component and wiring installation attributes. Below are the WO inspection steps and the number of deficiencies identified for each at the time of this

inspection. Inspection had not been completed for all of the attributes at the time of this inspection.

Step	Inspection Attribute	Number
3.04	cable damage	TBD
3.11	loose components and hardware	TBD
3.12	wire crimping and strip back length	573
3.13	cable support	12
3.14	lifted wires	2
3.15	unidentified splices	TBD
3.16	spare and abandoned cables properly taped	80
3.17	component identification	20
3.18	field cables identified and separation	1
3.19	conduit identification and separation	6
3.20	presence of work in-progress information tags	26
3.21	debris	TBD
3.22	rework of all identified deficiencies	TBD
3.23	internal panel separation	75

A total of 795 deficiencies were identified. The inspector reviewed the in-progress WO implementation to determine the status of the ongoing inspections and rework. At the time of the inspection, the applicant had begun to correct some of the identified deficiencies.

5.1 Internal Panel Separation

As documented in IR 50-390/94-82, paragraph 2.3, the NRC identified internal panel wire separation violations inside a local panel and also the main control room panels. At the time of that inspection, QA was also performing a field assessment of internal panel separation. This assessment was being performed as part of the QA IVP to support closure of the Electrical Issues CAP. The inspector observed that some of the issues identified by the NRC were also being identified through the QA assessment. Therefore, no violation of NRC requirements was identified.

Within panels, a minimum free air space distance of six inches is required between redundant division cables and non-Class 1E cables as specified in drawings 45W1640 and 45W3000. Where six inches of separation cannot be maintained, a metal barrier may be installed to provide acceptable separation. These separation requirements are also described in the WBN FSAR Chapters 7.1.2.2.2 and 8.3.1.4. As discussed in paragraph 5.0 of this report, the applicant has begun to inspect control room panels for various attributes including cable separation. On June 1, 1995, the applicant issued DCN W-36577-A to revise control board critical wiring drawing 45W1640 to allow the use of a Glastic Red Board as an acceptable barrier. The inspector reviewed the DCN and noted that, prior to issuance, it was reviewed for impact on the SAR and was determined to have no impact. Therefore, a change to the SAR was not processed. The inspector questioned this determination since the above referenced FSAR chapters clearly identified that a metal barrier was the approved alternative to providing 6 inches of free air space separation. Following detailed discussions with NE representatives, the applicant

initiated PER WBPER950327 on June 10 to document that the DCN was issued with no FSAR impact identified.

This issue will be identified as an inspector follow-up item, IFI 50-390/95-38-03, PER Regarding SAR Internal Panel Separation Requirements, to track the applicant's disposition of the PER and determination of any required FSAR updates.

6.0 REVIEW OF COMPLETED WPs, WOs, AND CLOSED DCNs

The inspector reviewed completed WPs, WOs, and closed DCNs to determine whether the administrative requirements for the processing and closure of WPs, WOs, and DCNs were properly implemented. Administrative and technical requirements are provided in the following procedures:

- SSP-6.02, Maintenance Management System, Revision 15
- SSP-7.53, Modification Workplans, Revision 13
- EAI-3.05, Design Change Notices, Revision 21
- MAI-1.3, General Requirements for Modifications, Revision 7

6.1 Completed WPs - Cable Installation and Terminations

The 50 WPs were reviewed to verify that modification data sheets contained the required sign-offs by craft, foreman/designee, and QC. These WPs were implemented during the period of October 1, 1993 - February 28, 1994.

The electrical modification WPs were identified through a sort of the QA trend report that tracked the use of Procedures MAI-3.2, Cable Pulling for Insulated Cables Rated Up to 15,000 Volts, Revision 14, Data Sheet 1, Cable Installation/Pullback Data Sheet, and MAI-3.3, Cable Terminating, Splicing, and Testing for Cables Rated Up to 15,000 Volts, Revision 14, Data Sheet 3, Cable Termination Data Sheet.

D-01145-04	D-01145-09	D-01195-37	D-01195-48
D-02647-02	D-02671-11	D-02864-05	D-02978-06
D-03180-03	D-03206-19	D-03206-32	D-03206-38
D-03206-74	D-03206-75	D-03206-76	D-03206-77
D-03206-78	D-03206-80	D-04159-01	D-04160-34
D-04171-30	D-04269-02	D-04269-04	D-04269-05
D-04269-06	D-04269-08	D-04269-10	D-04269-11
D-04269-13	D-04269-15	D-04269-18	D-04269-28
D-07376-01	D-07537-14	D-07891-02	D-07895-05
D-07960-06	D-08061-05	D-08061-12	D-08061-14
D-08061-30	D-08631-01	D-08631-04	D-08631-14
D-08858-04	D-08859-04	D-09153-03	D-10898-06
D-10951-41	D-22748-46		

The WPs were verified to have the required signatures. No deficiencies were identified.

6.2 Completed WOs - Systems 211 and 212

The inspector performed a review of completed WO/WRs to verify conformance to requirements specified in Procedure SSP-6.02. The WBN maintenance program provides for the performance of minor maintenance tasks. Minor maintenance is defined as activities which are of minor nature and incidental to the integrity or quality of plant equipment. A listing of minor maintenance activities are also listed in Appendix M to Procedure SSP-6.02.

Appendix M also provides limitations for performing work as minor maintenance. For example, work activities requiring more than visual inspection as a PMT cannot be classified as minor maintenance. Functional tests are not considered visual inspections. Therefore, if a functional test is required as PMT, the work activity cannot be performed as minor maintenance. The inspector randomly selected the 50 WO/WRs listed below which were implemented in 1992 and 1993 to determine if any work performed as minor maintenance were properly categorized as minor maintenance.

92-04387-00	92-04475-00	92-05129-00	92-05133-00
92-05213-01	92-05385-00	92-05751-00	92-05752-00
92-05753-00	92-07175-00	92-10425-00	92-10426-00
92-10429-00	92-10430-00	92-10431-00	92-11073-00
92-11075-00	92-12125-00	92-12159-00	92-12160-00
92-12170-00	92-12171-00	92-12258-00	92-12259-00
92-12335-00	92-12336-00	92-12337-00	92-12338-00
92-12339-00	92-12340-00	92-12341-00	92-12342-00
92-12954-00	92-13032-00	92-13925-00	92-15289-00
92-22958-00	93-00091-00	93-00251-00	93-00266-00
93-00291-00	93-00320-00	93-00352-00	93-00427-00
93-00769-00	93-00771-00	93-00801-00	93-00902-00
93-00994-00	93-07552-00		

The above WO/WRs were selected based on a random selection from a listing of WO/WRs which involved relays, fuse blocks, and other electrical components. No deficiencies were identified with respect to categorizing WO/WRs as minor maintenance or performance of any required PMT.

During the review of WO 92-05385-00, the inspector noted that an internal wire in 6.9 kV Shutdown Board 2-211-2A-A, Panel 12, was spliced in the wireway. Wire 107C-5 was spliced within the wireway due to it being identified as damaged. A splice identification number was requested as documented on page 10 of the WO, but it was determined that an identification number was not required since the spliced wire was an internal wire and not a field cable. This determination was reviewed by an NE cable specialist. The inspector reviewed General Engineering Specification G-38, Installation, Modification, and Maintenance of Insulated Cables Rated Up to 15,000 Volts, Revision 14, and WB-DC-30-5, Power, Control, and Signal Cables for Use in Category I Structures, Revision 15, and determined that splicing of internal panel wiring was not prohibited. The splice identification requirements pertain to field cables and were not explicitly applicable to internal wiring. Therefore, the inspector determined that splicing of internal wiring in panels was acceptable

without unique splice identification numbers. No deficiencies were identified through review of the WO documentation.

6.3 WP Implementation and DCN Closure Reviews

The 22 WPs listed below implemented M-DCNs and were reviewed to determined if any of the original work scope was revised out of the WP and rolled into a WO, which is not allowed by Procedure SSP-6.02, Maintenance Management System, Revision 15, paragraph 2.2.1.C. WOs can only implement DCAs generated by no-work required DCNs such as S-DCNs, Q-DCNs, and W-DCNs. The WPs selected were completed from January 1 to August 31, 1993.

D-01219-05	D-02859-01	D-02859-02	D-02859-07	D-02859-09
D-03472-02	D-07955-03	D-10448-03	D-11378-06	D-12029-06
D-12029-11	D-12029-14	D-12029-17	D-12029-23	D-12064-35
D-12187-15	D-12212-21	D-13515-03	D-13515-08	D-14599-02
D-14849-04	D-15003-05			

The 15 closed electrical modification M-DCNs listed below were reviewed to determine if any of the required modification changes were incorporated by WOs. These DCNs were closed between January 1 and June 4, 1994.

M-02848-A	M-06801-A	M-07533-A	M-07884-A	M-08609-A
M-08927-A	M-09880-A	M-11619-A	M-11943-A	M-13737-A
M-13984-A	M-16571-A	M-20892-A	M-14176-A	M-14226-A

The inspector reviewed the modification work completion statement associated with each of the above DCNs. This form (SSP-7.53, Appendix H) identifies the work implementing documents which implemented the DCN. WOs were not identified as having implemented any M-DCNs. No deficiencies were identified.

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

7.0 REVIEW OF CORRECTIVE ACTION DOCUMENTS

7.1 PER WBPER940088

This PER was initially issued in February 1994 to document that work packages which involved physical work on 10 CFR 50.49 equipment did not incorporate an applicable copy of Form HERS-235 as required by Procedure PAI-10.12, QMDS Verification, Implementation, and EQ Baseline Activities. HERS-235 forms are included in Procedure PAI-10.12 and identify qualification maintenance applicable to equipment and cables. The forms also provide documentation of completion of such maintenance, as well as degradation inspections. The inspector reviewed Revision 2 of this PER, which was issued on August 4, 1994, and incorporated an additional example of deficiencies associated with HERS-235 forms. The additional example dealt with the failure to complete sign-offs to the HERS-235 forms during the closure of WOs. As required by Procedure PAI-10.12, HERS-235 data sheets are required to be reviewed and entered into the HERS data base. The cognizant engineer shall ensure submission of the EQ work record to the EQ coordinator for data entry into the HERS data base. The extent of condition was to be determined at the

completion of Steps 11 and 12 of the corrective action. Step 11 of the corrective action was that the EQ group would generate lists from MPAC and HERS data bases of EQ components and WO numbers. Comparison of the list will be performed to identify WOs affecting EQ components that have been closed without an EQ review. Step 12 of the corrective action requires that, based on the results of Step 11, impacted WOs will be further reviewed and HERS data base updated if required. The inspector reviewed the developed corrective actions for the PER and discussed the status with the applicant. No deficiencies were identified.

