



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
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September 30, 2013

Mr. Michael D. Skaggs
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Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 2 CONSTRUCTION - NRC INTEGRATED
INSPECTION REPORT 05000391/2013607

Dear Mr. Skaggs:

On August 17, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection of construction activities at your Watts Bar Unit 2 reactor facility. The enclosed integrated inspection report documents the inspection results, which were discussed on August 29, 2013, with you and other members of your staff.

This inspection examined activities conducted under your Unit 2 construction permit as they relate to safety and compliance with the Commission's rules and regulations, the conditions of your construction permit, and fulfillment of Unit 2 regulatory framework commitments. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the enclosed report documents one NRC-identified finding which was determined to involve a violation of NRC requirements. However, because the finding was a Severity Level IV violation and was entered into your corrective action program, the NRC is treating the violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the non-cited violation in the enclosed report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTENTION: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Watts Bar Unit 2 Nuclear Plant.

In accordance with 10 *Code of Federal Regulations* (CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

M. Skaggs

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Should you have questions concerning this letter, please contact us.

Sincerely,

/RA/

Robert Haag, Chief
Construction Projects Branch 3
Division of Construction Projects

Docket No. 50-391
Construction Permit No: CPPR-92

Enclosure: Inspection Report 05000391/2013607 w/Attachment

cc w/encl: (See next page)

Should you have questions concerning this letter, please contact us.

Sincerely,

/RA/

Robert C. Haag, Chief
Construction Projects Branch 3
Division of Construction Projects

Docket No. 50-391
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cc w/encl: (See next page)

* Previous Concurrence

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Letter to Michael D. Skaggs from Robert C. Haag dated September 30, 2013.

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 2 CONSTRUCTION - NRC INTEGRATED
INSPECTION REPORT 05000391/2013607

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PUBLIC

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-391

Construction Permit No.: CPPR-92

Report No.: 05000391/2013607

Applicant: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Unit 2

Location: Spring City, TN 37381

Dates: July 1 – August 17, 2013

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Approved by:

Robert C. Haag, Chief
Construction Projects Branch 3
Division of Construction Projects

EXECUTIVE SUMMARY

Watts Bar Nuclear Plant, Unit 2

This integrated inspection included aspects of engineering and construction activities performed by TVA associated with the Watts Bar Nuclear (WBN) Plant Unit 2 construction project. This report covered a seven-week period of inspections in the areas of quality assurance (QA), identification and resolution of construction problems, construction activities, and follow-up of other activities. The inspection program for Unit 2 construction activities is described in NRC Inspection Manual Chapter 2517, "Watts Bar Unit 2 Construction Inspection Program." Information regarding the WBN Unit 2 Construction Project and NRC inspections can be found at <http://www.nrc.gov/info-finder/reactor/wb/watts-bar.html>.

Inspection Results

- The NRC identified a Severity Level (SL) IV non-cited violation (NCV) of Title 10, Code of Federal Regulations, Part 50 (10 CFR 50), Appendix B, Criterion III, "Design Control," for the failure to ensure that the design basis requirements were correctly translated into the design documents and specifications. Specifically, the applicant failed to ensure that safety analysis report (SAR) information was correctly translated into the design documents for the fabrication and installation of the ice condenser personnel access doors for Unit 2. Based on the planned corrective actions described by the applicant, the performance deficiency is more than minor because it may require either an engineering evaluation to demonstrate that the as-built condition did not adversely affect the SSC's ability to perform its safety function or a change to the licensing basis. The inspectors determined this finding to be of very low safety significance. The applicant entered this violation into their corrective action system as PER 741744 to address the issues identified by the inspectors. (Section C.1.4)
- The inspectors concluded that concerns pertaining to several open items, including three construction deficiency reports (CDRs), one unresolved item (URI), two Temporary Instructions (TIs), one historical violation, one Three Mile Island (TMI) Action Item (AI), and one other open item have been appropriately addressed for WBN Unit 2. These items are closed.
- Other areas inspected were adequate with no findings identified. These areas included quality assurance; piping; mechanical systems and components; electrical systems and components; fire protection; pre-operational testing activities; various NRC inspection procedures (IPs); the Electrical Conduit and Conduit Supports Corrective Action Program; and refurbishment activities.

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REPORT DETAILS

Summary of Plant Status

During the inspection period covered by this report, TVA performed construction completion activities on safety-related systems and continued engineering design activities of the Watts Bar Nuclear (WBN) Plant, Unit 2.

I. QUALITY ASSURANCE PROGRAM

Q.1 Quality Assurance Oversight Activities

Q.1.1 Identification and Resolution of Construction Problems (Inspection Procedure 35007)

a. Inspection Scope

The inspectors continued to review problem evaluation reports (PERs), as part of the applicant's corrective action program, to verify that issues being identified under the corrective action program were being properly identified, addressed, and resolved by the applicant.

The inspectors reviewed actions associated with the following PERs:

- PER 461428, PER to evaluate NRC NCV 05000391/2011608-01
- PER 685494, American Society of Mechanical Engineers (ASME), Hardware Non-Conformance Historical Issue
- PER 621073 ASME, Hardware Non-Conformance for valve bonnet material specification requirements not being met for WBN-2-FCV-062-0128-A

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The issues identified in the PERs reviewed were adequately identified, addressed, and resolved.

Q.1.2 Safety Conscious Work Environment (Inspection Procedure 35007, Temporary Instruction 2512/015)

a. Inspection Scope

The inspectors reviewed existing program requirements and recent safety-related concerns identified by the applicant's and contractor's employee concerns programs. The inspectors also met with the employee concerns program coordinator and reviewed monthly and quarterly reports to verify that significant problems were properly identified, addressed, and resolved under the corrective action program.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors did not identify any issues or concerns regarding the ability of the applicant to provide a safety-conscience work environment.

II. MANAGEMENT OVERSIGHT AND CONTROLS

C.1 Construction Activities

C.1.1 Unit 1 and Unit 2 Construction Activity Interface Controls

a. Inspection Scope

The inspectors independently assessed applicant controls, associated with Unit 2 construction work activities, to prevent adverse impact on Unit 1 operational safety. The inspectors attended routine Unit 1/Unit 2 interface meetings to assess the exchange and sharing of information between the two site organizations. Periodic construction and planning meetings were observed, at least once per week, to assess the adequacy of the applicant's efforts to identify those construction activities that could potentially impact the operating unit. This included the review of select work activities, which the applicant had screened as not affecting Unit 1, to verify the adequacy of that screening effort. Additionally, the inspectors independently assessed select construction activities to verify that potential impacts on the operating unit had been identified and adequately characterized with appropriate management strategies planned for implementation. Furthermore, the inspectors performed independent walkdowns of select construction work locations to verify that controls to protect the operating unit provided an adequate level of protection and had been properly implemented.

Specific work activities observed included work associated with:

- Work Order (WO) 111026547, SUT System 32 WBN-2-PIPE-32-B Clean Procedure
- WO 114843762, EDCR2 54633, ABSCE Core Drill 0-SLV-304-C17055A
- Staging of temporary equipment in preparation for Component Cooling Water system flush (multiple work orders)

Specific work activities that the applicant had screened out as not affecting Unit 1 included, but were not limited to, electrical work activities and refurbishment activities.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

Overall, adequate management oversight and controls were in place for observed construction activities that could potentially impact the operating unit, and an adequate level of protection had been implemented.

C.1.2 Piping – Reactor Coolant System and Safety-Related Piping Work Observations and Verification of As-Built (Inspection Procedures 37051, 49053, and 49063)

a. Inspection Scope

The inspectors observed the cleanliness visual inspection for the reactor coolant system (RCS) loop four cold leg to verify the work activities and visual inspection was completed in accordance with the approved procedures.

The inspectors reviewed PER 501892, ASME Related Non Conformance, Class 2 (B) material installed in a Class I (A) application and observed the safety injection piping repair work activities associated with the PER corrective actions. The inspectors reviewed the work instructions and observed the pipe cutting activities to verify that the work activities were completed in accordance with the approved procedures including 25402-000-GPP-0000-N3503, "Piping Installation," Revision (Rev.) 5, and that pipe cleanliness was maintained in accordance with 25402-000-GPP-0000-M3505, "Piping System Cleanliness," Rev. 3.

In addition, the inspectors reviewed the as-built drawings and observed the integrated interaction and clearances construction completion walkdowns for portions of the containment spray discharge piping. This walkdown covered piping from the 2A containment spray heat exchanger nozzle through penetration A0442CM down to the 4-inch take-off pipe to support 72-2CS-R057. The inspections were conducted to determine if the as-built conditions met the design specifications for system, thermal, and seismic interactions. Additionally, the inspections verified that the walkdowns were completed in accordance with procedure SMP-4.0, "System Completion and Turnover," Rev. 7; WB-DC-20-32, "Integrated Interaction Program Screening and Acceptance Criteria," Rev. 5; and WCG-2-733, "WBN2 Seismic Category I Suspended Systems and Equipment Proximity Walkthrough Screening Evaluation Guidelines," Rev. 1.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The piping work activities observed and the integrated interaction program as-built walkdowns for the containment spray discharge piping for the 2A containment spray heat exchanger were conducted in accordance with the procedures.

C.1.3 Mechanical Components – Work Observation and Construction Refurbishment Process (Inspection Procedures 50073 and 37002)

a. Inspection Scope

The inspectors reviewed the work instructions and observed two inspections as part of the secondary side close out for steam generators (SGs) 3 and 4. This review included debris removal for SG 4. The inspectors reviewed two work orders, WO 112345414, WBN-2-SGEN-068-SG4, and WO 112325391, WBN-2-SGEN-068-SG3, to verify that the work activities were completed in accordance with the approved work instructions.

b. Observations and Findings

No findings were identified. The debris identified during the close-out inspection for SG 4 was removed.

c. Conclusions

The observed activities on SGs 3 and 4 were conducted in accordance with approved procedures.

C.1.4 Refurbishment Activities (Inspection Procedure 37002)

a. Inspection Scope

The inspectors observed general refurbishment activities inside the reactor building, including the configuration of the ice condenser personnel access doors. Inspectors reviewed the ice condenser vendor drawings and inspected the installation of the ice condenser personnel access doors for Unit 2 to verify that the doors were installed in accordance with the SAR.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

The inspectors identified the following violation of regulatory requirements:

Introduction: The NRC identified a severity level (SL) IV non-cited violation (NCV) of 10 *Code of Federal Regulations* (CFR) 50, Appendix B, Criterion III, "Design Control," for failure to correctly translate design basis requirements for the ice condenser personnel access doors into the approved drawings.

Description: On June 12, 2013, the inspectors walked down the containment building as part of the coatings inspection and identified that the Unit 2 ice condenser personnel access doors were installed with wood (approximately 2" by 2" by the partial height of the door) encapsulated within the shell of the steel doors. The inspectors reviewed Section 6.1.2 of the SAR which states that there is no wood inside containment. The inspectors reviewed the vendor drawings for the doors and determined that the doors were manufactured in accordance with the drawings to include wood encapsulated within the steel door. The doors were installed and approved as part of the historical Unit 2 construction activities.

The inspectors determined that the failure to translate the design basis requirements to the design documents, specifically, approving the design and installation for the ice condenser personnel access doors to include wood material as part of the fabrication was a performance deficiency. This performance deficiency was considered more than minor in accordance with Inspection Manual Chapter (IMC) 2517, "Watts Bar Unit 2 Construction Inspection Program," and IMC 2513, "Power Reactor Construction Inspection Reports," because it was similar to example 1 in IMC 0613. The performance deficiency represented an as-built SSC that did not meet the applicable design basis requirements. Based on the planned corrective actions described by the applicant, the performance deficiency is more than minor because it may require either an engineering evaluation to demonstrate that the as-built condition did not adversely affect the SSC's ability to perform its safety function or a change to the licensing basis. The inspectors determined this finding to be of very low safety significance in accordance with Section 6.5 of the NRC Enforcement Policy. Specifically, the applicant failed to correctly translate design basis requirements into the approved drawings and specifications for SSCs that are important to safety; however, this finding did not represent a breakdown in the applicant's QA program for construction related to a single work activity, or one with multiple significant examples. The applicant issued PER 741744, Wood insulation discovered in ice condenser personnel access door, to address this issue. No cross-cutting aspect was identified because the performance deficiency does not reflect present plant performance. The wood was installed prior to the reactivation effort of WBN Unit 2 in 2007.

Enforcement: 10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design bases for those SSCs are correctly translated into specifications, drawings, procedures, and instructions. In addition, Section 6.1.2 of the applicant's SAR states that there is no wood inside containment.

Contrary to the above, the applicant failed to ensure that the design basis requirements were correctly translated into the design documents and specifications. Specifically, the applicant failed to ensure that SAR information was correctly translated into the design documents for the fabrication and installation of the ice condenser personnel access doors for Unit 2.

Because this was a SL IV violation and the issue was entered into the applicant's corrective action program as PER 741744, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. This violation is identified as NCV 05000391/2013607-01, "Failure to Correctly Translate Design Basis Requirements into Design Documents and Specifications."

c. Conclusion

The applicant failed to translate the design basis requirements for primary containment into design documents for the ice condenser personnel access doors. The NRC-identified issue was entered into the applicant's corrective action program.

C.1.5 (Closed) Reactor Coolant Pressure Boundary Piping QA Review (Inspection Procedure 49051)

a. Inspection Scope

Background: As described in IMC 2517, TVA addressed WBN Unit 1 construction quality issues as part of the implementation of its nuclear performance plan (NPP). The results of the NRC inspection program were published in NUREG-1528, "Reconstitution of the IMC 2512 Construction Inspection Program for Watts Bar Unit 1." In 1985, construction on Watts Bar Units 1 and 2 was stopped due to the identification of multiple construction QA issues. TVA completed Unit 1 in 1995 but had conducted very little Unit 2-specific work since 1985. In 2007, TVA decided to finish the Unit 2 plant. As part of confirming that all issues and inspection requirements will be completed for Unit 2, a review of all NRC inspection reports was initiated to determine the status of the required IPs contained in NRC IMC 2512 which was in effect at the time construction was stopped. This effort was called the reconstitution process. The NRC used the results of the reconstitution process to identify areas which require additional inspections. The reconstitution of IPs dealing with the procedures and programs was determined to be unnecessary because these were common for both units, and the Unit 1 reconstitution effort confirmed that adequate reviews were completed as documented in NUREG-1528 and integrated inspection report (IIR) 05000391/2009602 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091210420), Section IV O.A.1. In addition, the reconstitution program determined that reactor pressure boundary piping QA program procedures for new activities performed in areas covered by IP 49051 would be inspected. The majority of the reactor coolant pressure boundary piping work activities were completed and inspected prior to Unit 2 construction reactivation in 2007. As a result, the inspection scope for new work was limited and included a sample of weld repairs, cleanliness, sensing line, and instrument line work activities.

Inspection Activities: The purpose of this IP was to determine whether technical requirements associated with reactor coolant pressure boundary piping (except for welding and nondestructive examination) have been adequately addressed and established in the construction specification, drawings, and work procedures and whether these controls were adequate. IIR 05000391/2009602, Attachment 3, documented some of these QA program reviews during a readiness inspection. In addition, inspectors performed applicable portions of this IP to ensure that the applicant had adequate procedures in place to cover the scope of new RCS piping work.

Portions of this IP have been previously addressed through inspection samples credited in the following inspection reports including some where IPs 49053 and 49055, reactor pressure boundary piping work observations and documentation reviews, were performed:

- 05000391/2009602 (ADAMS Accession No. ML091210420)
- 05000391/2010602 (ADAMS Accession No. ML101230144)
- 05000391/2010603 (ADAMS Accession No. ML102170465)
- 05000391/2010604 (ADAMS Accession No. ML103060240)
- 05000391/2010605 (ADAMS Accession No. ML110410680)
- 05000391/2012602 (ADAMS Accession No. ML12087A324)

- 05000391/2012603 (ADAMS Accession No. ML12123A156)
- 05000391/2012607 (ADAMS Accession No. ML12276A028)
- 05000391/2013604 (ADAMS Accession No. ML 13179A079)

The intent of this inspection effort was to perform a review of applicant procedures to include those previously reviewed such that this IP can be closed.

Section 02.01 of this IP required the completion of IP 35100, which was completed and documented in IR 05000391/2009602, Attachment 3.

Section 02.02 of this IP was used to determine if the applicant and each contractor had an established program for ensuring that all craft, examination, and inspection personnel associated with reactor coolant pressure boundary piping work are trained and qualified to perform their assigned tasks. The inspectors documented review of the applicant's procedures in IIR 05000391/2010602 associated with the limited construction scope for the reactor coolant pressure boundary piping to verify that the applicant had an established training program and that the implementing procedures had requirements for training or qualifications necessary to carry out the respective tasks.

Section 02.03 of this IP was used to determine if the applicant had an established audit program (including plans, procedures, and schedules) for monitoring the personnel, work, and quality control (QC) functions for the limited reactor coolant pressure boundary piping work related activities. The inspectors reviewed the audit plans and three completed QA surveillances as documented in IIR 05000391/2010602 to determine that the applicant had established an audit program for monitoring reactor pressure boundary piping work activities.

Section 02.04 of this IP was used to determine if appropriate and adequate procedures were included or referenced in the QA manual to ensure that specific work activities pertaining to reactor coolant pressure boundary piping were controlled and performed according to NRC requirements and SAR commitments. The following table documents the procedures reviewed as part of IIR 05000391/2011609 (ADAMS Accession No. ML11350A229), Section OA. 1.8, for safety-related piping QA review. The procedures used for the safety-related piping work activities were also applicable and used for RCS piping work activities. These were previously reviewed to verify that procedures met the criteria for each subsection in Section 02.04.

Section	RCS Pressure Boundary Attribute	Associated Procedures
02.04a	Purchase Documents	NPG-SPP-04.1 NEDP-8 25402-PRO-0002 25402-000-GPP-0000-N3705 25402-000-GPP-0000-N6102 25402-3DP-G06G-0001
02.04b	Receiving Inspections	NPG-SPP-04.2 25402-000-GPP-0000-N6104
02.04c	Storage and Issue	NPG-SPP-04.3 NPG-SPP-04.4

		25402-PRO-0007 25402-000-GPP-0000-N6204
02.04d	Handling	NPG-SPP-04.3
02.04e	Installation	25402-000-GPP-0000-N3503 25402-000-GPP-0000-N3504 25402-000-GPP-0000-N3506 25402-000-GPP-0000-N3701 25402-000-GPP-0000-N3702
02.04f	Cleanliness	25402-000-GPP-0000-N3505
02.04g	Design Changes	25402-3DP-G04-00062 25402-000-GPP-0000-N3105

Section 02.05 required completion of Section 02.01 for an expanded sample of onsite organization having QA/QC responsibilities relative to reactor coolant pressure boundary piping. At this time the additional sampling sections of 02.01 are not required as the procedures and organizations sampled thus far are adequate.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified. Below is a summary of each section of IP 49051:

- Section 02.01 – Complete
- Section 02.02 - Complete
- Section 02.03 – Complete
- Section 02.04 - Complete
- Section 02.05 - Not Required

c. Conclusion

The inspectors determined that procedures and audit material reviewed associated with the reactor coolant pressure boundary piping were adequate and established within quality assurance requirements. Based on the historical NRC inspections and the recent inspection efforts, a sufficient number of samples have been reviewed in order to consider IP 49051 closed.

C.1.6 (Discussed) Reactor Coolant Pressure Boundary Piping – Work Observation (Inspection Procedure 49053)

a. Inspection Scope

Background: As described in IMC 2517, TVA addressed WBN Unit 1 construction quality issues as part of the implementation of its NPP. The results of the NRC inspection program were published in NUREG-1528, "Reconstitution of the IMC 2512 Construction Inspection Program for Watts Bar Unit 1." In 1985, construction on Watts Bar Unit 1 and Watts Bar Unit 2 was stopped due to the identification of multiple construction QA issues. TVA completed Unit 1 in 1995 but had conducted very little Unit 2-specific work since 1985. In 2007, TVA decided to finish the Unit 2 plant. As part of

confirming that all issues and inspection requirements will be completed for Unit 2, a review of all NRC inspection reports was initiated to determine the status of the required IPs, contained in NRC IMC 2512, in effect at the time construction was stopped. This effort was called the reconstitution process. The NRC used the results of the reconstitution process to identify areas which require additional inspections. IIR 05000391/2009602, Attachment 2, documented the reconstitution results for IP 49053 and determined that the requirements of the IP were met for Unit 2; in addition, new reactor pressure boundary piping work or activities performed in areas covered by IP 49053 would be inspected. The majority of the reactor coolant pressure boundary piping work activities were completed and inspected prior to Unit 2 construction reactivation in 2007. As a result, the inspection scope for new work was limited and included a sample of weld repairs, cleanliness, sensing line, and instrument line work activities.

Inspection Activities: The purpose of this IP was to verify, by observation of various installation activities and record review, that requirements were met for reactor coolant pressure boundary piping. This IP included handling, protection, installation, cutting, grinding, bending, supporting, cleaning and flushing, quality-related inspections, inspector qualification, heat treatment, control of nonconforming items, as-built confirmation, and record keeping, as applicable. The following table lists the inspections that were performed under this IP.

IP Section	Inspection Report
02.01 Piping Activity Observation	05000391/2010604
	05000391/2010605
	05000391/2012602
	05000391/2012607
02.02 Semiannual Piping Activity Observation	05000391/2010602
	05000391/2010605
02.03 Piping Activities meet Procedure Requirements	05000391/2010603
	05000391/2010604
	05000391/2010605
	05000391/2012607

Section 2.04 and Section 02.05 of this IP are used to determine if the major components within the reactor coolant pressure boundary were completed as specified and to compare the as-built/final design drawings with the actual reactor coolant pressure boundary piping installation. The reconstitution determined the as-built inspection samples were met for RCS piping installed during the initial period of Unit 2 construction.

Section 02.06 required an expansion of the sample size as appropriate. At this time the additional sampling sections are not required.

Section 02.07 required additional inspections as determined by regional management using the historical systematic assessment of licensee performance (SALP) program. No additional samples are required. SALP is no longer in use.

b. Observations and Findings

No findings were identified. Below is a summary of each section of IP 49053:

- Section 02.01 – Complete
- Section 02.02 - Complete
- Section 02.03 – Complete
- Section 02.04 - Open
- Section 02.05 - Open
- Section 02.06 - Not Required
- Section 02.07 - Not Applicable

c. Conclusion

The inspectors determined that the work observations, procedures, and records associated with the reactor coolant pressure boundary piping met the applicable requirements. The inspection attributes noted in IP 49053, Section 02.01, have been met for handling, protection, and installation (to include cutting, grinding, bending, and supporting). Remaining activities associated with the reactor coolant system piping include cleaning, flushing, and as-built verification which may be inspected at the NRC's discretion and/or covered under other inspection procedures such as IP 37051, "Verification of As-Built" and preoperational testing inspections.

C.1.7 (Discussed) Electrical Cable – Work Observation (Inspection Procedures 51063 and 37002)

a. Inspection Scope

The Inspectors observed several cable pulling activities. The inspectors performed walkdown verification of the cable conduit and tray routes to determine if conduit completion and condition were adequate before the cable was installed. Work orders were reviewed against procedures and associated route cards to verify consistency with the latest revisions and to ensure that the cable route was clearly specified as design output. The inspectors observed the pull to verify that the cable was protected from sharp edges, that cable identification was preserved, proper bending radius was maintained, cable entry to terminal points was acceptable, pulling compounds and devices (break links, sheaves, etc.) were being appropriately utilized, unterminated cable ends were properly protected, and that QC was present and performing their assigned tasks. The inspectors reviewed the qualifications of craft and QC personnel to verify that they were properly qualified in accordance with the QA program and American National Standards Institute (ANSI) 45.2.6.

Specifically, the inspectors observed the following cable pull activities:

- WO 112578870, EDCR2 54637 2-PS-068-302-E Cable Tree 2PS302E
 - Cable 2PM1071E associated with 2-LI-68-335A-E
 - Cable 2PM1416E associated with 2-LI-3-38
 - Cable 2PM4791E associated with 2-LT-63-181-E
 - Cable 2PM1771E associated with 2-LI-3-106
 - Cable 2PM595E associated with 2-TE-68-43-E
 - Cable 2PM691E associated with 2-TE-68-65-E
 - Cable 2PM784E associated with 2-TE-68-60-E
 - Cable 2PM876E associated with 2-TE-68-83-E
 - Cable 2PM1480E associated with 2-PT-1-9B

- Cable 2PM1607E associated with 2-PT-1-20B
- WO 114097438, EDCR 55121 Lift, Pull-back, Re-train, Delete, Re-pull, Re-land, Install Cable 2PP625A and Associated Work
 - Cable 2PP625A associated with 2-MTR-72-27-A

The following samples were inspected:

- IP 51063 Section 02.02.c – 11 samples

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

Cable pull activities are generally being accomplished in accordance with site procedures and applicable standards and requirements.

C.1.8 (Discussed) Instrument Components and Systems – Work Observation (Inspection Procedures 52053 and 37002)

a. Inspection Scope

The inspectors evaluated portions of receiving inspection and storage activities pertaining to the instrument components and associated items selected for inspection under subsections b and c of Section 02.01, as required by the inspection procedure. The inspectors reviewed component identification and traceability to applicable receiving documents to determine if applicable requirements were being satisfied. Testing and qualification paperwork was reviewed for traceability to requirements and adequate documentation of findings for acceptability. Document review included verification of storage level, which was compared against observed storage conditions. Stored components were observed for indications of unidentified damage, deterioration, or other detriment. The inspectors reviewed warehouse nonconforming component handling procedures and walked through its implementation. Control and monitoring of storage conditions were verified by inspector walkdown and review of the past six months of surveillances. Qualifications of QC personnel responsible for environmental monitoring and receipt inspection were reviewed to ensure that signoffs were appropriate to the level of qualification. The transmitters inspected included four transmitters associated with the reactor trip system (RTS) process variable for the reactor coolant low flow trip (2-FT-68-48B-E, 2-FT-68-48D-F, 2-FT-68-71D-F, 2-FT-68-71A-D), one transmitter associated with the RTS process variable for the SG low-low level trip (2-LT-3-55-G), and one transmitter associated with the engineered safety features actuation system (ESFAS) process variable of containment high pressure (2-PDT-30-45-D).

The inspectors observed and inspected the completed installation of instrument components and associated items selected for inspection under subsections b, c, and e of Section 02.01, as required by the inspection procedure. The inspectors reviewed drawings and the vendor manuals and walked down instrument installations to verify that

location, configuration, and installation were completed in accordance with the latest approved drawings, specifications, and the updated master equipment list. The inspectors verified that installed equipment was adequately protected from adjacent construction activities, that cleanliness had been maintained, and that physical and electrical independence between redundant parts had been maintained. The inspectors reviewed work orders to verify that calibrated measuring and test equipment was used in support of the installations and that all required quality records were available and complete in support of the installation. The transmitters inspected included four transmitters associated with the RTS process variable for the reactor coolant low flow trip (2-FT-68-29D-F, 2-FT-68-29B-E, 2-FT-68-6A, 2-FT-68-6D-F), two transmitters associated with the ESFAS process variable of steam line low pressure (2-PS-1-2A-D, 2-PT-1-27A-D), and one pressure switch for the instrument air system (2-PS-1-138-A).