7.2 SCAR WBSCA930158

As discussed in IR 50-390, 391/93-63, paragraph 4, CAP and SP Quality Assurance Assessments, QA Assessment NA-WB-93-0078 documented examples of splices requiring inspection and rework which had not been inspected or reworked prior to releasing the associated systems for functional testing. This condition, and other examples of incomplete electrical modification work, was documented in SCAR WBSCA930158.

During this inspection period, the inspector reviewed SCAR WBSCA930158 to determine if the extent of condition considered the applicability of the SCAR to civil and mechanical commodities. The SCAR file contained the results of a review to determine extent of condition and risk assessment. The report concluded that the SCAR extent of condition was limited to electrical commodities and not applicable to mechanical and civil commodities based on the following:

- Review of CAQs did not identify any incomplete work turned over.

- The opportunity for error was low due to the nature of mechanical commodities. Improper closure or daisy-chaining was not probable because mechanical and civil commodities are addressed on one work implementing document unique to that commodity.

- The mechanical and civil commodities were determined to be a low risk to testing.

The inspector reviewed the SCAR items and background information provided in the report used to justify the extent of condition. The inspector concluded that the applicant had appropriately evaluated the extent of the SCAR condition to other commodities in addition to the electrical commodities. No deficiencies were identified during this review.

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

8.0 CONSTRUCTION INSPECTION PROGRAM RECONSTITUTION REVIEW (MC 2512)

The NRC MC 2512 construction phase inspection program was initially completed in 1985 for Watts Bar Unit 1. Since then, construction-related activities have been documented primarily against construction inspection temporary instructions. As such, post-1985 inspections have not been correlated to MC 2512 inspection procedures. Therefore, the current MC 2512 inspection

procedures are being re-evaluated with the objective of assuring that the procedures have been satisfied based primarily on post-1985 inspection activities. Where the program review procedures or field verification procedures of commodities cannot be verified complete based on post-1985 inspections, the records inspection procedures are being re-performed and/or pre-1986 inspection effort used as appropriate. The MC 2512 inspection procedures listed below were reviewed during this reporting period.

8.1 Heating, Ventilation, and Air Conditioning Systems (50100)

The purpose of this inspection procedure is to verify that the safety-related portions of the heating, ventilation, and air conditioning systems were constructed in accordance with regulatory requirements and the applicant's commitments. The inspection procedure includes the areas of QA manual and implementing procedure review, work procedure review, observation of work activities, and review of QA records. The reconstitution of this inspection procedure was completed by a review of post-1985 and pre-1986 inspections.

8.1.1 Review of Inspection Reports

Concurrent with the initial issuance of this inspection procedure, an inspection was performed. This inspection, which is documented in IR 50-390,391/85-52, included a review of a significant number of inspection procedure requirements.

Additionally, the review of post-1985 inspection reports revealed that a significant amount of additional HVAC work was performed by the applicant and inspected by the NRC since 1985. Inspections for this effort were documented against TI 2512/25, Inspection of Watts Bar Nuclear Plant HVAC Duct and Supports Corrective Action Program Plan, rather than against the inspection procedure. Other inspections also included a review of nearly all aspects of the procedure, even though they were not specifically charged against the procedure. These were the Construction Assessment Team Inspection (IR 50-390,391/89-200), Integrated Design Inspection (IR 50-390, 391/92-201), Integrated Design Inspection (IR 50-390, 391/93-201), the HVAC Duct and Duct Support CAP 75% Completion Inspection (IR 50-390,391/94-08), and the HVAC Ducts and Equipment QA Record Plan Inspection (IR 50-390, 391/94-09). In addition to these inspections, many other inspections have been conducted which reviewed portions of IP 50100 requirements. The inspections and areas addressed were as follows:

- QA manual and implementing procedures: 50-390,391/84-85, 85-52, 86-02, 91-13, 91-29, 92-21, 93-29, 93-34, 93-38, 93-68, 93-204, 94-08, 94-09, 94-13, 94-27, 94-40, 94-89, 95-15, 95-17

- Work procedures: 50-390,391/85-52, 91-13, 91-29, 93-29

- Observation of work activities: 50-390, 391/85-52, 87-07, 91-29, 92-08, 92-13, 93-56, 93-204, 94-08, 94-89, 95-23

- QA record reviews: 50-390, 391/86-09, 93-78, 93-79, 93-204, 94-09, 95-15

The above NRC inspection reports document completion of this inspection procedure, with the exception of performance of personnel interviews and review of environmental and seismic qualification of HVAC components. Those inspection procedure requirements are covered by the inspection documented in paragraphs 8.1.2 and 8.1.3 of this report.

8.1.2 Additional Inspection

The following addresses the results of further review and inspection of specific attributes of IP 50100.

8.1.2.1 Review of Selected HVAC Components for Environmental Qualification and Equipment Seismic Qualification Requirements

The inspector reviewed the applicant's EQ list test results and seismic analysis summary reports to verify that documentation was available to support qualification of selected components included in safety-related portions of HVAC systems and that those components were properly qualified in accordance with IEEE-323-1974, Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations, and IEEE-344-1975, Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations. The applicant's EQ and ESQ programs are covered by separate CAPs which will receive further NRC review prior to Unit 1 fuel load.

8.1.2.1.1 Environmental Qualification

The inspector reviewed the Watts Bar 10 CFR 50.49 List for equipment located in a harsh environment for the purpose of verification that the list contained HVAC components that would be required to function or otherwise not to fail in a manner detrimental to plant safety during a design basis accident. Specifically the inspector selected various HVAC components that met the above criteria and verified that those components were included on the EQ List. Components selected included the following:

1-MTR-030-0038	Containment Air Return Fan Motor
1-MTR-030-0039	Containment Air Return Fan Motor
1-PDT-030-0045	Containment Pressure Differential Transmitter
1-MTR-030-0146-A	ABGTS Fan Motor
1-ZS-030-0053B-B	Upper Containment Exhaust Isolation Valve Position Switch
1-MTR-030-0176-B	RHR Pump Room Cooler Fan Motor
1-FSV-030-0146-A	ABGTS Fan A-A Exhaust Damper
1-MTR-030-0179-B	SI Pump Room Cooler Fan Motor
1-MTR-030-0182-B	Centrifugal Charging Pump Room Cooler Fan Motor

1-FSV-065-0027-B	Unit 1 Shield Building Exhaust B Valve
1-FSV-065-0030-B	EGTS Train B Unit 1 Suction Valve

Each of the above HVAC components was listed and correctly classified as to EQ Equipment Category on the EQ list.

8.1.2.1.2 Equipment Seismic Qualification

The inspector selected four Class 1E HVAC components and requested that the applicant provide documentation to support seismic qualification of those components. The inspector reviewed the documentation and compared these QA records to requirements stated in IEEE-344-1975. The components selected by the inspector included the following components:

1-FSV-065-0030-B	EGTS Train B Unit 1 Suction Valve
1-FSV-065-0027-B	Unit 1 Shield Building Exhaust B Valve
1-MTR-030-0176-B	RHR Pump Room Cooler Fan Motor
1-MTR-030-0146-A	ABGTS Fan Motor

The inspector reviewed Reliance Electric Motor Division Seismic Analysis Summary Reports 84b-A-16 and 77-A-7a, which documented the vendor's seismic analysis of Fan Motors 1-MTR-030-0176-B and 1-MTR-030-0146-A. The inspector noted that the analysis method documented in both reports involved a dynamic analysis approach rather than actual component testing. Since the critical speed of the rotor mass system for both motors was above 1980 RPM (33 Hz X 60 sec/min) and the motors would therefore have no significant resonances in the frequency range below the high frequency asymptote of the required response spectrum defined in IEEE-344-1975, the inspector agreed that this analytical approach was acceptable. Additionally, the inspector determined that these summary reports provided an acceptable basis for seismic qualification of the fan motors.

The inspector reviewed ASCO Test Report AQR-676368, Report on Qualification of ASCO Catalog NP-1 Solenoid Valves for Safety-Related Applications in Nuclear Power Generating Stations. This report summarized the results of a test program jointly conducted by ASCO, Wyle Laboratories, Acton Environmental Testing Corporation, and Westinghouse Electric Corporation to demonstrate the generic qualification of a family of ASCO solenoid valves for safety-related applications at nuclear power plants. The test program was intended to provide a basis for environmental and seismic qualification of these solenoid valves. Based on the above review, the inspector determined that the seismic DBE simulation methodology and test report results provided an acceptable basis for seismic qualification of the solenoid valves.

8.1.3 Qualification/Certification of Craft and QC Inspection Personnel (50073, 50090, 50100)

A reconstitution inspection was conducted to examine the qualification and certification of craft and QC inspection personnel for activities to be examined under IPs 50073, 50090, and 50100. The results are discussed below.

The inspector conducted interviews with selected personnel that have been associated with Watts Bar construction activities for a period of 15 or more years. These personnel were selected in order to ensure that topics discussed would include periods dating back to early construction. Construction personnel selected for this series of interviews included five personnel that had served in the capacity of craftsmen and craft supervision, one individual involved in field engineering, and five personnel responsible for QC inspection. These personnel had been responsible for installation, inspection, and testing of a variety of safety-related equipment including mechanical components (pumps, valves, and heat exchangers), HVAC equipment and supports, reactor vessel internals, and piping/component supports.

During these interviews, various topics were discussed which were related to the individual's experience during the Watts Bar construction effort. Topics discussed included use of approved installation and inspection procedures, control and use of M&TE, qualifications of personnel commensurate with work in progress, training of personnel such that they were able to perform assigned duties or assume assigned responsibilities, independence of inspection personnel, allotment of time for QC inspections, and management support of QA/QC function. Additionally, the inspector questioned each individual concerning that individual's prior training and work experience prior to the individual assuming specific work assignments at Watts Bar.

The inspector determined that each individual had been qualified to assume their respective work assignments. Although a number of hardware problems and deficiencies were discussed, no new issues were identified as the result of these interviews that had not been corrected or were not already covered by corrective actions as part of one of the ongoing CAPs or SPs.

Based on the findings of this review, the inspector concluded that adequate inspections of the HVAC area had been conducted. The reconstitution of IP 50100 is considered complete.

Additionally, the reconstitution of attribute 02.03 of IP 50073 and attribute 02.03a of IP 50090 for examining the qualification of construction and inspection personnel is considered complete.

Within the areas inspected, no violations or deviations were identified.