The following samples were inspected:

- IP 52053 Section 02.02.a – six samples
- IP 52053 Section 02.02.b – six samples
- IP 52053 Section 02.02.d – seven samples

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

Receiving inspection and storage activities were generally being controlled and performed in a manner which ensured that applicable requirements were satisfied and completed in accordance with project procedures and regulation. Completed work was generally in conformance with properly approved design output and was identified and protected in accordance with project procedures and regulation.

C.1.9 (Discussed) Instrument Components and Systems – Document Review (Inspection Procedure 52055)

a. Inspection Scope

The inspectors reviewed the final safety analysis report (FSAR) and both site and contractor procedures for applicable requirements governing record creation, completion, review, and retention affecting safety-related instrument components and associated items to verify that the appropriate levels of review and approval are specified in conformance with applicant commitments, as applicable. The inspectors reviewed the purchase order and procurement data sheets for eight transmitters associated with the reactor coolant low flow reactor trip signal and two transmitters associated with the steam line low pressure engineered safety features actuation system. This review was performed to determine requirements the applicant imposed upon the vendor and the mechanisms the applicant would apply to verify that the items received conformed to those requirements. Receiving records for those components were then reviewed to verify that they specified the applicable engineering and functional specification attributes, and that the instrument component characteristics, material,

performance test results, environmental and seismic qualification tests were met or otherwise noted. The inspectors reviewed records management through procedure review and direct observation, to include a review of the last six storage inspections performed at the remote storage warehouse in Spring City, TN. The inspectors verified that required storage conditions were maintained, audited, and that nonconforming item storage records were properly maintained.

The inspectors reviewed two installation work order records, one associated with the reactor coolant low flow trip (2FT-068-029B-E) and the other associated with the steam line low pressure ESFAS signal (2-PS-1-2A-D, 2-PT-1-27A-D), to verify that the most recent and approved design and construction documents were used during installation. The inspectors walked down the installations to verify that the specified instrument components and associated items were installed in the location specified on the master equipment list data sheets in the work order, that they met the physical separation and independence requirements of applicant procedure N3E-934, and that required protection was provided after installation. The installation and quality records were reviewed to verify that the applicable required inspections, as detailed in applicant procedures N3E-934 and 25402-000-GPP-0000-N3401, and ANSI N45.2.4-1972, were performed and that the records were complete and accurate.

The inspectors reviewed qualification records of two individuals who performed QC receipt inspections and of five individuals who performed QC installation inspections for instrumentation associated with the reactor coolant flow low trip (2-FT-68-29D-F, 2FT-068-029B-E, 2-FT-068-6A, 2-FT-068-6D-F) and the variable for the steam line pressure low ESFAS actuation (2-PT-1-2A-D, 2-PT-27A-D) to verify that they were sufficient to reasonably support qualification according to the requirements in ANSI N45.2.6 and TVA and Bechtel's QA Programs. The inspectors reviewed the qualification records of a QC inspector who performed storage inspections and a QC reviewer of those inspections for instrumentation associated with variable for the reactor coolant flow low trip (2-FT-68-48B-E, 2-FT-68-48D-F, 2-FT-68-71D-F, 2-FT-68-71A-D), the variable for the steam generator level low low trip (2-LT-3-55-G), and the variable for the containment high pressure ESFAS actuation (2-PDT-30-45-D). The inspectors verified that the records were sufficient to reasonably support qualification according to requirements in ANSI N45.2.6 and TVA and Bechtel's QA Programs. The inspectors reviewed the qualification records to verify that the records were maintained in a current status.

The inspectors reviewed an audit performed by Bechtel which focused in general on the areas of Engineering Document Construction Releases (EDCRs), material requisitions, field material requisitions, and work orders. In general, the inspectors reviewed the audit to verify that it was performed in accordance with schedule and functional areas established in the audit plan, the record was sufficient to verify that the intended purpose, and scope of the audit was achieved. The inspectors reviewed the PERs associated with the audit findings to verify that they had been reported in sufficient detail to permit a meaningful assessment. The audit did not relate to instrumentation components in the RTS or ESFAS. However, the inspectors were able to link a surveillance which took place after the audit and was associated with the activities of an air blow for a sensing line associated with 2-LT-3-107, which is associated with the SG low-low trip.

The following samples were inspected:

- IP 52055, Section 02.01, one sample
- IP 52055, Section 02.02.a, two samples
- IP 52055, Section 02.02.b, six samples
- IP 52055, Section 02.02.c, two samples
- IP 52055, Section 02.03, nine samples
- IP 52055, Section 02.06, one sample

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The applicant generally demonstrated adequate preparation, control, review, and evaluation of records, and all records reviewed reflected that requirements had been met. The applicant's system of records was generally functioning properly.

C.1.10 (Closed) Electric Cable – Record Review (Inspection Procedure 51065)

a. Inspection Scope

Background: The purpose of IP 51065 was to determine whether quality records pertaining to safety-related cable systems were prepared, reviewed, and maintained properly and those records demonstrated that associated work accomplished was consistent with NRC requirements and SAR commitments. This IP includes the evaluation of the control and review of quality records. IP 51065 also covers the review and evaluation of work and inspection records pertaining to receipt inspection, storage, installation, cable testing, raceway loading, personnel qualification, nonconformance and deviation reports, change control, and audits.

The reconstitution of this IP determined that inspection requirements were not fully met. Additional inspection was required for Sections 02.02.d, Cable Testing Records for 13 cables minimum; Section 02.03, Raceway Loading for 10 cable trays and eight conduits minimum; Section 02.04, Personnel Qualification Records; and Section 02.06, Change Control Records. Additionally, new work or activities performed in areas covered by this IP were reviewed as part of the rework inspection effort.

Inspection Activities: Direct inspection activities were not performed during this inspection period. In previous inspection reports, the inspectors performed inspection activities for Unit 2 in order to determine if the established record management system as it relates to safety-related cable systems satisfies NRC requirements and SAR commitments. The inspectors determined whether adequate preparation, control, review and evaluation of these records have been made, whether they reflect that appropriate requirements have been met and whether the system of records is functioning properly. The inspectors selected records associated with various safety-related power, control and instrument cables; cable connectors, splices, and support grips; terminations, lugs, tapes and pulling compounds; and fire barriers, seals and retardants.

Inspections associated with this IP have been documented in the following IIRs:

- IIR 05000391/2009602, Reconstitution Results (ADAMS Accession No. ML091210420)
- IIR 05000391/2009603, Section C.1.6 (ADAMS Accession No. ML092120326)
- IIR 05000391/2009604, Section C.1.9 (ADAMS Accession No. ML093030479)
- IIR 05000391/2010603, Section OA.1.1 (ADAMS Accession No. ML102170465)
- IIR 05000391/2010605, Section OA.1.12 (ADAMS Accession No. ML110410680)
- IIR 05000391/2011608, Section OA.1.13 (ADAMS Accession No. ML11311A082)
- IIR 05000391/2012602, Section C.1.8 (ADAMS Accession No. ML12087A324)
- IIR 05000391/2013603, Sections C.1.10, C.1.11, C.1.12, and C.1.13 (ADAMS Accession No. ML13134A239)
- IIR 05000391/2013604, Sections C.1.6 and C.1.8 (ADAMS Accession No. ML13179A079)

Inspection activities included:

- Reviewing records and procedures related to receipt inspection, handling and storage of electrical components and cables to ensure that they were procured, received, and stored in accordance with the purchase order requirements.
- Evaluation of the applicant's implementation of the QA Records CAP which included reviewing the results of sample assessments performed by the applicant in several areas to verify resolution of previously identified problems with retrievability, storage, and completeness and to resolve quality and technical problems.
- Reviewing a sample of electrical QA records that consisted of cables, cable trays, electrical conduit, and electrical equipment in order to verify that the records specified the correct component type and location, that the functional specifications were met, that the required QA/QC inspections were performed, and that they were complete and legible.
- Reviewing engineering documents regarding the design and installation of the feeder connecting the 2B-B emergency diesel generator (EDG) to the 2B-B 6.9 kilovolts (kV) shutdown board to determine whether NRC requirements, applicant commitments, and testing requirements were adequately met. The record review covered different aspects of the installation including cable splices and terminations, separation, documentation of completed installation, and cable testing.
- Reviewing revised drawings to verify that deficiencies were addressed and that the logic of operation is consistent with associated design documents.
- Reviewing cable testing records for cables inside and outside containment to confirm that required tests were performed, approved technical procedures were followed, test equipment was operated by qualified personnel, equipment calibration was current, and that test data results were properly documented.
- Reviewing documentation to determine that power and instrument cable raceways were properly filled to account for thermal and mass loading.
- Reviewing records associated with the training and qualification of quality control inspectors and field engineers to verify that the system for personnel qualification records was adequate and maintained current and that personnel were appropriately trained and qualified for their assigned tasks.

- Reviewing records associated with design and field changes to verify that timely reviews were conducted by qualified personnel, the appropriate type of change documents were used, and whether design changes were subject to adequate design control.
- Reviewing records to verify whether non-conformance reports were prepared for instances where non-conformances to design requirements were resolved through the design change process.

The following samples were inspected:

IP Section	Previously credited samples	Total
02.02.a	7 Samples (IIR 05000391/2009603 section C.1.6)	7
02.02.b	7 Samples (IIR 05000391/2009603 section C.1.6)	7
02.02.c	1 Sample (IIR 05000391/2009604 section C.1.9) 1 Sample (IIR 05000391/2013604 section C.1.6)	2
02.02.d	20 Samples (IIR 05000391/2013603 section C.1.10) 6 Samples (IIR 05000391/2013604 section C.1.8)	26
02.03	29 Samples (IIR 05000391/2013603 section C.1.11)	19 cable tray, 10 conduit
02.04	10 Samples (IIR 05000391/2013603 section C.1.12)	5 inspector, 5 craftsmen
02.05	1 Sample (IIR 05000391/2010603 section OA.1.1)	1
02.06	10 Samples (IIR 05000391/2013603 section C.1.13)	5 design change, 5 field change
02.07	1 Sample (IIR 05000391/2010603 section OA.1.1) 1 Sample (IIR 05000391/2010605 section OA.1.12)	2

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors reviewed the applicant's documentation for the new electrical cable construction work and concluded that this intent of the IP has been satisfied. IP 51065 is considered closed.

C.1.11 (Closed) Structural Concrete: Record Review (Inspection Procedure 46055)

a. Inspection Scope

Background: The purpose of this IP was to review documentation for additional concrete placements and associated records. This IP includes receipt inspection and material certification, installation inspections, nonconformance/deviation records, training/qualification records, and QA audits. As documented in IIR 05000391/2009602 (ADAMS Accession No. ML091210420), the reconstitution of this IP determined that the requirements for satisfying this IP were accomplished and documented in original construction reports. New work or activities performed in areas covered by this IP were reviewed as part of the rework inspection effort.

Inspection Activities: The Inspectors performed inspection activities for Unit 2, in order to determine if records for concrete, concrete constituents, repair concrete, installation, non-conformances and training met specifications. Specifically, the inspectors reviewed records associated with concrete for the refueling water storage tank (RWST) conduit missile protection slab and repair concrete used at various locations in Unit 2 over the past three years. For these activities, the inspectors reviewed records to verify the following:

- Required material characteristics, tests, and other specifications were met;
- concrete installation and curing were performed and inspected as specified;
- non-conformances were recorded and reports included the status of corrective actions for resolution; and
- QA/ QC and testing personnel were adequately qualified for their assigned duties and responsibilities.

The following samples were inspected:

- IP 46055 Section 02.01.a – Twelve samples
- IP 46055 Section 02.01.b – Two samples
- IP 46055 Section 02.02.a – Three samples
- IP 46055 Section 02.02.b – Two samples
- IP 46055 Section 02.02.c – no samples – Audits were not performed on new work and were unavailable for inspection

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors reviewed the applicant's documentation for the new construction work and concluded that the intent of the IP has been satisfied. IP 46055 is considered closed.

C.1.12 (Closed) Safety-Related Piping - Records Review (Inspection Procedure 49065)

a. Inspection Scope

Background: The purpose of this IP was to review a sample of safety-related piping records to determine whether the applicant's system for preparing, reviewing, and maintaining records was functioning properly; the selected records reflected work accomplished consistent with NRC requirements and SAR commitments; and the records indicated any potential generic problems, management control inadequacies, or other weaknesses.

The reconstitution of this IP determined that the requirements for satisfying this IP were accomplished and documented in original construction reports. New work or activities performed in areas covered by this IP were reviewed as part of the inspection effort.

Inspections associated with this IP have been documented in the following IIRs:

- 05000391/2009602, Section C.1.4 (ADAMS Accession No. ML091210420)
- 05000391/2009604, Section C.1.6 (ADAMS Accession No. ML093030479)
- 05000391/2009605, Section C.1.3 (ADAMS Accession No. ML100290703)
- 05000391/2010603, Section C.1.5 (ADAMS Accession No. ML102170465)
- 05000391/2011604, Section OA.1.1 (ADAMS Accession No. ML111810890)
- 05000391/2011607, Section OA.1.3 (ADAMS Accession No. ML112730134)
- 05000391/2011610, Section C.1.3 (ADAMS Accession No. ML12034A202)
- 05000391/2012602, Section OA.1.21 (ADAMS Accession No. ML12087A324)
- 05000391/2012604, Section OA.1.20 (ADAMS Accession No. ML12167A212)
- 05000391/2013605, Section C.1.8 (ADAMS Accession No. ML13220A640)

Inspection Activities: Direct inspection activities were not performed during this inspection period. In previous inspection reports, the inspectors performed inspection activities for Unit 2, to determine if the applicant's records system was working properly and that the records reflect work accomplishment consistent with regulatory requirements. Specifically the inspectors reviewed PERs related to nonconforming conditions on safety-related piping to verify that:

- They were legible, complete, and adequately reviewed;
- they were routinely processed through proper channels for resolution and determination of possible generic implications and trending;
- they were adequately identified, stored, and retrievable; and
- they included the status of corrective action or resolution and action taken to prevent recurrence if needed.

The inspectors also reviewed sets of personnel qualification records to verify that:

- A system existed to track and maintain qualifications, and met the requirements of the Quality Assurance Program Description (QAPD); and
- they were sufficient to reasonably support qualification for the work performed.

The inspectors also reviewed QA surveillances of work on safety-related piping and the associated PERs to verify that:

- The surveillances were performed as required by the QAPD and procedures;
- the surveillances were reported in sufficient detail to allow a meaningful assessment;
- the applicant had taken adequate corrective actions of unsatisfactory findings; and
- the corrective actions resolved the identified nonconforming conditions.

The following samples were inspected:

IP Section	Previously credited samples	Total
02.01	9 Samples (IIR 05000391/2012602 section OA.1.21) 8 Samples (IIR 05000391/2013605 section C.1.8)	17
02.02	5 Samples (IIR 05000391/2011607 section OA.1.3) 2 Samples (IIR 05000391/2013605 section C.1.8)	7
02.03	13 Samples (IIR 05000391/2011604 section OA.1.1) 2 Samples (IIR 05000391/2013605 section C.1.8)	15

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors reviewed samples of the applicant's documentation for safety-related piping work, and concluded that the intent of the IP has been satisfied. IP 46095 is closed.

C.1.13 (Discussed) Construction Refurbishment Process - Watts Bar Unit 2 (Inspection Procedure 37002)

a. Inspection Scope

The inspectors reviewed implementation of the refurbishment program. This included reviews of the documentation for the refurbishment of passive commodities and active components in the essential raw cooling water (ERCW) system. Previous inspections of refurbishment activities for the ERCW system were documented in IIR 05000391/2011603 (ADAMS Accession No. ML111370702), Section C.1.6; IIR 05000391/2011607 (ADAMS Accession No. ML112730134), Section C.1.11; and IIR 05000391/2011608 (ADAMS Accession No. ML11311A082). The applicant had previously turned over the ERCW system to the startup organization in 2011, however, it

was returned to construction due to the amount of work that was outstanding. On June 27, 2013, the system was turned over for a second time requiring further NRC inspection of final system refurbishment documentation. The inspectors reviewed updated refurbishment reports completed after the second system turnover (revision 1 reports) for active components and passive commodities for the ERCW system.

The applicant's pre-established minimum passive sample inspections had been previously completed in 2011. The applicant conducted 35 additional passive inspections after the first turnover period. The results were reviewed for all of the inspections to confirm appropriate inspections were performed and engineering evaluations were adequate. The inspectors chose three inspection reports of the 35 additional inspections conducted for detailed review. The three reports included piping attached to valves 2-CKV-067-0585-B, 2-VTV-067-0688B-B, and 2-RFV-067-1029B.

The inspector also reviewed WO documentation to confirm planned refurbishment activities were performed for 10 components (40 components had previously been inspected). The ERCW sampled components included four flow control valves, two throttle valves, two check valves, a temperature control solenoid valve, and a relief valve.

The following samples were inspected:

- IP 37002 Section 02.02.b – 10 samples
- IP 37002 Section 02.02.d – 3 samples

b. Observations and Findings

No findings were identified. For active components the applicant had conducted a 100 percent review of ERCW refurbishment WOs, including a re-review of those previously reviewed for the first turnover, to confirm refurbishment activities had been completed. This additional review was performed after the applicant had identified problems, such as missing WO documentation of refurbishment activities. The applicants' review disclosed some minor documentation changes and also some activities which had not been completed requiring additional WOs to be initiated. Therefore, the decision to perform a 100 percent review was prudent and the applicant indicated that this practice would continue as required by the current procedure. The applicant adequately documented refurbishment of active components in the ERCW system. For the sample selected, components were clearly categorized and supporting documentation for refurbishment was confirmed. The passive inspections were documented in accordance with program requirements. The three reports reviewed showed that some debris was left in the system and evaluations showed that the debris should be forced out of the system during system startup. The applicant's evaluations were adequate.

c. Conclusions

The active and passive refurbishment activities for the ERCW system met program requirements.

C.1.14 (Discussed) Nuclear Welding General Inspection Procedure (Inspection Procedure 55050)

a. Inspection Scope

The purpose of IP 55050 was to directly observe and determine whether safety-related welding activities were accomplished in accordance with regulatory requirements. The reconstitution effort described in IIR 05000391/2009602 (ADAMS Accession No. ML091210420) determined that the requirements of IP 55050 had been met based on documentation credited in portions of 37 historical inspection reports. New work or activities performed in the area covered by the IP have since been inspected as part of the rework inspection effort. IIR 05000391/2012604 (ADAMS Accession No. ML12167A212) documented a set of additional inspections performed by the inspectors as in-process welding continued. The following table has been updated and corrected to list the inspections that were performed to date under IP 55050.

IP Section	Inspection Report	Sample Quantity
02.01 – Base Material and Weld Filler Metal Compatibility	05000391/2009604 – 2 samples 05000391/2010602 – 2 samples 05000391/2010603 – 17 samples 05000391/2010604 – 1 sample	22
02.02 – Welding Procedures	05000391/2009604 – 1 sample 05000391/2010602 – 1 sample 05000391/2010603 – 4 samples 05000391/2010604 – 7 samples 05000391/2011603 – 1 sample	14
02.03 – Welder Qualification	05000391/2009604 – 1 sample 05000391/2010602 – 2 samples 05000391/2010603 – 6 samples 05000391/2010604 – 6 samples	15
02.04 – Production Welding	05000391/2009604 – 1 sample 05000391/2010602 – 2 samples 05000391/2010603 – 3 samples 05000391/2010604 – 3 samples	9
02.05 – Preheat and Postweld Heat Treatment	05000391/2010603 – 1 sample 05000391/2011603 – 3 samples	4
02.06 – Examination of Welds	05000391/2009602 – 3 samples 05000391/2010602 – 2 samples 05000391/2011603 – 14 samples 05000391/2011607 – 22 samples	41

b. Observations and Findings

No findings were identified.

c. Conclusions

As stated in IIR 05000391/2012604, the inspectors determined that safety-related production welding activities, materials, procedures, personnel qualifications, and

records were found to conform to regulatory requirements. This report provides a correction to the number of samples completed. This IP was considered closed in IIR 05000391/2012604 and will remain closed based upon this conclusion. However, for future welding activities on safety-related ASME and ANSI pressure boundaries, the NRC maintains the option to perform additional inspections per the applicable requirements of IP 55050.

C.1.15 (Discussed) Reactor Vessel Internals (Welding) Observation of Welding and Associated Activities (Inspection Procedure 55093)

a. Inspection Scope

The purpose of IP 55093 was to observe activities pertaining to field welding of reactor vessel internals to verify they were accomplished in accordance with regulatory requirements. IP 55093 was inspected and documented as closed in IIR 05000391/2012602 (ADAMS Accession No. ML12087A324). The table below shows the completed samples documented in IIR 05000391/2012602.

IP Section	Inspection Report	Sample Quantity
02.01 – Welding Identification	05000391/2011604	6
02.02 – Weld Preparation	05000391/2011604	6
02.03 – Welding Material	05000391/2011604	2
02.04 – Observation of Welding	05000391/2011604	6

IP 55093 instructs the inspectors to complete inspection samples from three areas listed in the IP. The inspection report shown in the above table lists the observations performed by the inspectors covered by one area (other safety related weld activities). This inspection included six completed stainless steel fillet weld locations joining the 3 inch diameter portion of the conical shape funnel guides and thermal sleeve tubes beneath the upper head of the reactor vessel. It is noted that this was the only reactor vessel internals welding activity completed by the applicant as part of new work that was associated with IP 55093. Thus, it was not possible for inspectors to obtain inspection samples from three areas, as described in the IP. The inspectors completed the inspection based on the one area that was available for inspection.

b. Observations and Findings

No findings were identified.

c. Conclusions

As stated in IIR 05000391/2012602, the observed reactor vessel internal welds, procedures, and records were found to conform to the applicable requirements. This report is being used to clarify that the inspectors completed all sections of the IP for the one area that was available for inspection. The IP could not be completed in its entirety because no other areas were available for inspection. IP 55093 was considered closed in IIR 05000391/2012602 and remains closed with the issuance of this report. However, if additional welding activities are performed, internal to the reactor vessel, the NRC maintains the option to perform additional inspections per the applicable requirements of IP 55093.

F.1 Fire Protection

F.1.1 (Discussed) Procedures - Fire Prevention/Protection (Inspection Procedure 64051)

a. Inspection Scope

The inspectors observed two construction activities using ignition sources to determine whether fire prevention procedure requirements were met. This included the handling and use of flammable materials and the use of combustible materials relative to locations of flammable ignition sources. Specifically, the inspectors observed hot work activities related to:

- WO 112876239, EDCR 52487 WBN-2-HGR-062-RB
- WO 111099021, WBN-2-DRV-063-0653 ASME Section III

The following samples were inspected:

- IP 64051 Section 02.08 – two samples

b. Observations and Findings

No findings were identified.

c. Conclusions

The applicant generally implemented adequate fire protection measures and controls to support Unit 2 construction activities and minimize impact on Unit 1 operational activities.

P.1 Pre-Operational Activities

P.1.1 (Discussed) QA Program-Documents Control (Inspection Procedure 35742)

a. Inspection Scope

The objective of this inspection was to confirm the applicant had a viable process to ensure the latest versions of documents are controlled and available to the staff. The inspectors reviewed the applicants' electronic document control system, the business services library. In addition, the inspectors reviewed the applicants' process for updating the FSAR and Technical Specifications (TSs).

b. Observations and Findings

No findings were identified. The applicant has established an electronic control system for drawings, manuals, TSs, procedures, and the FSAR. The TSs and FSAR were living documents, i.e. in draft form controlled by the licensing department with a procedurally controlled process for ensuring the final versions were completed and correspondence with NRC was completed for final approval. The living versions were contained in the electronic library.

c. Conclusions

The review showed that the applicant has a well-established electronic control system for documents. This satisfies inspection of Section II.1.b of the IP. Further NRC inspection of implementation is planned when further safety-related systems have been turned over to the startup organization.

P.1.2 (Discussed) QA Program-Design Changes and Modifications (Inspection Procedure 35744)

a. Inspection Scope

The objective of this inspection was to confirm that the applicant has established a temporary modification program which includes Unit 2. The inspectors reviewed procedure NPG-SPP-09.5, Temporary Modifications, Rev. 5, to ascertain whether the applicant has developed and implemented a QA program relating to the control of design changes and modifications that is in conformance with regulatory requirements.

b. Observations and Findings

No findings were identified. The inspectors confirmed that the corporate procedure for temporary modifications that currently covers Unit 1 will also cover Unit 2 once construction is completed.

c. Conclusions

The review determined that the applicant has plans in place for a Unit 2 temporary modifications process when needed. This satisfies the program review for the construction phase inspection for IP 35744. Further NRC inspection is planned if temporary modifications are initiated during the first six months of operation.

P.1.3 (Discussed) Maintenance Procedures Inspection (Inspection Procedure 42451)

a. Inspection Scope

The objective of this inspection was to confirm that the applicant has established a process for determining unique Unit 2 components which may need new or updated maintenance procedures for preventive and general maintenance. The inspectors reviewed the applicants' component list of unique Unit 2 equipment and maintenance procedure tracking information to verify unique Unit 2 components have been identified.

b. Observations and Findings

No findings were identified. The inspectors determined that the applicant has established a list of unique Unit 2 equipment that may require maintenance procedures, utilizing the master equipment list. The list appeared to be comprehensive, however, changes may be forthcoming as systems are completed. In addition, the applicant has established current needs for maintenance procedures and is tracking completion. Only limited progress has been made for safety-related components.

c. Conclusions

The review showed that the applicant has established a process for evaluating the maintenance procedure needs. However, further inspection is warranted to ensure the list is kept up to date. Further inspection is also planned to evaluate maintenance procedures as these are developed.

IV. OTHER ACTIVITIES

OA.1.1 (Discussed) TMI Action II.F.1.a, Noble Gas Effluent Monitors (Inspection Procedure 35007)

a. Inspection Scope

Background: As part of the response to the TMI accident, the NRC issued NUREG-0737, "Clarification of TMI Action Plan Requirements." Section II.F.1 established a requirement to install noble gas monitors that have the capability to detect and measure concentrations of noble gas fission products in plant gaseous effluents during and following an accident.

The previous inspection of this TMI action item for Unit 2 was documented in IIR 05000391/2013604 (ADAMS Accession No. ML13179A079). That report identified that the noble gas monitoring high range detectors (2-RE-255 and 256) and the skid-mounted sampling system (2-RE-90-119) had been set into place for the condenser vacuum exhaust effluent path. No electrical or signal circuitry had yet been installed.

Inspection Activities: In this inspection, the inspectors reviewed engineering specifications, electrical drawings, manufacturer's calibration records, material receiving reports, equipment manuals, and equipment qualification reports for equipment associated with noble gas effluent monitoring. The review was performed to verify equipment characteristics were consistent with those outlined in NUREG-0737. The review included evaluations of instrument system range, accuracy, energy response, redundancy, and reliability of equipment power supplies.