9.0 REVIEW OF APPLICANT'S INTEGRATED DESIGN INSPECTION

To satisfy the commitment in the applicant's Nuclear Performance Plan, Volume 4, the applicant is presently performing an IDI of the auxiliary feedwater system. The audit started June 5, 1995, and is being performed by QA personnel and supplemented with SWEC and contractor personnel. The applicant

selected the auxiliary feedwater system because it is a nuclear safety-related system that has been accepted by the operating staff as complete. The objective of the audit was to verify that:

- System description/design criteria adequately reflect licensing commitments and regulatory requirements.
- System design is consistent with the design criteria, appropriate components and materials are specified and important design aspects are supported with technically adequate calculations.
- Installation (configuration, equipment, components, materials) is consistent with drawing and specification requirements.
- Operating, surveillance and maintenance procedures agree with design basis, vendor requirements, and technical specifications.
- Industry concerns, such as represented in Nuclear Experience Reviews items, NRC NUREGs, NRC Bulletins, Sequoyah Lessons Learned, etc., have been correctly addressed in design documents, installation requirements, operating and maintenance procedures, as appropriate.

The inspector reviewed the applicant's ongoing inspection activities against the applicant's audit plan WBA95506, Revision 1, Integrated Design Inspection of the Auxiliary Feedwater System Technical Audit. The inspector met with the team members and determined the experience and qualifications of each individual was consistent with the specific areas of inspection assignment. The inspector attended one of the applicants daily briefing sessions to determine the depth of the applicants inspections. The inspector found the team was thorough in the inspection implementation, including field walkdowns in conjunction with documentation reviews.

The inspector found the audit was being conducted in accordance with the audit plan. Within the areas reviewed, no violations or deviations were identified.

10.0 EMPLOYEE CONCERNS (TI 2512/15)

The inspector reviewed the results of an investigation conducted by the SWEC employee concerns representative. This issue which related to invalidation of unsatisfactory QC inspections by QC management was identified during an employee exit and is documented under TVA Exit/Inquiry File, ECP-93-WB-319. The inspector reviewed the results of the SWEC employee concerns representative's investigation of this issue including SWEC's response letter to the CI.

As the result of SWEC's investigation, the issue identified in the inquiry was not substantiated. The results of the investigation had been reviewed by TVA CRS and the file was closed by SWEC and TVA CRS. The inspector determined that the issue had been adequately resolved.

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

11.0 WALKDOWN VERIFICATION FOR DAMAGED, LOOSE, OR MISSING HARDWARE (TIs 2512/18, 23, and 26)

During this inspection period, TVA continued to perform walkdowns to identify and correct damaged, loose, and missing hardware. This process is described by Procedure MAI-1.9, Walkdown Verification for Modifications System/Area Completion and Damaged, Loose, or Missing Hardware, Revision 3.

The NRC has identified 144 area/rooms scheduled for turnover which the NRC staff determined include a significant amount of safety-related equipment. The NRC resident staff plans to inspect each of those areas after TVA completes turnover of area to plant staff. Seventy-nine of those 144 area/rooms remain to be turned over, including 11 remaining areas that are required to be turned over prior to HFT2. The NRC has completed inspection of 38 of those 65 areas that have been accepted by plant staff. Attachment 1 to this report identifies the applicant's and NRC's status relative to completion and final inspections of these areas. Also shown are the areas required to be completed before start of HFT2.

The inspector reviewed Nuclear Assurance Assessment NA-WB-95-0077. This report covered nuclear assurance's monthly assessment of the implementation of the system/area completion and damaged, loose, or missing hardware walkdowns and the Class 1E Conduit and conduit support walkdowns. The assessment was performed by the applicant's nuclear assurance group between April 1 and 30, 1995. During this assessment several minor hardware deficiencies such as loose screws, loose flex conduit connectors, and inadequate thread engagement were identified by QC inspectors. However, no significant hardware problems were identified during this assessment. Additionally, housekeeping deficiencies for two areas were considered as unsatisfactory. These areas were the 1B RHR pump room and the 1C charging pump room. The assessment report identified WO numbers for each of the hardware deficiencies, and the inspector was informed that the housekeeping deficiencies were corrected during discovery. The inspector did not identify any housekeeping discrepancies during a subsequent tours of those rooms.

To determine the adequacy of the ongoing walkdowns, the inspector performed a confirmatory walkdown of the 125V Vital Battery Board Room I, 125V Vital Battery Board Room II, 125V Vital Battery Board Room III, 125V Vital Battery Board Room IV, Auxiliary Control Instrument Room 1B, Auxiliary Control Instrument Room 2A, Auxiliary Control Instrument Room 2B, Elevation 713' CVCS Valve Gallery, Unit 1 VCT Room, Unit 1 713' Elevation CVCS Pipe Gallery, Unit 1 676' Elevation Pipe Chase, RHR and CS HXCH Room 1B-B, 24/48 Volt Battery Room, 24/48 Volt Battery Board and Charger Room, Centrifugal Charging Pump 1A-A Pump Room, and Centrifugal Charging Pump 1B-B Pump Room. These areas were recently turned over to the plant.

The inspector noted that the door into one room was not closed and locked. This room was the RHR and CS HXC 1B-B room which could not be closed due to the presence of temporary drainage and/or air hoses. The inspector verified that the door was covered with a current approved breach permit which reflected ongoing work activities.

During the tour of Elevation 713 CVCS Valve Gallery, the inspector noted five penetration seals where portions of sealant material had been removed resulting in a partial reduction in actual penetration seal thickness of as much as eight inches. The seal material removal appeared to have occurred subsequent to original application possibly to support work or inspection activities on adjacent supports. Affected penetrations included A0607AM, A0607BM, A0607CM, A0607DM, and A0607EM. The penetration seals were otherwise free of voids and the outer surface of each penetration seal was verified to be flush with the outside walls of the CVCS Valve Gallery. The inspector subsequently determined that these penetration seals were not a problem. This determination was based on the concrete wall thickness of 36 inches and that each penetration seal was required to be a minimum of 12 inches in depth.

During the tour of the auxiliary control instrument rooms, the inspector noted that housekeeping in auxiliary control instrument room 1B was poor. Loose pieces of insulation, dirt, and wire ties were present. The air return fire damper located in the room wall contained an excessive accumulation of dust. Housekeeping conditions in the other two auxiliary control instrument rooms were acceptable. The inspector discussed the housekeeping observation with TVA management and was informed that it would be corrected. During a subsequent tour the inspector verified that the room had been cleaned. The inspector did not identify any significant hardware deficiencies during the walkdown of the above areas.

The above results indicated that the completed walkdowns were adequate to identify all significant instances of DLMH in the bounded areas. The inspectors will continue to monitor the applicant's walkdown activities as well as subsequent actions to correct identified deficiencies as a result of these walkdowns.

Within the areas inspected, no violations or deviations were identified.

12.0 NRC OPEN ITEM STATUS REVIEW (92901, 92902, 92903, 92904)

In order to evaluate the adequacy of the applicant's resolution of open items in respect to the plant completion status, the inspector performed an evaluation of all items that are still open. The open items include 50.55(e) reports, violations, deviations, and unresolved items. Currently the number of construction-related open items totals 135. The evaluations were completed by the NRC staff to determine those that the NRC believed were a significant concern to remain open without review at this time considering the status of the plant in respect to preoperational testing and fuel load. The criteria used to evaluate the items are listed in IR 50-390,391/95-17.

For the high concern, the applicant agreed to either provide a closure package or an incomplete status package to the NRC staff for review. The staff has received some of the packages and completed a review indicated in the following paragraphs.

12.1 (Closed) IEB 79-27, Loss of Non-Class 1E Instrumentation and Control Power System Bus During Power Operation (low concern)

NRC team inspection of the DBVP CAP revealed that a commitment/requirement to respond to a bulletin could not be verified in accordance with DBVP plan objectives. Bulletin IEB 79-27 included a requirement for the applicant to re-evaluate NRC Circular 79-02. The NRC team finding documented in IR 50-390,391/89-12, paragraph 4.3, stated:

> "The NRC team review revealed that C/R unit (B43 860902 902) involved a response to an NRC circular that could not be verified in accordance with the DBVP plan objectives. The commitment included in the response did not seem to be technically consistent with the issues raised in the NRC circular. The applicant needs to review the information contained in NRC Circular 79-02 and revise its response."

In a letter to the NRC dated February 5, 1990, the applicant responded to the DBVP finding stating that a revision to its response to NRC Circular 79-02 would be incorporated into Chapter 7 of the FSAR.

The inspector determined from a review of plant documents (T03 950327859) that the applicant re-evaluated the NRC recommendations of Circular 79-02. The applicant's review specifically addressed each recommendation and provided the technical basis for conclusions as appropriate. The applicant found the conclusions provided in the original evaluation had not changed. The applicant evaluated the affected FSAR sections and determined the information provided therein was correct and no change was necessary. The inspector determined the applicant had revised and adequately documented its position to NRC Circular 79-02. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews, were reviewed and considered adequate by the NRC inspector. This IEB is closed.

12.2 (Closed) CDR 50-390/87-04, Potential Loss of ECCS Inventory Through Air Return Fans (low concern)

Water from the containment spray ring headers is required to drain to the emergency containment sump for recirculation to the containment spray system and emergency core cooling system. A design modification was made to seal the crane wall so that 13.2 feet of water would be retained inside the crane wall. During this modification it was not recognized that a portion of the spray water could pass through the recessed air return fan opening, equipment trenches, and personnel access door trenches to the lower containment area outside of the crane wall such as in the accumulator rooms. Since the crane wall is sealed, water outside of the wall would not flow to the sump located inside the crane wall. This condition would gradually deplete the inventory in less than two days by 50 percent and result in insufficient amount of water to provide net positive suction head and prevent vortexing of ECCS pumps needed for long term cooling.

On June 12, 1987, the applicant submitted the final report for the deficiency. The corrective actions described in the report stated the applicant would

install curbing around hatches on the operating floor to direct water runoff toward the refueling canal (where it could return to the sump). The existing curbs in affected accumulator rooms would be modified and accumulator room floor penetrations would be sealed or curbed to prevent water loss. In addition, a drainage system would be installed to direct water from the accumulator room to the sump.

The installation of the drainage system piping and associated supports and curbing was completed in accordance with DCN P-00853-D. In addition, the necessary revisions to Instruction MI-271.010, Removal and Replacement of Equipment Hatch, Doors, Bridge, Track and Shield Wall, Revision 6, were made to ensure removal and replacement of seal plates were controlled during outages. The inspector reviewed the above listed DCN and procedure revisions and determined that actions necessary to correct the identified deficiency were complete. Physical verification of the completed modifications was performed with no deficiencies identified. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. This CDR is closed.