The scope of inspection included direct observations of installed components at the condenser vent exhaust and the sites for future installations of externally mounted radiation detectors that will monitor noble gas in the main steam lines. The observations were performed to verify appropriate selection, placement, and configuration of instruments in relation to areas to be surveyed by the monitors.

In addition, the inspectors conducted direct observations of radiation monitoring system components currently stored in construction warehouses 1, 4, and 8. The purpose of the inspection was to verify stored items were protected and were identifiable as to acceptance status and traceable to quality documentation.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

To date, the applicant had initiated the installations of three of seven noble gas monitoring systems required for this TMI action item. None of the installations had yet been fully completed. The inspectors were able to verify that design and selection of gaseous effluent monitors were consistent with the requirements specified in Table II.F.1-1 of NUREG-0737. Specifically, components purchased for installation in Watts Bar Unit 2 had sensitivities and operating ranges that were sufficient to monitor analyzed accident effluents, and were designed to be capable of functioning both during and following an accident. The design for the system power source was sufficient to assure a capability to obtain readings at least every 15 minutes during and following an accident.

c. Conclusion

The inspectors determined that activities were in progress to address the TMI action item. Further inspection of the noble gas monitoring system will be required.

OA.1.2(Discussed) TMI Action II.F.1.c, In-Containment High-Range Radiation Monitors (Inspection Procedure 35007)

a. Inspection Scope

Background: As part of the response to the TMI accident, Section II.F.1 of NUREG-0737 required applicants to install high range monitoring instrumentation with the capability to detect and measure the radiation level within containment during and following an accident. The previous inspection of this TMI action item was documented in IIR 05000391/2013604 (ADAMS Accession No. ML13179A079). That report identified that design output products for in-containment monitoring of radiation were consistent with the requirements of NUREG-0737.

Inspection Activities: The inspectors interviewed responsible design and procurement personnel and reviewed engineering specifications, electrical drawings, material receiving reports, equipment manuals, manufacturer's factory calibration records, and equipment qualification reports for equipment associated with in-containment radiation monitors. The review was performed to verify equipment characteristics were consistent with those outlined in NUREG-0737, and included evaluations of instrument system range, accuracy, energy response, redundancy, and reliability of equipment power supplies.

The scope of inspection included direct observations of the plant locations designated for future installation of high range radiation monitors in the upper and lower containment regions. The inspection was performed to verify that the locations in upper and lower containment were on opposite sides (i.e. on azimuths 180 degrees opposite each other), and that the designated placements would be similar to those on Unit 1.

In addition, the inspectors walked down storage locations for containment monitoring equipment that had not been installed. The review was performed to verify stored items were protected from extremes of temperature and humidity and were protected against damage or degradation. The inspectors reviewed tagging, markings, and documentation to verify stored items were identifiable as to their acceptance status and were traceable to quality assurance documentation.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

The inspectors determined that to date, the applicant had initiated the routing of electrical conduit to serve the four high range detector locations in containment; however, none of the electrical and signal conductors and none of the detectors had been installed. Observations of the proposed locations for the detectors determined that the locations in Unit 2 were consistent with Unit 1. Appropriately, all four locations were to be sited on outer containment walls at azimuths approximately 180 degrees opposite of each other. The proposed elevations of the two upper containment monitors would provide unobstructed views of upper containment from locations just below the polar crane deck. The designated locations of the two lower containment monitors would be appropriate for monitoring conditions between steam generators and associated coolant loops from perspectives on opposite sides of containment. The inspectors also determined that the requirement for the applicant to conduct in-place calibrations was not completed and would not be performed until the monitors are installed, operable, and appropriate procedures developed. In summary, the inspectors' review of available design and manufacturer's information determined that the design and selection of high range containment monitors were consistent with the requirements specified in Table II.F.1-3 of NUREG-0737. Components purchased for installation in Watts Bar Unit 2 had the specified sensitivities, operating ranges, and response times. The designs for physical placements of monitors were sufficient to assess accident conditions, addressed separation and redundancy requirements, and were evaluated to be capable of functioning both during and following an accident.

c. Conclusions

The inspectors determined that activities were in progress to address the TMI action item. Further inspections will be required to evaluate the in-containment monitoring systems.

OA.1.3 (Discussed) Generic Letter 1989-19, Request for Actions Related to Resolution of Unresolved Safety Issue A-47 "Safety Implication of Control Systems in Light Water Reactor (LWR) Nuclear Power Plants" Pursuant to 10 CFR 50.54(f) (Inspection Procedure 92701)

a. Inspection Scope

Background: In 1989, The NRC issued Generic Letter (GL) 1989-19 requesting action to resolve Safety Issue A-47, "Safety Implications of Control Systems in LWR Nuclear Power Plants" pursuant to 10 CFR 50.54 (f). GL 1989-19 concluded that all pressurized water reactor (PWR) plants should provide automatic steam generator overfill protection. Also, procedures and technical specifications for all plants should include provisions to verify periodically the operability of the overfill protection. Specifically for Group 1 plants (WBN Unit 2 design), GL 1989-19 affirmed that the design is acceptable provided that: (1) the overfill protection system is separate from the control portion of the main feedwater so it is not powered from the same power source, not located in the same cabinet, and not routed so that a fire is likely to affect both systems, and (2) plant procedures and technical specification include requirements to periodically verify operability of this system.

Inspection Activities: The inspectors reviewed the applicant's engineering complete closure report package documentation, the Watts Bar Unit 2 FSAR Section 7.0, "Instrumentation and Controls", and electrical control diagrams for the main and auxiliary feedwater systems. Direct observations of the protection and control cabinets were conducted to verify installations were consistent with the drawings.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusion

The inspectors determined that the SG level control logic is isolated from the SG level protection logic and the isolation is provided by the Westinghouse Eagle-21 process protection system. The inspectors determined that the SG level control system logic circuits are located in cabinets separate from the protection system logic circuits. Each SG's overfill protection logic utilizes separate instrument busses to initiate the 2-out-of-3 ESFAS feedwater isolation function. Each instrument bus is electrical isolated and energized from a separate power source. In addition, the inspectors determined that the WBN Unit 2 developmental technical specifications include surveillance requirements for the SG hi-hi water level feedwater isolation signal.

Further inspections will be required to verify the SG hi-hi level protection and level control system cable routing meets the fire protection requirements of GL 1989-19.

OA.1.4 (Discussed) Temporary Instruction 2500/19, Inspection of Licensee's Actions Taken to Implement Unresolved Safety Issue A-26: Reactor Vessel Pressure Transient Protection for Pressurized Water Reactors (PWRs) (Inspection Procedure 92701)

a. Inspection Scope

Background: The NRC issued Temporary Instruction (TI) 2500/19 in November, 1986, after a technical issue was identified concerning the safety margin-to-failure for PWRs should they be subject to severe pressure transients while at a relatively low temperature. Plants committed to design reviews, procedure changes, equipment modifications, operator training, and surveillance.

For Unit 1, the applicant designed and installed the cold overpressure mitigation system (COMS) to provide the capability, during relatively low RCS temperature, to prevent RCS pressure from exceeding allowable limits determined by 10CFR 50 Appendix G. The pressurizer power-operated relief valves (PORVs) are signaled to open by the COMS actuation logic if RCS pressure approaches an unacceptable pressure for the particular RCS temperature. The COMS instrument system actuation logic is to monitor both the RCS temperature and pressure whenever the temperature is below the arming setpoint (350 degrees F for Unit 1). COMS is manually armed and actuates automatically. Administrative controls are in place to deactivate specified injection sources when RCS temperature is below the arming setpoint. Inspection was performed and documented in

NRC inspection report 50-390/95-37 and 50-391/95-37 (ADAMS Accession No. ML072760547), which closed TI 2500/19 for Unit 1.

For Unit 2, the approach to address low temperature overpressure conditions is fundamentally the same as the Unit 1 approach. Unit 2 contains the same design PORVs as used on Unit 1. For Unit 2, the Unit 1 COMS analog circuitry has been replaced by a digital distributed control system (DCS). The DCS uses the same inputs and duplicates the function of the Unit 1 COMS analog controls. The valves and actuation circuitry will be tested in the same manner as used in Unit 1. The Unit 2 COMS will be manually armed at the temperature specified in the RCS Pressure and Temperature Limits Report (PTLR) to prevent pressure from exceeding 10CFR 50 Appendix G limits. Administrative controls for cold overpressure protection will remain unchanged.

Inspection Activities: The inspectors performed a review of Unit 2 COMS drawings, the COMS system description, and the FSAR to confirm the system design met the requirements as described in TI 2500/19. The inspectors reviewed WBT-D-2899, "Cold Overpressure Mitigation System (COMS) Setpoint Analysis," for the Watts Bar Unit 2 Completion Program, to confirm PORV lift setpoints were established to prevent pressure from exceeding 10CFR 50 Appendix G limits. The inspectors reviewed documentation to verify that the system will function as designed during and after a design basis earthquake. The inspectors reviewed Unit 1 general operating procedures for startup and shutdown to verify administrative controls and procedures were adequate with the expectation that controls will remain unchanged with respect to COMS for Unit 2. The inspectors reviewed 2-PTI-068-15, "Pressurizer Pressure and Level Control Preoperational Test," Rev. 0, to verify that the test will demonstrate the controls, interlocks, and setpoints of COMS and the pressurizer PORVs.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors concluded that the design and administrative controls for COMS at WBN Unit 2 provide an effective mitigation system for low-temperature overpressure transient conditions. Preoperational testing of COMS will take place as a prerequisite to hot functional testing. A review of COMS testing is recommended prior to closure of TI 2500/19.

OA.1.5 (Discussed) Temporary Instruction 2515/66, Inspection Requirements for IE Bulletin 84-03, Refueling Cavity Water Seals (Inspection Procedure 92701)

a. Inspection Scope

Background: The NRC issued TI 2515/66 to provide guidance for inspection followup to licensee's response to Bulletin 84-03, "Refueling Cavity Water Seals." Bulletin 84-03 notified licensees of a refueling cavity water seal failure at Haddam Neck and required licensees to evaluate the potential for and consequences of such a failure. TVA

responded by letter dated December 6, 1984, stating that such a seal failure was not a credible event at WBN and that all potential seal leakage could be adequately mitigated. The TVA analysis was based on documentation for an identically configured inflatable seal installed at Sequoyah Nuclear Plant.

WBN Unit 1 issued procedure MI-68.001, "Removal and Replacement of the Reactor Vessel Head and Attachments," which included requirements for seal shelf life, storage, pre-use inspection and testing, and subsequent destruction. Also abnormal operating instruction, AOI-29, "Dropped or Damaged Rod or Refueling Cavity Seal Failure," contained steps to assist operators in diagnosing seal leakage and corrective actions to mitigate the event. The requirements of Bulletin 84-03 were inspected using TI 2515/66 and was closed for Unit 1 in inspection report 50-390/94-73 and 50-391/94-73 (ADAMS Accession No. ML072750564). As of 2007, Unit 1 replaced the inflatable reactor cavity seal with a segmented passive seal.

Inspection Activities: Through interviews with applicant personnel, the inspectors determined that the applicant intends to install the inflatable reactor cavity seal prior to filing to the reactor cavity for open vessel testing. The inspectors reviewed WO 110959805 and applicable drawings to verify the original TVA analysis appropriately applied to the inflatable seal configuration for Unit 2. Calculation EPMJB102092 was reviewed to verify the reactor cavity water seal maximum leak rate calculation was generic to the Unit 2 inflatable seal and that sufficient makeup capacity exists from several sources. The inspectors reviewed abnormal operating instruction 1-AOI-29, Rev.0, as it applies to Unit 1, to confirm that operators are provided actions to respond to a refueling cavity seal failure.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified. The reactor cavity seal is not currently installed on Unit 2. A seal will not be required for use at Unit 2 until the reactor cavity is filled prior to open vessel testing. The inspectors observed that since WBN Unit 1 replaced the inflatable reactor cavity seal with a segmented passive seal in 2007, the maintenance instructions and procedures for seal shelf life, storage, inspection, and testing were only applicable to the Unit 1 reactor cavity seal.

c. Conclusions

Additional inspection activities are required prior to closure of TI 2525/66. Specifically, following installation of the reactor cavity seal, the inspectors should verify that Unit 2 maintenance instructions correctly apply to the Unit 2 seal configuration and that appropriate AOIs are issued for Unit 2.

OA.1.6 (Discussed) Inspection of Electrical Conduit and Conduit Supports Corrective Action Program (Temporary Instruction 2512/018, Inspection Procedure 51055)

a. Inspection Scope

Background: The Electrical Conduit and Conduit Supports Corrective Action Program (Conduit CAP) was developed by TVA to address programmatic and structural deficiencies associated with conduits and conduit supports. Section OA.1.14 of IIR 05000391/2010604 (ADAMS Accession No. ML103060240) documented previous inspection results and background details of the Conduit CAP.

Inspection Activities: The purpose of this inspection was to evaluate the adequacy of actions taken to address the Conduit CAP, and the review of adverse conditions involving the Conduit CAP which were programmatically characterized by TVA. This inspection focused on verifying as-built configuration of a number of modified and non-modified conduits and conduit supports. This included the review and field verification of the relevant sections of the engineering evaluation walkdown documentation packages. The engineering evaluation walkdowns performed by the applicant consisted of a visual evaluation of as-constructed installation to verify the seismic adequacy, structural integrity, and falling interaction hazards of pre-existing, safety-related seismic category IE and non-safety-related seismic category I(L) conduits and conduit supports by using qualification criteria guidelines and technical procedures, including documentation forms. The inspectors reviewed drawings, procedures, and instructions pertaining to conduit and conduit supports to determine if they had been adequately implemented and completed. The inspectors conducted interviews with personnel engaged in conduit support installation to confirm adequate performance of work in progress and completed work. The inspectors checked the actual installation of conduits to determine whether the proper material, bolts, anchors, and supports were installed. The inspectors assessed whether design changes were subject to adequate design control, including consideration of the impact of the change on as-built records.