12.3 (Closed) Open Item 50-390/89-200-07, Inadequate Raychem Splices on Penetration Leads

This item pertained to deficiencies associated with splices at outboard containment electrical penetrations. During the CAT team inspection in 1989, the inspector identified that the penetration leads had been extended by splicing them to wire extensions. The Raychem heat shrink tubing on splices had less than the two-inch overlap required by Conax manual IPS-1349. Several splices had overlaps in the range of 1/4 to 1/2 inch. This deficiency was subsequently identified as Example 3 of VIO 50-390/89-200-41, Inadequate Inspection Procurement Activities. This VIO was reviewed by the NRC prior to the resumption of construction activities in 1991 as documented in IR 50-390/91-26. The recurrence controls at that time were determined to be adequate for construction restart. In NRC IR 50-390/94-61, this violation example was closed based on the same issue being tracked through OI 50-390/89-200-07.

During this inspection period, the inspector reviewed the applicant's closure package for this item to determine if the corrective actions for the identified deficiencies were adequately implemented. The corrective actions involved the removal and replacement of the subject heat shrink material for each of the deficient splice installations on the electrical containment penetrations associated with safety-related circuits. The deficiencies were documented in SCAR WBP890567SCA, which was closed on May 5, 1995.

As documented in IR 50-390/94-61, the NRC identified damage to the Kapton insulated wires at electrical penetrations. The applicant has implemented corrective actions to correct the identified deficiency. To prevent recurrence, the applicant installed a polyolefin material over the Kapton insulated wires and splices to prevent further damage due to construction and transient activities. The installation of this material resulted in the inaccessibility of the vendor wires at the outboard penetrations during this

inspection period. However, NRC inspection activities have been previously performed during the applicant's implementation of the corrective actions. The following inspection reports documented NRC inspection of in-process and completed splicing activities at electrical penetrations. Inspection attributes included verification of acceptable seal length on splices.

50-390/92-40, paragraph 2.d
50-390/93-10, paragraph 2.a
50-390/93-20, paragraph 2
50-390/93-29, paragraphs 2.a and 2.c
50-390/94-66, paragraph 2.4

No examples of inadequate splice seal lengths were identified during the inspection of the work activities. In addition, as documented in paragraph 3.2 of this report, the inspector performed a review of eight completed vendor splices and verified that the correct splice seal length of two inches was present. The above inspection effort provides sufficient inspection effort to concluded that the completed vendor splice replacement effort has been adequately implemented as required by the SCAR corrective actions. The penetration splice rework effort was performed as required by DCNs M-11747, -11748, -11885, -11953, -12014, -12186, and -12218. The inspector verified that the above DCNs have all been closed.

As part of the SCAR closure verification of the completed corrective actions, the CAQ closure group performed a closure review of the SCAR corrective actions. This effort included a review of work implementing documents to confirm that the existing work documentation provided evidence that penetration splices had been reworked. A sample of 60 penetration ports were reviewed as part of this effort.

The nuclear assurance verification performed as a part of the SCAR closure included the following activities:

- Reportability evaluations for 10 CFR 50.55(e) and 10 CFR 21 were included in closure package.

- Work implementing documents were all closed.

- Design Change Notices were all closed.

- Field verification was not performed due to the susceptibility of Kapton insulated wires being damaged. QC inspectors involved in the splice activities were interviewed by the nuclear assurance reviewer.

No deficiencies were identified during the inspector's review of the completed corrective actions. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. This open item is closed.

12.4 (Closed) CDR 50-390/91-09, Limitorque SMB-00 Torque Switch Roll Pin Failures (moderate concern)

This 10 CFR 50.55(e) report was issued as a result of a 10 CFR 21 report from Limitorque Corporation involving potential failures of roll pins in torque switches in size 00 MOV actuators. As documented in SCAR WBSCA910213, the applicant identified 70 MOVs required for Unit 1 operation that could have had the potentially defective roll pins installed. In a letter to NRC (RIMS T04921019998) dated October 19, 1992, the applicant committed to inspect the suspect MOVs and replace the affected torque switches prior to system completion.

Completion of the replacement of the affected torque switches was documented in the closure package for SCAR WBSCA910213, Revision 1, and performed in accordance with Procedure PM-1380V, Routine Inspection and Maintenance of Limitorque Motor Actuators, Revision 11.

The inspector reviewed the above-referenced closed SCAR and determined that it adequately documents completion of the required corrective actions. In addition, as discussed in IR 50-390,391/93-87, the inspector performed a detailed review of the records for 22 of the 70 replaced torque switches with no deficiencies being noted. Physical inspection of the roll pins in the newly installed torque switches could not be performed as it would have necessitated de-energizing and partially disassembling the actuators. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. This CDR is closed.

12.5 (Closed) CDR 50-390, 391/91-29, Pressure Locking and Thermal Binding of Gate Valves (moderate concern)

The applicant determined that INPO SOER 84-7 was applicable to WBN. Active gate valves in safety-related systems that are required to open for system operation have been identified as potentially susceptible to either pressure locking or thermal binding. Thermal binding exists when a gate valve is heated, closed, and allowed to cool. The disc may become so tightly pinched by the valve seats that the valve may be impossible to open without reheating the body, due to the differential contraction between the valve body and disc during cooling. Pressure locking occurs when the valve bonnet becomes filled with water and is pressurized by either system pressure or external heating. System pressure may cause the upstream disc to pull away from its seat and allow the bonnet to reach system operating pressure. When the system is depressurized, the discs seal tightly, leaving the bonnet at system pressure. Such pressure from within the valve, acting on both discs, may prevent the valve from opening.

The applicant found 28 safety-related valves in six Unit 1 systems were potentially susceptible. Of the 28, five were determined to need modification to eliminate the operability concern. DCN M-18044-A was issued and called for field modifications in System 63, Safety Injection System, and System 74, Residual Heat Removal System. The modification consisted of drilling a hole

in the disc on the upstream side of the valve gate valves. The work was performed during late 1993.

During system testing in 1994, the applicant determined pressure locking had occurred on two RHR system valves (1-FCV-74-35-B, 1-FCV-74-33-A) which had not been in the scope of the original evaluations. The applicant initiated PER WBPER940355. The corrective actions of the PER included a re-evaluation of the SOER 84-07 design study. No additional examples were identified. The applicant modified the RHR valves to eliminate the design deficiency by use of drilled discs.

The applicant discovered a complication with the drilled disk design on one valve that required the disc hole to be plugged and a bonnet pressure relief line installed. Significant leakage past the seats of 1-FCV-62-172, caused check valves in the SIS hot leg injection line to unseat. The unseating required the performance of technical specification surveillance SR 3.4.14.1 prior to reactor mode changes and was found to add several hours of critical path time at the Sequoyah Nuclear Plant. The applicant implemented DCN W-31677-A to perform the modification.

The inspector reviewed the applicant's final report to the CDR, the corrective actions of SCAR WBSCA910231 including valve evaluations, DCNs W-31677-A and DCN M-18044-A, and PER WBPER940355. No deficiencies were identified.

Inspectors performed a walkdown of RHR systems and verified tags were placed on valves with drilled discs as specified in the DCN. The inspectors found that valves added to the system in DCN W-31677-A had not been placed in operations procedure valve line-ups. This issue is discussed in VIO 50-390,391/95-18-01. No other deficiencies have been identified. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector.

Recent NRC initiatives regarding pressure locking of valves have been documented in IEN 95-14, Susceptibility of Containment Sump Recirculation Gate Valves to Pressure Locking, February 28, 1995, and IEN 95-18, Potential Pressure-Locking of Safety-Related Power-Operated Gate Valves, March 15, 1995. The applicant's review of the IENs and discussions with NRC inspectors resulted in the June 3, 1995, initiation of DCN 36588-A to provide bonnet pressure relief on containment sump valves addressed in the IENs.

The NRC will review the completion of the DCNs during the performance of TI 2515/129, Pressure Locking of PWR Containment Sump Recirculation Gate Valves, March 18, 1995.

The inspector reviewed the TVA final report to the CDR, the corrective actions of SCAR WBSCA910231 including valve evaluations, DCNs W-31677-A and M-18044-A, and WBPER940355. The inspector found that the commitments reported in CDR 50-390,391/91-29 have been implemented. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. This CDR is closed.

12.6 (Closed) IFI 50-390,391/91-04-02, Seal Liner Adequacy (low concern)

NRC IR 50-390,391/91-04 documented water leakage from the upper containment to the lower containment through the divider seal. The inspector noted water running down the inside containment wall when the ice condenser was being thawed. The report documented that maintenance work requests were being written to correct the leaks and inspect other areas of the seal for damage or leakage. The report also indicated that a PER was issued to document the conditions and that a second PER, WBPER910177, was being issued to evaluate the environment qualification of the barrier seal material.

NRC IR 50-390,391/91-08 provided status of the issue and indicated that WBPER910217 was issued to evaluate the condition of the seals and any containment corrosion. WR A530892 was issued to inspect the seals for leakage. Five leaks were identified. As corrective action, the applicant initiated WRs 597183, 745739, 645740, 645756, 672690, 673627, and 673643 to repair the seals, tighten hold down clamps, and repair a leaking loop seal drain. The report documented that the applicant had determined the seal had been appropriately qualified (WBPER910177).

The inspector reviewed NRC IRs 50-390,391/91-04 and 50-390,391/91-08, PERs WBPER910177 and WBPER910217, the WRs, the vendor divider seal inspection reports, and associated documentation. Review of the WRs indicated that the applicant had canceled WRs to repair individual leaks and clamping bolt problems in order to coordinate all corrective action under PER WBPER950217, Step 1(B). New WOs were completed, under the PER, to repair damage and replace missing clamping bolts. The inspector reviewed Procedure PTI-061-02, Ice Condenser Ice Loading, Revision 2, and Procedure 1-SI-304-3, Divider Barrier Seal Inspection, Revision 0. Section 6.2 of Procedure PTI-061-02 performs the gross leakage bypass test to measure gross bypass flow between the upper and lower containment, and 1-SI-304-3 addresses the periodic divider seal inspection. The inspector concluded that the surveillance procedure should provide adequate guidance for the divider seal inspection. The PTI would ensure the seal inspection is completed prior to fuel load and operation. The inspector also discussed the divider seal issue with NRR and reviewed WBN SSER 15. SSER 15 documented NRR's evaluation of the divider seal, repair methods, and surveillance testing for the divider seal. Corrective action for Unit 2 was documented on WBPER910453 and was placed in an inactive status.