During the implementation of the Unit 1 Conduit CAP, an initial assessment evaluated a representative population of seismic categories I and I(L) conduits and conduit supports located in different areas of the WBN Plant. The walkdown programs of Unit 2 Conduit CAP incorporated considerations for conduit attributes recommended in the Initial Assessment Report. The Unit 2 Conduit CAP addressed additional adverse conditions associated with configurations, conditions and areas which required unique evaluations and corrective actions. The inspectors performed as-built verifications of representative samples of the following main conduit attributes, conditions and areas representative of the seismic categories I and I(L) conduits and conduit supports:

Conduit Over-Spans (Seismic Category IE)

Conduit over-span refers to an as-built condition where an unsupported conduit segment extends across a distance which exceeds the design or installation requirements. As part of the Conduit CAP implementation, TVA identified and corrected these conditions by performing engineering evaluation walkdowns, refined design analysis and modification of discrepant conduits. For the following conduits with over-span attributes, the inspectors verified whether the Conduit CAP identified and corrected this attribute by reviewing calculations, Integrated Cable and Raceway Design System (ICRDS) records, engineering evaluation walkdown packages, engineering drawings, as-built conduit

spans between supports, conduit configurations and fittings, missing parts or mismatched support components:

- Conduit segment in 2-VC-292-3043A located between junction box No. 2-JB-292-TEE-A and pull box No.2-PBX-292-953-A
- Conduit segment in 2-VC-293-3049A located between pull box No. 2-PBX-292-965-A and pull box No.2-PBX-292-965-A
- Conduit segment in 2-VC-293-3426A located between junction boxes 2-JB-293-545-A and 2-JB-293-8111-A

One-hole Straps/Clamps Conduit Supports (Seismic Category IE)

This area of the Conduit CAP addressed installation deficiencies associated with one-hole clamps, which included excessive spans, improper installation, and mixing of parts from different manufacturers through EDCR 52938. This document identified and corrected deficient one-hole strap installations. The inspectors verified whether the Conduit CAP identified and corrected this attribute by reviewing EDCR 52938, Field Change Request (FCR) 55015A, FCR 54613A, WO Package 08-956627-017, and WO 08-956627-007. Specifically, the inspectors assessed whether the category IE conduits and supports were installed in the proper location, orientation, and were using the appropriate mounting hardware material and identification tag. The inspectors observed the installed configurations to verify that one-hole clamp supports have three components: 1) the strap, 2) the spacer, and 3) the anchor bolt assembly. The inspector also checked the installed configuration to verify that each strap matched the spacer of the same manufacturer and that the support span was within allowable limits. The following conduit segments were reviewed:

- Conduit segment in 2-VC-293-2188A between conduit supports 8956627-017-1 and 8956627-017-7
- Conduit segment in 2-PM-293-6586E between conduit support 8956627-007-3 and junction box 2-JB-293-3039E

Conduit Overweight (Seismic Category IE and I(L))

Conduit overweight refers to a condition where the weight of the electrical cables inside the conduit exceeded the maximum allowable weight for its conduit size as specified by installation or design requirements. As part of the Conduit CAP implementation, TVA corrected these conditions by evaluating a list of overweight conduits obtained from ICRDS. The inspectors performed inspections to verify whether the Conduit CAP identified and corrected this attribute by reviewing conduit calculations WCG-2-866, Revision 1, and WCG-2-863, Rev. 0, to determine if the conduits and conduit supports identified with overweight conditions were adequately evaluated. For the following conduits identified with overweight condition, the inspectors observed the as-built condition and compared it against ICRDS records, engineering evaluation walkdown packages, and engineering drawings:

- Conduit 2-4PLC-293-1136A
- Conduit 2-3VC-293-1593B
- Conduit 2-3VC-293-2056A

Typical Detail 55 Supports (Seismic Category IE)

Typical Detail 55 Supports refer to a support configuration in which a cantilevered steel tube was welded to a base plate that was usually mounted using concrete anchor assemblies. The Conduit CAP addressed a number of deficiencies affecting the design capacity of this conduit support type by performing engineering evaluation walkdowns and refined design analysis of discrepant conduit supports. The inspectors performed inspections to verify whether the Conduit CAP identified and corrected this attribute by reviewing calculations WCG-2-378 and WCG-2-796, walkdown packages, engineering drawings, and ICRDS records associated with Typical 55 attributes to determine if these adequately incorporated and evaluated the observed as-built condition of this support type. For the following conduit segments containing typical 55 supports, the inspectors observed the installed conditions to verify allowable conduit spans between supports, conduit support configuration, base-plate weldments, conduit fittings, and any damaged, missing or mismatched support parts:

- Conduit segment in 2-NM-293-3101G located between junction box 2-JB-293-621-G and penetration 2-PENT-293-31-G
- Conduit segment in 2-VC-293-1231B located between junction boxes 2-JB-293-252-B and 2-JB-293-TEE-B
- Conduit segment in 2-VC-293-6383E located between junction boxes 2-JB-293-2167-E and 2-JB-293-2169-E

Typical Detail 66 Supports (Seismic Category IE)

Typical Detail 66 Supports refer to a support configuration in which a cantilevered strut steel channel was welded to a base plate that was usually mounted using concrete anchor assemblies. The Conduit CAP addressed a number of deficiencies affecting the design capacity of this conduit support type by performing engineering evaluation walkdowns and refined design analysis of discrepant conduit supports. The inspectors performed inspections to verify whether the Conduit CAP identified and corrected this attribute by reviewing walkdown packages, engineering drawings, calculations, and ICRDS records associated with Typical 66 attributes to determine if these adequately incorporated and evaluated the observed as-built condition of this support type. For the following conduit segments containing typical 66 supports, the inspectors observed the installed conditions to verify allowable conduit spans between supports, conduit support configuration, base-plate weldments, conduit fittings, and any damaged, missing or mismatched support parts:

- Conduit segment in 2-PM-293-7869D between conduit supports 5783, 2-CSB-293-2168, and clamp ID 2170
- Conduit segment in 2-PM-293-7869D between conduit supports 5680, 5840, 5629
- Conduit segment in 2-PM-293-6439D between conduit supports 6750, 6748, 6746, 6747, to the T-connection

Non-Standard (Unique) Supports (Seismic Category IE)

Non-Standard (Unique) Supports refer to support configurations in which the as-built structure did not meet the main characteristics specified in a typical detail support drawing. The Conduit CAP addressed a number of deficiencies affecting the design capacity of this conduit support type by performing engineering evaluation walkdowns, refined design analysis and modification of discrepant conduit supports. The inspectors

reviewed records to verify whether the Conduit CAP identified and corrected this attribute by reviewing walkdown packages, engineering drawings, calculations, and ICRDS records associated with unique support attributes to determine if these adequately incorporated and evaluated the observed as-built condition of this support type. For the following conduit segment containing unique supports, the inspectors observed the installed conditions to verify allowable conduit spans between supports, conduit support configuration, base-plate weldments, conduit fittings, and any damaged, missing or mismatched support parts:

- Conduit segment 2-VC-293-1801B located between 2-FCV-63-98-B and penetration 2-PENT-293-7-B

Typical 107 and/or 52 Supports (Seismic Category IE)

Typical 107 and/or 52 Supports refer to as-built configurations where a conduit was attached to a cable tray. The Conduit CAP was developed to evaluate these conduit attributes especially when they were installed without the use of a flexible conduit. Since the Conduit CAP did not identify any non-conforming configuration of this type, the inspectors walked-down some safety significant areas of the plant to verify that there were no non-conforming supports of Typical 107 and/or 52. The following areas inside and outside wall of the Steel Containment Vessel (SCV) were walked-down by the inspectors:

- Area outside the SCV (i.e. annulus area) from elevation 713 and azimuth 40 to elevation 708 and azimuth 40.
- Area outside the SCV (i.e. annulus area) from elevation 708 and azimuth 40 to elevation 708 and azimuth 350.
- Area outside the SCV (i.e. annulus area) from elevation 713 and azimuth 40 to elevation 708 and azimuth 215.
- Area outside the SCV (i.e. annulus area) from elevation 708 and azimuth 215 to elevation 708 and azimuth 245.
- Area outside the SCV (i.e. annulus area) from elevation 708 and azimuth 245 to elevation 730 and azimuth 165.
- Area outside the SCV (i.e. annulus area) from elevation 730 and azimuth 165 to elevation 730 and azimuth 1.
- Area outside the SCV (i.e. annulus area) from elevation 730 and azimuth 165 to elevation 750 and azimuth 165.
- Area outside the SCV (i.e. annulus area) from elevation 750 and azimuth 165 to elevation 768 and azimuth 165.
- Area outside the SCV (i.e. annulus area) from elevation 768 and azimuth 165 to elevation 768 and azimuth 305.
- Area inside the SCV but just outside from the crane wall from elevation 702 and azimuth 65 to elevation 702 and azimuth 250.
- The inspectors walked-down in a full circle outside the SCV (i.e. annulus area) starting at from elevation 750 and azimuth 165.
- The inspectors walked-down close to the inside of the crane wall at elevation 746 and azimuth 233.

Christmas Trees (Seismic Category IE)

Christmas Tree attribute refers to conduit configurations with long cantilever length having multiple fittings and numerous flexible conduits. Christmas Tree configurations

were normally assembled with several conduits and supports. The Conduit CAP was developed to evaluate these conduit attributes especially when they were installed with extreme cantilever lengths. As part of the Conduit CAP implementation, TVA identified and corrected these conditions by performing engineering evaluation walkdowns, refined design analysis and modification of discrepant conduits. The inspectors reviewed records to verify whether the Conduit CAP identified and corrected this attribute by reviewing walkdown packages, engineering drawings, calculations, and ICRDS records associated with Christmas tree conduit attributes to determine if these adequately incorporated and evaluated the observed as-built condition of this support type. For the following conduit segments containing Christmas Tree configurations, the inspectors observed the installed conditions to verify allowable conduit spans between supports, conduit support configuration, base-plate weldments, conduit fittings, and any damaged, missing or mismatched support parts:

- Conduit 2-VC-293-2145B located between cable tray No. 2-4TRY-293-1919-1920-B and junction box 2-JB-293-TEE-B
- Conduit 2-VC-293-2142A located between cable tray No. 2-4TRY-293-1929-1930-A and junction box 2-JB-293-TEE-A
- Conduit 2-VC-293-2143-A located between junction box 2-JB-293-TEE-A and 2-FCV-67-139-A
- Conduit 2-VC-293-2144A located between junction box 2-JB-293-8522 and 2-JB-293-TEE-A
- Conduit 2-VC-293-1409 located between junction box 2-JB-293-8552 and 2-FSV-77-18-B
- Conduits 2-VC-293-2001B, 2-VC-293-2003B, 2-VC-293-2005, and 2-VC-293-2006B were in the process of being modified. The non-modified configuration was inspected and was found to be in compliance with the walkdown documentation. These conduits were located between junction box 2-JB-293-1037B and pull boxes 2-PBX-293-9046-B and 2-PBX-293-9047-B.

Conduits Installed on the Steel Containment Vessel (Seismic Category IE)

This attribute of the Conduit CAP was established to identify and evaluate installations of conduits on the SCV. The applicant determined that there were no installations of this type attached to the SCV. The inspectors reviewed WCG-2-883, Revision 1, "Safety-Related Conduits Attached to the Unit 2 SCV," a number of walk-down packages, and walked-down several areas with high probability of having such conduit installations to verify no seismic category IE conduits and conduit supports, within the Conduit CAP population, were installed on the SCV. The following areas inside and outside wall the SCV were walked-down by the inspectors:

- Area outside the SCV (i.e. annulus area) from elevation 713 and azimuth 40 to elevation 708 and azimuth 40.
- Area outside the SCV (i.e. annulus area) from elevation 708 and azimuth 40 to elevation 708 and azimuth 350.
- Area outside the SCV (i.e. annulus area) from elevation 713 and azimuth 40 to elevation 708 and azimuth 215.
- Area outside the SCV (i.e. annulus area) from elevation 708 and azimuth 215 to elevation 708 and azimuth 245.
- Area outside the SCV (i.e. annulus area) from elevation 708 and azimuth 245 to elevation 730 and azimuth 165.

- Area outside the SCV (i.e. annulus area) from elevation 730 and azimuth 165 to elevation 730 and azimuth 1.
- Area outside the SCV (i.e. annulus area) from elevation 730 and azimuth 165 to elevation 750 and azimuth 165.
- Area outside the SCV (i.e. annulus area) from elevation 750 and azimuth 165 to elevation 768 and azimuth 165.
- Area outside the SCV (i.e. annulus area) from elevation 768 and azimuth 165 to elevation 768 and azimuth 305.
- Area inside the SCV but just outside from the crane wall from elevation 702 and azimuth 65 to elevation 702 and azimuth 250.
- The inspectors walked-down in a full circle outside the SCV (i.e. annulus area) starting at from elevation 750 and azimuth 165.

Conduits Installed on the Reactor Coolant Loop Structure (Seismic Category IE)

This attribute of the Conduit CAP was established to identify and evaluate installations of conduits on the Reactor Coolant Loop (RCL) structures. The applicant determined that there were no seismic category IE conduits and conduit supports attached to the RCL structures. The inspectors reviewed a number of walk-down packages and walked-down RCL 2 and 3 structures to verify that there were no conduits and conduit supports of this type.

Conduits in Areas with High Thermal Differential (Seismic Category IE)

This attribute of the Conduit CAP was established to identify and evaluate installations of conduits on areas where a potential high temperature differential existed, including normal operating modes and under design basis accident conditions. The inspectors reviewed calculation WCG-2-361 Rev. 1, "Walkthrough Procedure of Unique Evaluations for Electrical Conduits and Conduit Supports," to verify that screening criteria would adequately evaluate conduit subjected to thermal loads. For the following conduit segments, the inspectors verified that the screening criteria were met:

- Conduit segment 2-VC-1261B located between penetration 2-PENT-293-009 and support 41531
- Conduit segment 2-VC-1975B located between penetration 2-PENT-293-009 and support 41531

The inspectors also reviewed calculation WCG-2-1313 Rev. 3, Thermal Affected Conduit and FCR 57130-A to verify outliers (i.e. conduit configuration not meeting the screening criteria) were adequately qualified by engineering calculations or modified per applicant design change process.

Conduits in Yard Structures (Seismic Category IE)

This attribute of the Conduit CAP was established to identify and evaluate installations of conduits on structures located in the yard area of the plant. The applicant determined that the Unit 1 Conduit CAP evaluated exposed conduit and supports in common areas of the yard, and the only remaining seismic category IE conduits and conduit supports for Unit 2 were within the pipe tunnel from the Auxiliary Building leading to the RWST. The inspectors walked-down the pipe tunnel from the Auxiliary Building leading to the RWST to verify that the remaining Unit 2 seismic category IE conduits and conduit

supports were adequately evaluated. For this attribute, the inspectors observed the installed conditions to verify allowable conduit spans between supports, configurations, conduit fittings, and any missing parts or mismatched support components for the following category IE conduit and conduit segments:

- Conduit segment 2-PLC-299-62E located between conduit supports 50535, 50536, 50537 and from junction box 1538E to 2 supports downstream
- Conduit segment 2-PLC-299-62G located between conduit supports 50535, 50536, 50537 and between conduit supports CS-AB-13959 and CS-AB-13966

Shake-space Crossing Conduit (Seismic Category IE and I(L))

This attribute of the Conduit CAP was established to identify and evaluate installations of conduits affected by differential motion during operation or other design basis conditions, including seismic movements. Inspectors reviewed calculation WCG-2-445 Rev. 4, WBN2 Shakespace Walkthrough Screening Evaluation Guidelines, to verify that screening criteria would adequately evaluate differential motion.

Inspectors observed the as-built configuration of several shakespace crossing conduits listed in Limited Scope Walk-down (LSWD) 3220, “WBN2 Shakespace Evaluation, ERCWT-A.” For the following conduit segments, the inspectors observed the installed conditions to verify that the screening criteria were met:

- Conduit segment 2-PLC-60F (ODS-3220-6) located between conduit supports CS-AB-13180-F59580A and CS-AB-13179-F59580A
- Conduit segment 2-PLC-61D located between conduit supports CS-AB-13180-F59580A and CS-AB-13179-F59580A
- Conduit segment ODS-3220-1 located between conduit right angle connection on south wall of ERCWT-A and two 1-hole clamp supports downstream

The inspectors also reviewed calculation WCG-2-759 Rev. 1, “WBN2 Shakespace Crossings – Resolution of Conduit Outliers,” to verify the applicant adequately resolved any outliers associated with the conduit, either through engineering calculations or through design change process. Conduit CAP Personnel involved with LSWD-3233 were interviewed to discuss documentation details and the walk-down of several conduits associated with this LSWD.

Category I (L) Conduit Walk-downs

The seismic category I(L) conduits and conduit supports were qualified, as part of the Conduit CAP, by performing walkdown screenings evaluations, documented in LSWD packages, and then performing additional evaluations using bounding analysis of the outliers (i.e. conduit configuration not meeting the screening criteria). The inspectors reviewed calculation WCG-2-349 Rev. 4, “WBN2 Seismic Category I(L) Conduit and Supports Walkthrough Screening Evaluation Guidelines,” to verify that applicable Conduit CAP commitments were incorporated and met.

The inspectors inspected the as-built configuration and reviewed the following LSWD packages to verify that outliers and the engineering disposition of either use-as-is, rework, or further evaluation met applicable screening and design criteria:

- LSWD-3058, Rev. 0, WBN2 Seismic Category I(L) Conduit and Supports
- LSWD-3021, Rev. 0, WBN2 Seismic Category I(L) Conduit and Supports

Other areas reviewed

The inspectors reviewed PER 143791 and PER 143796 to verify if deficiencies associated with conduit installation were properly addressed. These PERs were issued to address conduit installation deficiencies identified in Violation (VIO) 391/87-19-01 (Inspection Report 50-390/87-19 and 50-391/87-19, ADAMS Accession No. ML072530363). PER 143791 addressed several welding discrepancies and errors in the as-built dimensions. PER 143796 addressed issues associated with attachment welds not conforming to welding detail on drawing 47A056-04. The inspectors observed the as-built condition, of the conduit supports identified in these PERs, and compared it against PER records, engineering evaluation walkdown packages, and engineering drawings to determine if these matched the as-built condition. The following conduit supports were walked-down by the inspectors:

- Conduit support 0-CSP-292-18684X
- Conduit supports 0-CSP-292-1178 and 0-CSP-292-1179

The inspectors reviewed PER 143879 to verify if deficiencies associated with conduit installation were properly addressed. This PER was issued to address conduit installation deficiencies identified in Condition Deficiency Report (CDR) 391/87-18, "Deficiencies in installation of electrical conduit and conduit supports." The inspectors observed as-built condition of conduit 0-1P-292-6014 and compared it against PER records, LSWD 497, and engineering drawings to determine if these matched the as-built condition.

PER 143758, Revision 1, was issued to address conduit installation issues identified in CDR 391/86-59, "Qualification of ASCO solenoid valve conduit connector configuration." The inspectors reviewed this PER to determine if it was within the scope of the Conduit CAP.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusion

The inspectors concluded that the observed as-built configuration associated with conduits and supports was in accordance with procedures, and that all work associated with these installations was inspected, documented, and completed as stated in the Conduit CAP.

The Conduit CAP (TI 2512/018) will remain open pending inspection of the following:

- CDR 391/87-18, "Deficiencies in installation of electrical conduit and conduit supports"
- CDR 391/86-59, "Qualification of ASCO solenoid valve conduit connector configuration"
- Additional field verification of final as-builts for conduit attributes of unique supports and L-shaped cantilevers.

- Additional review of several programmatic aspects of the Conduit CAP, including the review of Procedure 25402-000-GPP-0000-N1213, Revision 1, "Walkdown Verification for Construction Area Completion and Damage, Loose, or Missing Hardware"

OA.1.7 (Discussed) Temporary Instruction 2512/019, Inspection of Watts Bar Nuclear Plant Design Baseline Corrective Action Program Plan (Inspection Procedure 92701)

a. Inspection Scope:

Background: An NRC Integrated Design Inspection of the WBN Unit 1 civil/structural area was conducted by the Special Inspection Branch of the Office of Nuclear Reactor Regulation (NRR) from July 13 through August 7, 1992. A primary focus of this inspection was to assess the adequacy of TVA's design control process in the civil/structural area at WBN Unit 1. This was accomplished by assessing: (1) TVA's implementation of licensing commitments and design criteria, and the technical adequacy of design documents for selected structures, piping and supports; (2) examination of installed supports, structures and equipment; and (3) assessment of programmatic controls for the implementation of the design and design changes in the civil/structural area. The items of concern from this inspection were captured in IR 50-390/92-201 (ADAMS Accession No. ML072680700). The applicant resolved the issues of concern and a subsequent NRC inspection, IR 50-390/93-201 (ADAMS Accession No. ML072690552), closed the items for WBN Unit 1. This scope of this inspection was to review select issues to ensure that the applicant had adequately captured and resolved the issues for WBN Unit 2. The following identified issues were selected for review:

- Combination of Seismic Category I(L) and Non-Seismic Piping Loads for Boundary Anchor Design
- Incorrect Use of Criteria for Equipment Rigidity Frequency
- Use of Certified Material Test Reports for Pipe Stress Analysis
- Use of U-Bolts as Pipe Clamps
- Lack of Analysis for Commodity Supports Attached to Flexible Structures
- Deficiency in Implementation of Integrated Interaction Program
- Use of Unconservative Approach for Anchor Analysis
- Use of Incorrect Factor of Safety for Anchors and Plates

Inspection Activities: To address Unit 2 actions, the inspectors performed the following:

- NRC inspection reports and correspondence between the applicant and the NRC were reviewed to verify that corrective actions were captured and implemented for Unit 2.
- Design documents were reviewed to verify that Unit 1 process changes were adequately included in Unit 2 construction design.
- Unit 2 work documents (i.e. WOs, EDCRs, Drawings) were reviewed to verify that Unit 1/2 design changes were adequately captured in Unit 2 construction work instructions.
- Personnel were interviewed to verify that the proper controls were established for Unit 2 design activities.

- Unit 1/2 analysis and evaluations were reviewed to ensure that they captured the corrective actions of the previously identified concerns.

Documents reviewed are listed in the Attachment.

b. Observations and Findings:

No findings were identified.

c. Conclusions:

Based on the review of the applicant's documentation and the actual completed work observed during this inspection period, the inspectors determined that the subject deficiencies were properly analyzed or corrected. Therefore, the follow-up of select Unit 1 issues, identified in IR 50-390/92-201, Integrated Design Inspection, is considered closed. However, further inspection is necessary to complete TI 2512/019.

OA.1.8 (Closed) TMI Action II.F.1.2.b, Iodine and Particulate Sampling (Inspection Procedure 35007)

a. Inspection Scope

Background: As part of the response to the TMI accident, Section II.F.1.2 of NUREG-0737 required applicants to provide onsite laboratory facilities for analyses of radiological samples and to establish a capability to sample gaseous effluent streams to detect post-accident releases of radioactive iodine.

The previous inspection of this TMI action item was documented in IIR 05000391/2011603 (ADAMS Accession No. ML111370702). In that inspection, the inspectors identified that the applicant intended to include the disposition of this action item with actions taken for TMI Action III.D.3.3, In-Plant Monitoring.

A related inspection of the applicant's capability to monitor and analyze samples for post-accident particulates and radioiodines was subsequently documented in IIR 05000391/2012605 (ADAMS Accession No. ML12220A536). In that report, the inspectors determined the applicant had established a sufficient capability to collect and analyze samples for particulates and radioactive iodine as prescribed by TMI action III.D.3.3.

Inspection Activities: The inspectors reviewed corrective action closure reports, conducted interviews with the applicant's radiological laboratory personnel, and examined the portable devices available to personnel for collection and transport of radiological samples. The review was performed to confirm the applicant had the capability to collect samples using sample media that will collect iodine selectively over Xenon (e.g., silver zeolite). In addition, the inspection interviews and observations were performed to verify that the applicant had the capability to remove sampling cartridges to a low-background, low-contamination area for further analysis.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

The inspectors determined that the applicant had established the capability required by TMI action II.F.1 to monitor iodine and particulates in plant effluent streams during a postulated accident, to conduct onsite analysis of samples, and to characterize post-accident releases of radioiodines and particulates. Based upon the inspection results, the inspectors determined that no further inspection of this requirement is needed.

c. Conclusion

The inspectors determined that a sufficient capability had been established to implement post-accident sampling of particulates as guided by TMI action II.F.1, Iodine Particulate Sampling. This inspection item is closed for Unit 2.

OA.1.9 (Closed) URI 05000391/2012610-01, “Discrepancies in Determining Reportability under 50.55(e)” (Inspection Procedure 92701)

a. Inspection Scope

Background: A December 2012 inspection documented in IIR 05000391/2012610 (ADAMS Accession No. ML13035A201) noted that the applicant had identified an apparent programmatic breakdown with control of field changes that had received “approvals with changes.” An unresolved item (URI) was opened to review the applicant’s resolution to this condition in order to better understand the factors necessary to reach a determination of reportability.

Subsequently, a related concern with evaluating and reporting significant breakdowns in quality assurance programs was documented in IIR 05000391/2013611 (ADAMS Accession No. ML13085A258). That concern was documented as apparent violation, 05000391/2013611-02, “Failure to Make Required 50.55(e) Report.” The apparent violation was later documented as one of three violations in IIR 05000391/2013614 (ADAMS Accession No. 13169A030). The violation dealt with a failure of the applicant’s screening process to identify the reportability of a breakdown of the applicant’s program for the dedication of commercial grade items.

Inspection Activities: The inspectors interviewed responsible management and reviewed documentation provided with PER 653083 to determine whether the condition identified in the URI had been adequately evaluated against the requirements of 10 CFR 50.55(e). The inspectors’ review included consideration for whether the actions established in the PER corrective action plan were sufficient to identify the extent of problems with screening for programmatic breakdowns, and whether actions would be sufficient to correct and prevent occurrences of flawed or omitted evaluations.

The inspectors noted that the original program deficiency with control of field changes had been subsequently re-screened by the applicant and had been determined to be reportable under 10 CFR 50.55(e). The applicant made an initial report to NRC in event notification 49209, dated July 22, 2013. This is considered another example of the violation for failure to report a condition under 10 CFR 50.55(e) that was identified as violation 05000391/2013611-02. The inspectors determined that the regulatory response to violation 05000391/2013611-02 will provide additional verifications that the applicant

had taken the necessary actions to assure proper evaluations and reporting under 10 CFR 50.55(e).