The inspector discussed the divider seal inspection and repair with the applicant's technical support personnel and performed field walkdowns to inspect visually accessible areas of the seal. The inspector identified three minor deficiencies during the inspection. First, in the containment raceway, 702' elevation, azimuth 270 degrees, two ½" diameter clamping bolts (one on each side of the seal), where the seal meets the floor, were missing flat washers. Second, at that location, one 1/4" diameter clamping bolt located about 4 feet above the floor was bent. Because the seal runs vertically in that area and is directly below an equipment access hatch, the damage may have been caused by hoisting activities. The seal and clamping bolts had no protection in that area. And third, the RTV coating on the seal splice in raceway at azimuth 102 degrees did not fully cover the splice bolts and did

not extend 1" on both sides of the bolting pattern as depicted figure 5 of procedure PR16550, Procedure for Cold Bonding Divider Barrier Splice Joints. WO 91-00214-00 installed the splice and required the use of the cold bonding procedure. The inspector discussed the items with the applicant's technical support personnel who initiated maintenance request 1-321260 to correct the deficiencies. The inspector concluded that the applicant's action on this issue for Unit 1 was adequate. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. IFI 50-390/91-04-02, Seal Liner Adequacy, is closed.

12.7 (Closed) IFI 50-390,391/92-06-01, Instrument Sensing Line UVAs (low concern)

A review of the applicant's action on unverified assumptions associated with 230 instrumentation sensing line calculations was documented in IR 50-390,391/92-04. UVAs were assigned to the sensing lines because installed locations could fall within the zone of influence of the HELB, Appendix R, and heavy loads programs. Future walkdowns by the applicant were planned to identify any required modifications to sensing lines due to zone of influence considerations. IR 50-390,391/92-06 documented the review of programmatic guidance associated with the applicant's planned walkdowns. The review indicated that guidance, which should allow identification of UVAs, was in place for the HELB and Appendix R programs, and that a revision had been instituted to add guidance to the heavy loads program. Walkdowns had not started at the time of that inspection. The issue was left open pending NRC review of the applicant's walkdowns. Unit 2 action for this issue was placed on hold. This item will remain open for Unit 2.

The inspector reviewed Procedure SSP-6.06, Operation of Overhead Handling Equipment, Revision 6, and confirmed that the procedure required review of sensing lines during evaluation of heavy load lift paths. The inspector discussed the completion status of walkdowns relating to UVAs for sensing lines with applicant personnel who stated that all walkdowns were not complete. The Appendix R walkdowns had been done; however, the HELB and heavy loads walkdowns were not complete. The applicant stated that HELB walkdowns were complete inside containment, but not outside, and that heavy load walkdowns were done but had not been analyzed and reviewed. The inspector reviewed Appendix R, Sense Line Calculation, Revision 1, Walkdown Procedure WD-35, WBN - Walkthrough for the Field Evaluation of Pipe Rupture Effects, Revision 1, and portions of Calculation NE-CEB-ESQ, Documentation and Evaluation of Pipe Rupture Interactions From SIS Lines Inside Containment. The inspector had members of the multi-disciplinary team, who conducted the walkdowns, step through the walkdown procedure, walkdown methodology, and selected walkdown results. For the heavy loads program, the inspector reviewed Procedure SSP-9.A, Administration of Walkdown Documents, Revision 4, Procedure EAI-7.01, Modification Review For NUREG-0612 Compliance, Revision 3, and NC0930238004-04, NUREG-0612 Safe Load Path Verification for selected auxiliary building cranes/monorails. The inspector discussed the walkdown methodology and walkdown results with the applicant's engineering personnel. The inspector identified no deficiencies. The inspector noted that this issue will receive additional validation during NRC Appendix R walkdowns presently

scheduled for July 1995 and during the review and closure of the Instrument Line CAP. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. IFI 50-390,391/92-06-01, Instrument Sensing Line UVAs, is closed.

12.8 (OPEN) VIO 391/94-04-01, Failure to Follow Procedure SSP-2.10 for Evaluation of Vendor Unit 2 Manual PM Deviations (low concern)

Appropriate engineering evaluations required by the applicant's QA plan had not been developed for vendor recommendations for preventive maintenance program for Unit 2. This failure to follow Procedure SSP-2.10, Vendor Manual Information Control, Revision 10, for evaluations of vendor manual PM deviations led to the violation.

In a letter dated March 28, 1994, the applicant responded to the violation with proposed corrective actions. The applicant stated new revisions to vendor manuals will be reviewed for impact on PMs. A sample of 50 vendor manuals would be performed to determine if the impact of not performing vendor recommended tasks (not identified in the ongoing applicant's PM program) would prevent components from performing their intended safety function. The sample would replace a review of all associated vendor manuals and evaluation of recommendations not currently performed and as required by the applicant's QA plan.

The inspector has determined that equipment in Unit 2 may have vendor-required, specialized preventive maintenance which has not been performed and the effect of which will not be evaluated prior to placing the equipment in a safety-related system. The inspector reviewed the applicant's program for transfer of equipment from Unit 2 to operating plants. Procedure BP-380, Requests for Installed Unit 2 Non-Transferred Components, Revision 1, establishes the coordination necessary to obtain the proper reviews and approvals for the removal of installed Unit 2 equipment for re-installation at other sites within WBN Unit 1 operational boundary. The procedure requires the review of Unit 2 PMs that have been performed but does not require a review of vendor manuals to determine what, if any, vendor recommendations may not have been performed and the potential impact on component performance.

This violation will remain open until the Unit 2 PM program is evaluated as specified in Generic Letter 87-15. Generic Letter 87-15, Policy Statement on Deferred Plants, issued November 4, 1987, defines a deferred plant as a nuclear power plant at which the applicant has ceased construction or reduced activity to a maintenance level, maintains the construction permit in effect, and has not announced termination of the plant. The policy states the applicant should address maintenance, preservation, and documentation of equipment in a program. The program should include a description of the planned activities and procedural control that apply to the verification of construction status, maintenance and preservation of equipment, and retention of records. The program will be reviewed by the NRC.

12.9 (Closed) CDR 50-390/94-05, Radiation Monitor Cable Crimps (high concern)

The applicant determined by disassembly of one of many failed connections on radiation monitoring system that the crimp of the connector sleeve to the outer jacket of the field-installed type WWK coaxial cable was so tight that it caused the dielectric of the cable to separate along the axis of the cable, pulling the center conductor apart.

The cause of the condition was that the radiation monitor vendor specified a cable connector based on the use of Belden 9254 cable; but, when the applicant determined it needed cable qualified to a higher temperature, it purchased the field cable as mark number WWK but installed connectors per the vendors recommendations. The coaxial portion of mark WWK cable was 0.17 inch larger than the coaxial portion of Belden 9254. The vendor manual specified the use of the Belden cable crimp tool to install the connector (AMP, Inc.), since the cable was WWK cable the above described condition resulted.

The applicant submitted the final report for this deficiency on April 15, 1995. The corrective actions specified in the report were part of the applicant's SCAR WBSCA940032 and included replacement of coaxial connectors in control room panels for radiation monitoring system type WWK cables. The recurrence controls were to change the Radiation monitoring system vendor manual and associated drawings to alert craftsmen to the proper crimp tool.

The inspector reviewed the corrective actions of SCAR to ensure appropriate extent of condition was determined. The applicant performed reviews of all coaxial cable to access the adequacy of cable connectors. Other deficiencies were identified but were not associated with connector tools as specified in the CDR. These other identified deficiencies are followed by the SCAR. The inspector verified by review of CCRS that the coaxial cables were free from splices and interim connectors.

The inspector reviewed changes to Vendor Manual WBN-VTM-G292-360, G. A. Technologies Liquid Radiation Monitors, Revision 4, and DCN S-31015-A and verified recurrences controls were implemented as specified (i.e., to list the proper crimp tool and require its use on WWK cable). In addition, an inspection of coaxial cable termination to RM 1-RM-90-280 in control room panel 1-M-12/4 was conducted. The crimp replacement was verified to have been as specified in WO 95-06406-00. The inspector noted that a wire leading to the RM that appeared to have been cut was identified with a ribbon noting "item #5 95-02647-12". The WO was determined to be part of the corrective actions for SCAR WBSCA9500044 for identification of deficiencies in control room panels. No other deficiencies were identified. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. This item is closed.

12.10 (Closed) VIO 50-390/94-13-01, Failure to Follow Procedures (moderate concern)

This VIO identified four examples of failure to follow procedures, as follows:

Example 1: WPs D-01219-08 and D-01219-09 were closed without the incorporation of DCN F-20882-A, AA-02. This resulted in safety-related cables 1V1038B and 1V1040B being routed differently than shown in the CCRS.

Example 2: PPSP 28627 was signed off as complete without completion of required operability testing for commercial grade pump vanes in safety-related radiation monitors 0-RE-090-126 and 1-RE-090-131.

Example 3: Procedure SSP-3.06, Problem Evaluation Reports, Revision 13, was not followed when PER WBPER940077 was determined not to be potentially reportable under 10 CFR 50.55(e) even though the pump vanes in question were for use in safety-related radiation monitors and the qualification of the vanes was indeterminate.

Example 4: Deviations from design drawings and TI-2007 walkdown inspection criteria for the boric acid batching tank access platform and the fuel handling area exhaust fan platform were not adequately identified or documented in walkdown packages WCG-1-833 and WCG-1-832, respectively. (It should be noted that this example encompasses only the issue of deficient hardware which had not been adequately identified and documented. Related issues involving inadequate corrective action, extent of condition determination, root cause determination, and actions to prevent recurrence are addressed by Example 2 of VIO 50-390/94-13-02.)

As committed to in a response letter dated May 13, 1994 (RIMS T04940513903), the applicant has implemented the following corrective actions and recurrence controls:

Example 1: DCN F-29630-A was issued to revise CCRS to show the as-installed routing of the affected cables.

All F-DCNs associated with base DCNs completed between March 1 and 31, 1994 were reviewed to determine whether or not the identified deficiency was an isolated case. That review, which encompassed approximately 695 F-DCNs, revealed no additional similar deficiencies. The results of the review, along with a listing of the F-DCNs reviewed, are documented in PER WBPER940199.

Additional training was provided to personnel who could potentially initiate FDCNs in the future. This training was documented in PER WBPER940199.

Example 2: PPSP 28627 was reopened pending the completion of operability testing on the pump vanes. The required testing was successfully

completed as shown below, and the PPSP was again closed on May 26, 1995.

Component Test	Performed	Approved
CSI-0-090D-0111-E02000	9-22-94	1-21-95
CSI-1-090D-0357-E02000	1-19-95	1-25-95

Appropriate personnel were retrained in the requirements of Procedure SSP-10.C, Evaluation of Installed Safety-Related Replacement Items, Revision 1. This training was documented in PER WBPER940077.

Example 3: As stated in the above-referenced response letter, the applicant determined the cause of this deficiency to be a misinterpretation of procedural requirements along with inconsistency in procedural methodology. The individual performing the potential reportability determination mistakenly understood that credit could be taken for other actions (i.e., condition alarms and operator interaction) when determining whether the component could have performed its intended safety function if left uncorrected. In addition, Appendices D and G of Procedure SSP-3.06 were not consistent in that Appendix D represented management's intent, while Appendix G contained methodology reflected by the previous revision of the procedure.

To correct the identified condition, PER WBPER940077 was revised to show that it was potentially reportable under the procedural requirements in effect at the time. A subsequent reportability determination, performed in accordance with Procedure SSP-4.05, NRC Reporting Requirements, Current Revision 7, determined that the condition was not reportable. In addition, all PERs that had been reviewed and determined to be not potentially reportable during the time that Revision 13 of Procedure SSP-3.06 was in effect were re-reviewed to determine whether other similar inappropriate reviews had been completed. This re-review encompassed approximately 50 PERs, with no additional deficiencies identified.

To preclude future recurrence, Procedure SSP-3.06 was revised to delete the guidance and the form for performing potential reportable screening. Potential reportability evaluations are now being performed in accordance with the more clearly defined guidance contained in Procedure SSP-4.05.

Example 4: The discrepancies identified on the boric acid batching tank access platform have been evaluated by engineering and accepted for use-as-is. These evaluations are documented in Calculation WCG-1-961, Revision 2, dated March 13, 1995.

The deficiencies identified on the fuel handling area exhaust platform have been dispositioned in Calculation WCG-1-866, Revision 1, dated March 13, 1995.

Deficiencies identified during walkdowns of other structural platforms have been dispositioned in 18 calculations listed in PER WBPER940374, in Part D, Closure Verification, under Corrective Action Step 1.1.

The inspector reviewed the applicant's completed corrective actions, including the above-referenced documents, and determined that they are adequate to resolve the identified deficiencies. TVA verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. Therefore, this VIO is closed.

The following discussion pertains to the inspector's review of the closure package for VIO 50-390/94-13-01 submitted to the NRC resident inspector office on May 10, 1995 (RIMS T03950510828). The closure form on page 5 of 8, Item g, stated that WRs C-152364 and C-152365, which had been issued to track the operability testing of the pump vanes identified in Example 2 of the violation, had been superseded by Generic Test Instruction GTI-XX01 as a tracking document. The closure package also contained a document that showed that cancellation of the WRs had been approved by SUT on August 11, 1994. In addition, Page 6 of 8 contained a statement that the operability testing of the vanes was the only action pertaining to this violation remaining to be completed. The inspector posed the following questions to the NE representative who had prepared the closure form.

- The cancelled WRs had been referenced in the applicant's violation response, dated May 13, 1994, as the documents that had been issued to accomplish the committed corrective action. Therefore, was the appropriate level of management aware that SUT had cancelled these WRs?

- Could evidence be provided that the referenced generic test instruction would ensure that all requirements that had been included in the WRs were similarly contained in the generic test instruction?

Although unable to provide adequate answers to the above questions, the NE representative did state that it really did not matter because the operability testing had already been completed, but that procurement engineering had not yet reviewed the results of the tests and closed the PPSP. After being presented with this information, the inspector requested that the closure package be amended to show the status of the corrective action accurately.

On May 30, 1995, a supplemented closure package and revised open item closure form were presented for NRC review. This package included documents that verified that the required operability testing had been completed and accepted as of January 25, 1995. The inspector's concern is that although the closure package, which had been signed by the preparer on April 23, 1995, had been reviewed by several levels of management on April 23, 25, and 26, 1995, and nuclear assurance verification had been completed on May 10, 1995, all of

these reviews failed to reveal the inaccuracy of the reported corrective action completion status.

12.11 (Closed) URI 50-390,391/94-37-02, Use of Globe Valves Versus Gate Valves Shown on System Description Sketches (moderate concern)

This issue addressed an NRC concern about the significance of inconsistencies within system description documents. Table 9-1 in Feedwater System Description N3-3A-4002 identified valves 1-FCV-3-185, -186, -187, and 188 as globe valves while Figure A-1 in Appendix A of the system description showed the valves as gate valves.

This issue was discovered by the inspector during a review of the adequacy of corrective actions. The feedwater system description table had been changed to identify the FCVs as globe valves as part of the corrective actions for SCAR WBP880804SCAR4. The fact that the corrective actions of the SCAR were not thoroughly implemented to include changing figures in the system description that were associated with the table was addressed in IR 50-390,391/94-37.

The applicant initiated DCN S-32848-A to revise System Description N3-3A-4002, Figures A-1 through A-6 to properly indicate valve types. In addition, a note was added to the system description in the area of the list of figures to inform users that detailed information on the systems could be found on configuration control drawings listed in the appropriate section of the system description.

The inspector reviewed the DCN and the system description and verified that the technical information was consistent between Table 9-1 and associated figures. In addition, the inspector conducted interviews with personnel in the applicant's nuclear engineering group and found that it is indeed the intent of the applicant to ensure consistency and accuracy of all information in the system descriptions. The inspector considered the actions appropriate to the significant item. The figures in system descriptions and similar documents are simplified flow schematics for understanding and identifying major components in system flowpaths and are utilized in various forms throughout the industry. No attempt is made to include or duplicate the information contained in controlled design output piping and instrument drawings. It is considered within the skill of nuclear engineers, operations personnel, and maintenance personnel to recognize the information in such figures as general in nature and to rely on detailed design drawings when modifying the system or developing procedures. However, it is appropriate when developing figures in system descriptions that the applicant make any information identified in the figures accurate and promptly correct any identified deficiencies. These guidelines are clearly documented in Procedure EAI-3.08, Maintenance of the Design Basis Document, Revision 5.

The inspector concluded the significance of the issue was minor and appropriate actions were taken to correct the deficiency and that no violation of regulatory requirements existed. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews, was reviewed and considered adequate by the NRC inspector. This item is closed.

12.12 (Closed) VIO 50-390/94-47-02, Failure to Properly Implement Design Control (low concern)

This VIO involved the failure to implement properly design attribute limitations of System Description N3-32-4002, Compressed Air System (auxiliary control air system), into alarm response procedures and annunciator setpoints. Procedure ARI 131-137, Alarm Response Instruction, Revision 0, for annunciator AUX AIR TR-A MOISTURE HI did not: 1) provide the alarm setpoint for MOISTURE in the auxiliary control air system in the same units as used for the design basis as stated in the system description (e.g., percent relative humidity versus dew point); and 2) provide information that the alarm setpoint (approximately 22 °F) was greater than the design basis of -40 °F as stated in the system description.

In a response to the violation dated July 19, 1994, the applicant concurred with the violation and stated the violation occurred because the system description did not clearly specify the system design basis dew point and reported the following:

- The system description identified that the air dryers were specified to deliver -40 °F air. Consistent with the applicant's response to Generic Letter 88-14, the design basis of the system was originally 18 °F below the lowest normal room temperature in accordance with Instrument Society of America (ISA) Standard 7.3. The lowest normal room temperature at Watts Bar for interior plant rooms, per the Environmental drawings, is 40 °F, therefore, the system design basis dew point temperature was 22 °F and the installed plant instrument was set to correspond to that. In addition, the applicant's response to Generic Letter 88-14 indicated that the testing acceptance criteria for the dew point was between -40 and 0 °F. The 0 °F dew point was established to provide operating margin between the -40 °F and the 6 percent relative humidity alarm setpoint.

The applicant's corrective actions and recurrence controls for the violation included the following:

- DCN S-27201-A revised System Description N3-32-4002 to clarify the design parameters for the equipment versus the design parameters for the system. The revision states that although the dryers were procured to provide a dew point of -40 °F, 0 °F dew point is considered the design dew point of the system.

- DCN S-31923-A revised System Description N3-32-4002 to define the alarm setpoint parameter for the AUX Air TR-A MOISTURE Hi Alarm. The system description now states that the ACAS system design dew point is 0 °F which is equivalent to 2 percent relative humidity based on the maximum temperature of the air stream (100 °F) at the outlet of the after coolers.

- System Description N3-32-4002 was source noted for the actions of VIO 50-390/94-47-02.

- DCN W-31268-A replaced the existing MOISTURE sensors with new sensors that would operate at a range sufficient to support the new alarm setpoint of 0 °F dew point. The DCN revised Calculation EPM-MEC-071789, EMS input, procurement documentation, and vendor documentation to support the new AUX Air TR-A and B MOISTURE Hi alarm setpoint.

- Change notices were incorporated into Procedure ARI 131-137, Alarm Response Instruction, Revision 0, which is on hold pending SPOC review of System 55. The changes also require that the system engineer be notified to evaluate MOISTURE contamination effects on components if the alarm setpoint is exceeded.

NRC acknowledged the applicant's response to the violation in a letter dated August 9, 1994. The inspector reviewed the violation, violation response, system description, alarm response procedure, calculations, DCNs, and WOs. The inspector identified no deficiencies and considered the applicants corrective action for the issue adequate. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. VIO 50-390/94-47-02 is closed.

12.13 (Closed) CDR 50-390/95-01, Damage to Kapton Insulation Involving Electrical Penetration Feed through Assemblies (low concern)

CDR 50-390/95-01, dated May 13, 1995, identified Kapton insulation damage to spare feed-through assemblies supplied by Conax Buffalo Corporation. The damage was identified prior to installation of the assemblies in the plant. The items had completed the applicant's receipt inspection process which contained a specific requirement not to open items that were sealed by the vendor. The applicant had previously identified insulation damage on feed-throughs for existing installations, but that damage was believed to have occurred after installation (SCAR WBSCA94055 - CDR 50-390/94-15). The assemblies are used in containment electrical penetrations and could have been installed in safety-related applications. Failure of assemblies, if damaged assemblies were installed, could cause a loss of safety functions which could adversely affect plant safety. The applicant determined the cause to be damaged assemblies supplied by the vendor. The applicant's corrective action included a joint TVA/Conax inspection of about 390 (number subsequently reduced to 369) spare feed-through assemblies in the warehouse, with 30 assemblies requiring repair and 14 designated as scrap.

The applicant initially documented this problem as PER WBPER940745 which was subsequently upgraded to SCAR WBSCA950010. As interim corrective action, feed-through replacement work was stopped on December 17, 1994. Additionally, the applicant contracted with Conax Buffalo Corporation to perform a 100 percent review of all spare Kapton insulated feed-through assemblies. The inspection was completed in March 1995.

The inspector reviewed the CDR, PER, SCAR, Conax Buffalo Corporation inspection reports, and associated documentation and performed inspections of selected spare penetration feed-through assemblies. The inspector performed inspections of ready-for-issue assemblies in warehouse Hut 5, assemblies on QA

hold identified for repair, and assemblies designated for scrap. The three categories (ready, hold, and scrap) were properly tagged and separately binned. The inspector identified no deficiencies with ready-for-issue, feed-through assemblies. Of the 369 feed-through assemblies, the final status was that 169 were ready for issue, 154 were awaiting QC inspection for release, 27 required repair, and 19 were designated for scrap. The inspector noted that assemblies had been delivered with varying degrees of protection for the Kapton insulated conductors and the polysulfone. More recent delivered feed-through assemblies (1984 and 1991 contracts) were individually wrapped and individually boxed. Older deliveries (1979 contract) were packaged together in multiple layers. All ready-for-issue, feed-through assemblies had been repackaged to the Conax Buffalo recurrence control requirements which consisted of mesh conductor protection on both ends, mesh protection over the polysulfone on both ends, individual bagging, and horizontal straight storage. The inspector reviewed the Conax Buffalo recurrence controls outlined in a Conax/TVA letter (RIMS T49950502819) dated April 17, 1995. The letter stated that Conax Buffalo had improved packaging of feed-throughs through procedural changes and method improvements and planned to further enhance standard packaging on future orders based on the results of feed-through examinations at Watts Bar. The letter also stated that during involvement with the applicant on this issue, Conax Buffalo had developed more thorough acceptance criteria for polyamide insulated conductors and was working with Kapton conductor suppliers to improve quality.

The inspector discussed the material receipt inspection process as it applies to feed-through assemblies with QA supervisory personnel. The inspector found that the receipt inspections were performed by looking at the outside of packaging for damage if the package was vendor wrapped as discussed above. If the package was not sealed, the feed-through assembly would be inspected and then repackaged prior to being binned. The inspector found that receipt inspections were consistent with Procedure QAI-10.04, Material Receipt Inspection, Revision 11. The inspector considered that the applicant's action on this issue was adequate. The applicant's verification activities conducted by QA for this open item, which consisted of document reviews and field inspections, were reviewed and considered adequate by the NRC inspector. CDR 50-390/95-01, Damage to Kapton Insulation Involving Electrical Penetration Feed-Through Assemblies, is closed.

12.14 (Closed) URI 50-390/95-33-01, Potential Reportability Screenings (low concern)

During a review of recently initiated PERs, distributed to the resident inspectors' offices during the first two weeks in April 1995, the inspector noted several PERs with questionable potential reportability screening determinations. Procedure SSP-3.06, Problem Evaluation Reports, Revision 16, requires the initiating supervisor to perform potential reportability screening in accordance with Procedure SSP-4.05, NRC Reporting Requirements. The potential reportability determination for 10 CFR 50.55(e) issues is documented on a form similar to Appendix E-1 of Procedure SSP-4.05, Revision 7, which provides two conservative "yes, no, or indeterminate" questions and decision making guidance. Question II on Appendix E-1 of Procedure SSP-4.05, 10 CFR 50.55(e) Screening Form Guidelines for Potential Reportability

Determination, requires that the deficiency being evaluated be identified as potentially reportable and be forwarded to the site licensing group for further evaluation if the evaluator cannot confirm that, if left uncorrected, the affected safety system or component could have performed its required safety function without reliance on future tests or operator actions. Adverse conditions on three PERs determined to be not potentially reportable, all initiated by maintenance personnel, appeared to have required operator actions and subsequent testing to ensure component or system operability and were questioned by the inspector. WBN site licensing personnel reviewed these PERs and stated that two had been incorrectly evaluated by site personnel. The inspector concurred with the applicant's explanation regarding the third PER's disposition. This concern was identified as a URI pending further applicant and NRC reviews.

All 15 PERs initiated by Maintenance in the preceding six months were subsequently reviewed by Site Licensing and two additional incorrect potential reportability determinations were identified. The applicant issued WBPER9500286 to document and resolve this adverse condition. To determine the extent of condition for this PER, all PERs issued by all organizations during the preceding six months were reviewed. Site Licensing identified four additional incorrect determinations from the approximately 145 PERs that had been determined to be not potentially reportable during this period. Subsequent full reportability evaluations by Site Licensing determined that none of the eight conditions were reportable in accordance with 10 CFR 50.55(e). However, the failure to follow procedures SSP-3.06, Problem Identification Reports and SSP-4.05, NRC Reporting Requirements, is identified as Example 2 of VIO 50-390/95-38-01, Failure to Follow Procedures for Design Control and Corrective Action Program. Based on the resolution of this issue, URI 390/95-33-01 is closed.

The inspector also noted that the SMRC review of these PERs failed to identify the incorrect potential reportability determinations. The only relevant SMRC responsibility defined in a formal WBN procedure is in paragraph 2.2 of SSP-3.06, which requires that the SMRC perform an overview of the PER. However, the SMRC charter, dated December 13, 1993, specifically states that the role of the SMRC for PER initiation includes a review of the potential reportability determination. The potential reportability determination is made by the initiating organization supervisor and is not subject to any documented, independent review other than the SMRC review after PER initiation.

At the close of this inspection period the CAP, cause analysis, and recurrence controls for WBPER950286 had not been approved.

Within the areas reviewed, one example of a violation for failure to follow procedures for PER reportability, was identified.

13.0 QA EFFECTIVENESS

13.1 QA Reviews of Open Items

During this inspection period the inspector assessed QA review of open item packages. These reviews are documented in paragraph 12. The inspector found that these reviews were adequate to assure that these packages contained appropriate information to close each respective issue with one exception. That exception, as discussed in paragraph 12.10, describes the failure by several levels of management and QA verification to reveal that a supplemental closure package for an NRC violation contained inaccurate corrective action completion status.

13.2 QA Oversight of Containment Cooling SP

As discussed in paragraph 2.5.1 of this report, the inspector reviewed the results of two QA assessment reports along with a PAC/AQ review associated with the Containment Cooling SP. These QA oversight activities were performed to verify that the Containment Cooling SP had been adequately implemented. The inspector determined that with the exception of issuance of operating procedures, the program had been fully implemented. That exception had been previously identified and was being tracked by QA.

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

14.0 EXIT INTERVIEW

The inspection scope and findings were summarized on June 16, 1995, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed the inspection results in detail. Dissenting comments were not received from the applicant. Proprietary information is not contained in this report.

Item Number	Status	Description and Reference
Bulletin	Closed	IEB - Loss of Non-Class 1E Instrumentation and Control Power System Bus During Power Operation (paragraph 12.1)
390/87-04	Closed	CDR - Potential Loss of ECCS Inventory Through Air Return Fans (paragraph 12.2)
390/89-200-07	Closed	OI - Inadequate Raychem Splices on Penetration Leads (paragraph 12.3)
390/91-09	Closed	CDR - Limitorque SMB-00 Torque Switch Roll Pin Failures (paragraph 12.4)

390,391/91-29	Closed	CDR - Pressure Locking and Thermal Binding of Gate Valves (paragraph 12.5)
390,391/91-04-02	Closed	IFI - Seal Liner Adequacy (paragraph 12.6)
390,391/92-06-01	Closed	IFI - Instrument Sensing Line UVAs (paragraph 12.7)
391/94-04-01	Open	VIO - Failure to Follow Procedure SSP-2.10 for Evaluation of Vendor Unit 2 Manual PM Deviations (paragraph 12.8)
390/94-05	Closed	CDR - Radiation Monitor Cables Crimps (paragraph 12.9)
390/94-13-01	Closed	VIO - Failure to Follow Procedures (paragraph 12.10)
390,391/94-37-02	Closed	URI - Use of Globe Valves Versus Gate Valves Shown on System Description Sketches (paragraph 12.11)
390/94-47-02	Closed	VIO - Failure to Properly Implement Design Control (paragraph 12.12)
390/95-01	Closed	CDR - Damage to Kapton Insulation Involving Electrical Penetration Feed Through Assemblies (paragraph 12.13)
390/95-33-01	Closed	URI - Potential Reportability Screenings (paragraph 12.14)
390/95-38-01	Open	VIO - Failure to Follow Procedures for Design Control and Corrective Action Program (paragraphs 4.0 and 12.14)
390/95-38-02	Open	IFI - Issuance of Operating Procedures (paragraph 2.5.1)
390/95-38-03	Open	IFI - PER Regarding FSAR Internal Panel Separation Requirements (paragraph 5.1)

15.0 LIST OF ACRONYMS AND INITIALISMS

ABGTS	Auxiliary Building Gas Treatment System
ACAS	Auxiliary Control Air System
ARI	Alarm Response Instruction
ASCO	Automatic Switch Company
AWG	American Wire Gauge
CAP	Corrective Action Program
CAQ	Condition Adverse to Quality
CAT	Construction Assessment Team
CATD	Corrective Action Tracking Document
CCRS	Computerized Cable Routing System
CDR	Construction Deficiency Report
CFR	Code of Federal Regulations
CI	Concerned Individual
CS	Core Spray
CVCS	Chemical Volume Control Systems
DBE	Design Basis Event
DBVP	Design Baseline and Verification Program
DCA	Drawing Change Authorization
DCN	Design Change Notice
DLMH	Damaged, Loose, or Missing Hardware
EAI	Engineering Administrative Instruction
ECCS	Emergency Core Cooling System
ECN	Engineering Change Notice
ECP	Employee Concerns Program
ECSA	Electrical Conduit Seal Assembly
ECSP	Employee Concerns Special Program
EGTS	Emergency Gas Treatment System
EMS	Equipment Management System
EQ	Environmental Qualification
ESQ	Equipment Seismic Qualification
F	Fahrenheit
FCV	Flow Control Valve
FDCN	Field Design Change Notice
FSAR	Final Safety Analysis Report
GTI	Generic Test Instruction
HELB	High Energy Line Break
HERS	Harsh Environment Records System
HFT	Hot Functional Testing
HVAC	Heating, Ventilation and Air Conditioning
HXCH	Heat Exchanger
IDI	Integrated Design Inspection
IEB	Inspection and Enforcement Bulletin
IEEE	Institute of Electrical and Electronics Engineers
IEN	Inspection and Enforcement Notice
IFI	Inspector Follow-up Item
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IR	Inspection Report
ISA	Internal Service Agreement
IVP	Independent Verification Program

kV	kilovolt
LCC	Lower Containment Cooler
LOCA	Loss of Coolant Accident
M&TE	Measuring and Test Equipment
MAI	Modification/Addition Instruction
MOV	Motor Operated Valve
MPAC	Maintenance, Planning, and Control (data base for WOs)
MSLB	Main Steamline Break
MTR	Motor/Minimum Training Radius
MTS	Master Tracking System
NA	Nuclear Assurance
NE	Nuclear Engineering
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation, Office of (NRC)
NUREG	(NRC) technical report designation
NWRT	Nuclear Wire Repair Tape
OB	Outboard
OD	Outside Diameter
OI	Open Item
PAC/AQ	Program for Assurance of Completion and Assurance of Quality
PAI	Plant Administrative Instruction
PER	Problem Evaluation Report
PIDG	Pre-Diamond Grip
PM	Preventive Maintenance
PMT	Post Maintenance Testing
PORV	Power-Operated Relief Valve
PPSP	Previous Procurement Substantiation Package
QA	Quality Assurance
QC	Quality Control
QMDS	Quality Maintenance Data Sheet
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RIMS	Records Information Management System
RPM	Revolutions Per Minute
RTD	Resistance Temperature Device
SAR	Safety Analysis Report
SCAR	Significant Corrective Action Report
SCR	Significant Condition Report
SI	Safety Injection
SIS	Safety Injection System
SMRC	Senior Management Review Committee
SOER	Significant Operating Experience Report
SOI	System Operating Instruction
SP	Special Program
SPOC	System Preoperation Checklist
SR	Surveillance Requirement
SSE	Safe Shutdown Earthquake
SSP	Site Standard Practice
SSER	Supplemental Safety Evaluation Report
SWEC	Stone and Webster Engineering Corporation
TBD	To Be Determined

TE	Temperature Element
TI	Temporary Instruction
TVA	Tennessee Valley Authority
UL	Underwriter's Laboratories
URI	Unresolved Item
UVA	Unverified Assumption
VCT	Volume Control Tank
VIO	Violation
VSR	Vertical Slice Review
WBN	Watts Bar Nuclear Plant
WO	Work Order
WP	Workplan
WR	Work Request

ATTACHMENT 1

SUMMARY OF NRC RESIDENT REVIEW OF AREA/ROOM TURNOVERS						
ROOM	HFT	DESCRIPTION	ACCEPTED BY PLANT	IRs	NRC REVIEW COMPLETE	COMMENTS
A208	Y	Containment Spray Pmp 1B-B	02-14-95	95-17	Y	
A209	Y	Containment Spray Pmp 1A-A	02-14-95	95-17	Y	
A210	Y	RHR Pmp Room 1B-B	01-27-95	95-17	Y	
A211	Y	RHR Pmp Room 1A-A	02-21-95	95-17	Y	
A216		U1 676' Pipe Chase	05-12-95			
A306	Y	Turbine Drivn AFW Pmp Room	04-18-95	95-06		Review in progress
A307		U1 Pent Room				
A308		U1 Pipe Chase				
A309	Y	CHG Pmp 1A-A	02-21-95	95-38	Y	
A310	Y	CHG Pmp 1B-B	02-21-95	95-38	Y	
A311	Y	CHG Pmp 1C	02-21-95			Review in progress
A312	Y	SI Pmp Room 1B-B	09-23-94	94-75	Y	
A313	Y	SI Pmp Room 1A-A	09-23-94	94-75	Y	
A406		U1 Pent Room				
A407	Y	VCT Room	11-21-94	95-38	Y	
A408		U1 RX Bldg Access Room				
A410		Seal Water HXCH 1A	11-21-94			
A411	Y	RHR & CS HXCH Room 1B-B	03-07-95	95-06 95-38	Y	
A412	Y	RHR & CS HXCH Room 1A-A	03-08-95	95-06		Review in progress
A423	Y	El 713 CVCS Valve Gallery	01-29-95	95-38	Y	
A428		U1 713 Pipe Chase		95-06		
A501		U1 S MS Valve Room				
A502		U1 S MS Valve Room				
A508		U1 PASS Room				
A516		U1 Shield Bldg Rad Mon Room				
A703		HVAC Room				

ATTACHMENT 1

SUMMARY OF NRC RESIDENT REVIEW OF AREA/ROOM TURNOVERS						
ROOM	HFT	DESCRIPTION	ACCEPTED BY PLANT	IRs	NRC REVIEW COMPLETE	COMMENTS
A706		Airlock to U1 S MS Valve Room				
A707		Letdown HXCH Room	05-12-95			Review in progress
A713		Airlock to U1 N MS Valve Room				
A801	Y	Aux Ctr Room				
A802		6.9KV SD Room A				
A803	Y	125V Vital Battery BD Room II	04-07-95	95-38	Y	
A804	Y	125V Vital Battery BD Room I	04-24-95	95-38	Y	
A805		580V SD BD Room 1B				
A809		U1 Personnel & Equip Access				
A811		U1 RX Bldg Equip Hatch	05-19-95			
A812		U1 RX Bldg Access Room				
A813		Refueling Room				
A816		EGTS Filter Room				
A821		480V SDBD Room 2A				
A822	Y	125V Vital Battery Bd Rm IV	04-18-95	95-38	Y	
A823	Y	125V Vital Battery Bd Rm III	04-18-95	95-38	Y	
A824		6.9KV SDBD Room B				
A825	Y	Aux Control Inst Room 1A				
A826	Y	Aux Control Inst Room 1B	04-24-95	95-38	Y	Housekeeping poor
A827	Y	Aux Control Inst Room 2A	03-25-95	95-38	Y	
A828	Y	Aux Control Inst Room 2B	03-25-95	95-38	Y	
A851		480 BD Room 1A				
A852		480 BD Room 1B				
A853	Y	125V Vital Battery Room II	09-09-94	94-61	Y	
A854	Y	125V Vital Battery Room I	09-09-94	94-61	Y	
A855		480V XFMR 1B				
A856		480V XFMR 1A				

ATTACHMENT 1

SUMMARY OF NRC RESIDENT REVIEW OF AREA/ROOM TURNOVERS						
ROOM	HFT	DESCRIPTION	ACCEPTED BY PLANT	IRs	NRC REVIEW COMPLETE	COMMENTS
A858		5th Vital Battery & BD Room				
A861		480V XFMR 2B				
A862		480V XFMR 2A				
A863	Y	125V Vital Battery Room IV	09-09-94	94-61	Y	
A864	Y	125V Vital Battery Room III	09-09-94	94-61	Y	
A865		480V BD Room 2B				
A866		480V BD Room 2A				
A901		U1 MG Set Room				
A902		PZR HTR XFMR Room Train A				
C107		24/48V Battery Room	05-18-95	95-38	Y	
C108		24/48V Battery BD & Charger Rm	05-19-95	95-38	Y	
C201		U1 Aux Inst Room				
C301		Cable Spreading Room				
C412	Y	Main Control Room				
C413		Relay Room				
D104	Y	D/G 1A-A	03-20-95	95-33	Y	
D105	Y	D/G 2A-A	03-20-95	95-33	Y	
D106	Y	D/G 1B-B	03-20-95	95-33	Y	
D107	Y	D/G 2B-B	03-18-95	95-33	Y	
D109		Pipe Gallery & Corridor	04-21-95	95-33	Y	
D203		Air Exh Room	04-18-95	95-33	Y	
D204		480V BD Room 1A	04-21-95	95-33	Y	
D206		Air Exh Room	04-18-95	95-33	Y	
D207		480V BD Room 2A	04-21-95	95-33	Y	
D209		Air Exh Room	04-18-95	95-33	Y	
D210		480V BD Room 1B	04-21-95	95-33	Y	

ATTACHMENT 1

SUMMARY OF NRC RESIDENT REVIEW OF AREA/ROOM TURNOVERS						
ROOM	HFT	DESCRIPTION	ACCEPTED BY PLANT	IRs	NRC REVIEW COMPLETE	COMMENTS
D212		Air Exh Room	04-18-95	95-33	Y	
D213		480V BD Room 2B	04-21-95	95-33	Y	
E101		U1 UHI Room				
E102		U1 Add Equip Bldg 740'				
E103		U1 Add Equip Bldg 752'				
I101		Electrical BD Room				
I102		ERCW Strainer Room A				
I103		ERCW Strainer Room B				
I105		ERCW Pump Room A				
I106		ERCW Pump Room B				
I107		HP FP Pump Room A				
I108		HP FP Pump Room B				
M101		Manhole 1				
M102		Manhole 2				
M103		Manhole 3				
M118		Manhole 18	06-08-95			
M119		Manhole 19				
M120		Manhole 20				
M121		Manhole 21				
M122		Manhole 22				
M123		Manhole 23				
M124		Manhole 24				
M125		Manhole 25				
M126		Manhole 26	05-12-95			
M127		Manhole 27				

ATTACHMENT 1

SUMMARY OF NRC RESIDENT REVIEW OF AREA/ROOM TURNOVERS						
ROOM	HFT	DESCRIPTION	ACCEPTED BY PLANT	IRs	NRC REVIEW COMPLETE	COMMENTS
M14A		Manhole 4A				
M14B		Manhole 4B				
M15A		Manhole 5A				
M15B		Manhole 5B				
M16A		Manhole 6A				
M16B		Manhole 6B				
M17A		Manhole 7A				
M17B		Manhole 7B				
M18A		Manhole 8A				
M18B		Manhole 8B				
M19A		Manhole 9A				
M19B		Manhole 9B				
R101	Y	SW Quad, Loop 1 702'-713'	06-12-95			
R102	Y	NW Quad, Loop 2 702'-713'	06-12-95			
R103	Y	NE Quad, Loop 3 702'-713'	06-12-95			
R104	Y	SE Quad, Loop 4 702'-713'	06-12-95			
R105	Y	Outside Crain Wall 702'-713'				
R110	Y	Reactor Cavity & Refueling Canal/Pit	05-11-95			
R111	Y	SW Quad, Loop 1 713'-755'	05-26-95			
R112	Y	NW Quad, Loop 2 713'-755'	05-26-95			
R113	Y	NE Quad, Loop 3 713'-755'	06-02-95			
R114	Y	SE Quad, Loop 4 713'-755'	06-02-95			
R116	Y	Accum Room 1	05-19-95			
R117	Y	Accum Room 2	05-26-95			
R118	Y	Accum Room 3				

ATTACHMENT 1

SUMMARY OF NRC RESIDENT REVIEW OF AREA/ROOM TURNOVERS						
ROOM	HFT	DESCRIPTION	ACCEPTED BY PLANT	IRs	NRC REVIEW COMPLETE	COMMENTS
R119	Y	Accum Room 4				
R120	Y	Fan Room 1				
R121	Y	Fan Room 2				
R122	Y	Regen/Letdown HXCH Room	05-02-95			
R123	Y	Airlock				
R124	Y	Seal Table Area				
R125	Y	SW Quad, Loop 1 756'-819'	03-25-95			
R126	Y	NW Quad, Loop 2 756'-819'	04-01-95			
R127	Y	NE Quad, Loop 3 756'-819'	04-01-95			
R128	Y	SE Quad, Loop 4 756'-819'	04-07-95			
R129	Y	Ice Condenser	04-05-94			
R131	Y	Airlock 757'	05-11-95			
R150	Y	Annulus				
Y121		U1 RWST	02-23-95	95-33	Y	
Y122		U1 CST				