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the condition identified in the URI had been adequately evaluated against the requirements of 10 CFR 50.55(e). URI 05000391/2012610-01 is closed.

OA.1.10 (Closed) Corrective Action Tracking Document 50400-WBN-04: Cracking Problems in Safety Injection Accumulators (Inspection Procedure 92701)

a. Inspection Scope:

Background: This issue involving piping support discrepancies in one of the accumulator rooms was originally reviewed by the NRC in IIR 05000391/2012607 (ADAMS Accession No. ML12276A028) Section OA.1.2. While that inspection focused on one portion of the commitment of corrective action tracking document (CATD) 50400-WBN-04, the conclusion of that inspection effort was that the remaining aspects of CATD 50400-WBN-04 required further review. Unlike the aforementioned concern that was previously inspected, these concerns were isolated to WBN Unit 2, and were therefore not required to be corrected prior to WBN Unit 1 startup.

The commitment originated from a memo, dated February 15, 1996, from E.B. Ditto II to W.L. Elliott on the closure of CATD 50400-WBN-04 for WBN Unit 2. This CATD was transferred, by the applicant, by rolling the concerns to a licensing commitment (NC0960008001). This particular CATD describes weld quality discrepancies, captured from employee concerns IN-85-524-002 and IN-85-707-001, of pipe supports in WBN Unit 2 accumulator room #2.

Employee concern IN-85-524-002 stated "Hangers in Reactor 2 accumulator are not welded completely around the outside of the hanger. Due to other conduits & pipes in the way of welders." This implied that these welds were not ASME code compliant.

Employee concern IN-85-707-001 stated "Welds with bad-looking caps/ appearance Accumulator #2, Unit 2." This also provided two examples of such welds along with their approximate locations. These examples characterized the welds as not capped completely and poor welds which looked structurally inadequate.

Unit 2 Actions

All WBN Unit 2 safety-related piping and associated pipe supports have been reanalyzed under Watts Bar Unit 2 construction completion project - hanger and analysis update program (HAAUP) corrective action plan (CAP). The following actions were part of the HAAUP CAP:

- As-built data for piping and pipe supports was collected using walkdown procedure WDP-PD-2. The as-built walk down of welds was included in the scope of this procedure.
- All safety-related piping systems were rigorously analyzed using current design criteria and considered as-built data as design input.
- Piping support design calculations were performed considering as-built walk down data and revised loads.
- Pipe support modifications, as required, have been issued through the EDCR process.

In employee concern IN-85-524-002, no specific support number or location were provided. As stated above, as-built data for all safety-related pipe supports (including Unit 2 accumulator rooms) was collected using walkdown procedure WDP-PD-2. The scope of this procedure included collections of as-built weld data by qualified persons. Pipe support design calculations were performed considering as-built walkdown data (including as-built weld data) and current loads. Required pipe support modifications were issued to construction through the EDCR process. The existing (incomplete) welds were either qualified by calculation or modified. The requests for modifications were issued to construction through the EDCR process.

Regarding employee concern IN-85-707-001, specific examples of the deficiencies were provided to the applicant.

Example# 1: "Up ladder in to accumulator, look to immediate right, all the way against wall-horizontal strut not capped completely." While the support number or exact location was not provided, walkdowns by the applicant matched support #47A435-14-92 with the description of the support in that area.

As stated above under the HAAUP program, as-built data was collected for support #47A435-14-92 using walkdown procedure WOP-P0-2. The walkdown results were recorded in package WBN2-P0-063-2340-44. The weld of the horizontal strut was visually examined and no deficiencies were identified. The pipe support calculation #47A43514092 Rev.003 was performed considering as-built walk down data and current loads. This support was modified due to an increase in loads. The modifications are issued in EDCR 52492, DRA 52492-242,-243. As per DRAs, the horizontal strut (strut in question) was replaced by higher capacity strut. Therefore, the existing weld deficiency is not an issue.

Example# 2: "Up ladder to top, stand and look straight up- poor welds which look structurally inadequate; Hanger made of approx. 4" I-Beam instead of tube steel." A walk down was performed and support 2-62A827 matches with the description of the support in that area. The as-built data for support 2-62A827 was collected under the HAAUP program using walkdown procedure WOP-P0-2. The walkdown results were recorded in package WBN2-P0-062-1498-29. The welds between the tube steel and the I-beam were examined and no deficiencies were identified. The issued pipe support calculation 262A827 Rev.003 qualified existing I-beams, tube steel, and welds considering the as-built walkdown data and current loads. The as-built information and required modifications were issued in EDCR 52482, DRA 52482-025 and 026. The construction work to close these EDCRs is contained in commitment #111032150 as remaining Unit 2 actions.

Inspection Activities: To address Unit 2 actions, the inspectors performed the following:

- The applicant's final complete closure package was reviewed to understand the applicant's proposed approach to resolving the deficiency.
- NRC inspection reports and correspondence between the applicant and NRC were reviewed to verify that corrective actions were captured and corrected for Unit 2.
- Unit 2 governing work documents (i.e. WOs, EDCRs, Drawings) were reviewed to verify that Unit 2 design changes were adequately captured in Unit 2 construction work instructions.
- Personnel were interviewed to verify that the proper controls were established for any future work activities and that controls were in place to protect existing construction.
- Completed work and work in progress documentation was reviewed to ensure that construction quality records were present, legible, and supported the work that had been performed.
- Unit 2 completed and in-process work was reviewed to verify that it satisfied construction design documentation and was consistent with industry standards.

Documents reviewed are listed in the Attachment.

b. Observations and Findings:

No findings were identified.

c. Conclusions:

Based on review of the final complete closure package, the previous review of the applicant's methodology for addressing this concern, and the actual completed work observed during this inspection period, the inspectors determined that the subject deficiencies were properly analyzed or corrected. Therefore, CATD 50400-WBN-04 is considered closed.

OA.1.11 (Closed) VIO 391/86-14-03: Failure to Establish Measures to Ensure that Deviations from Specifications are Controlled (Inspection Procedure 92702)

a. Inspection Scope

Background: Violation (VIO) 391/86-14-03 was identified because design specifications and ASME codes, described in the FSAR, indicated that fasteners on piping supports in the safety injection pump room may require locking devices, but no locking devices were installed. QC had accepted the pipe supports verifying drawing requirements and not design requirements. VIO 391/86-14-03 was issued because deviations from specifications were not being controlled between design and output documents. To address the issue, the applicant committed to the following corrective actions:

- Revise the FSAR to remove reference to specifications and properly characterize commitments that relate to codes and standards;
- revise pipe support design criteria WB-DC-40-31.9 to require locking devices on new and modified pipe supports;

- revise design criteria WB-DC-40-31.16 to require high vibration areas, discovered during preoperational testing, be evaluated for the need of locking devices;
- DCA-S16000-20 incorporating note 245 into drawing 48A200-20, specifying if loose fasteners were identified on existing supports during routine maintenance, preoperational walkdowns, etc. locking devices shall be added; and
- training Lesson Plan PPT 301.028, instructs plant personnel in the identification of loose hardware.

In IIR 390,391/91-15, the inspectors reviewed the above corrective actions and they determined the corrective actions to be adequate for construction to be restarted. However; the violation was left open pending the applicant's commitment to revise the FSAR and submit it to the NRC.

Inspection Activities: The inspectors reviewed the applicant's final closure package and corrective action documents. The inspectors determined the applicant submitted revisions to the FSAR, to remove reference to specifications and properly characterize commitments that relate to codes and standards, per the committed corrective actions. In addition, the inspectors observed a sample of modified supports containing the required locking devices, reviewed training material and records, and reviewed post construction turnover walkdown procedures to verify the other corrective actions were implemented.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors reviewed the applicant's final closure package, including documentation for the corrective actions, and determined that the issues associated with VIO 86-14-03 were adequately addressed in the applicant's corrective action program. VIO 86-14-03, "Failure to Establish Measures to Ensure that Deviations from Specifications are Controlled," is considered closed.

OA.1.12 (Closed) Construction Deficiency Report (CDR) 391/79-22-07: Electrical Junction Boxes in Containment (TI 2512/036)

a. Inspection Scope

Background: The applicant reported to the NRC in accordance with 10CFR 50.55(e) a concern with the adequacy of junction boxes located inside containment to withstand pressure that could occur from a Loss of Coolant Accident or a Main Steam Line Break. This was documented as Nonconformance Report (NCR) EEB 79-8. This item was previously inspected and documented in IIR 05000391/2012605 (ADAMS Accession No. ML12220A536) section OA.1.7. The previous inspection determined that the Class 1E terminations were properly identified and the proposed corrective actions were adequate

and additional inspection activities were needed to verify field installation of the Class 1E Environmental Qualification (EQ) splices and terminal blocks.

Inspection Activities: The inspectors reviewed the engineering complete closure package, and the applicable work orders implementing the actions associated with PER 172639 to verify Unit 2 actions associated with the CDR were tracked appropriately. The inspectors conducted field observations to verify implementation of the actions proposed to address the issues identified in the CDR, including replacement of certain terminations in class 1E junction boxes with splices or installing EQ terminal blocks. The inspectors observed multiple splices located in junction boxes in harsh environments both outside and inside containment, including electrical penetrations in order to verify that they had been replaced with EQ splices and installed adequately.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusion

Based on the field samples taken and the review of the applicant's engineering complete closure package, as well as previous NRC inspection results, the inspectors determined that the applicant adequately addressed the issues identified in the CDR. CDR 391/79-22-07 is closed.

OA.1.13 (Closed) CDR 391/84-13: Moisture Intrusion into Safety-Related Equipment (TI 2512/036)

a. Inspection Scope

Background: The applicant reported to the NRC, in accordance with 10 CFR 50.55(e), a deficiency in which certain class 1E devices that are necessary to achieve accident mitigation and safe shutdown, did not have a seal provided, and there was no documentation available to show that moisture intrusion would not be a problem without a seal installed in the device. This was documented as Nonconformance Report WBN EEB 8405. Consequently, sealing requirements for certain pieces of equipment required to be qualified in accordance with 10 CFR 50.49 were not met. This could have caused the failure of safety-related equipment to function as required due to moisture intrusion. All equipment in need of sealing was identified and a final report for Unit 2 was issued however a project directive later directed that all 10 CFR 50.49 devices be replaced for Unit 2.

Inspection Activities: The inspectors reviewed the engineering complete closure package, and applicable work orders implementing the actions associated with PER 172615 to verify Unit 2 actions associated with the CDR were tracked appropriately. The inspectors held discussions with responsible personnel and reviewed supporting documentation to verify the adequacy of the corrective actions proposed. The inspectors conducted walkdowns to verify that affected devices such as solenoid valves and limit switches were properly installed and protected from moisture in accordance with the EQ program. The inspectors reviewed the EQ binder and Qualification

Maintenance Data sheet to verify that maintenance requirements are defined and that the EQ program ensures that EQ requirements are maintained for the affected devices. The inspectors conducted walkdowns and observed splices inside junction boxes to verify that they had been replaced with EQ splices. The inspectors observed in-process and completed work related to implementation of EDCRs associated with this CDR.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusion

Based on the field samples taken and the review of the engineering complete closure package, and technical evaluations, as well as the adequacy of the corrective actions to address the applicable EQ issues, the inspectors determined that the applicant adequately addressed the issues identified in the CDR. CDR 391/83-13 is closed.

OA.1.14 (Closed) CDR 391/85-30: Incorrect Equipment Cable Terminations in Harsh Environments (TI 2512/036)

a. Inspection Scope

Background: The applicant reported to the NRC, in accordance with 10CFR 50.55(e) as Nonconformance Report WBN 6224 and 6208, a condition in which some Class 1E equipment cable terminations located in harsh environments or below the computed maximum flood level were not terminated using approved end caps or EQ splices. This item was previously inspected and documented in IIR 05000391/2012605 (ADAMS Accession No. ML12220A536) Section OA.1.8. The previous inspection determined that the class 1E terminations were properly identified and proposed corrective actions adequate. Additional inspections were needed to verify field installation of the Class 1E EQ splices and end caps.

Inspection Activities: The inspectors reviewed the engineering complete closure package, and the applicable work orders implementing the actions associated with PER 143534 Rev. 1 to verify Unit 2 actions associated with the CDR were tracked appropriately. The inspectors conducted field observations to verify implementation of the actions proposed to address the issues identified in the CDR, including the replacement of splices and installation of end caps where appropriate. The inspectors took multiple field samples of splices located in designated harsh environments in order to verify that they had been replaced with qualified EQ splices and installed adequately.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusion

Based on the field samples taken and the review of the engineering complete closure package, as well as previous NRC inspection reports, the inspectors determined that the applicant adequately addressed the issues identified in the CDR. CDR 391/85-30 is closed.

OA.1.15 (Closed) Temporary Instruction 2515/71, Inspection of Licensees' Actions in Response to IE Bulletin 82-02 (Inspection Procedure 92701)

a. Inspection Scope

Background: The NRC issued Bulletin 82-02, "Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary of Pressurized Water Reactor Plants," to notify licensees and construction permit holders about incidents of severe degradation of threaded fasteners (bolts and studs) in closures of the reactor coolant pressure boundary, and to require appropriate actions. TVA responded to Bulletin 82-02 in a letter to the NRC dated February 6, 1985. The NRC issued TI 2515/71 to provide guidance for inspection of licensee's action in response to IE Bulletin 82-02. NRC inspection reports 50-390/85-08 and 50-391/85-08 (ADAMS Accession No. ML082190701) closed the bulletin for both units.

The issues described in Bulletin 82-02 were further addressed in NRC Information Notice 86-108, "Degradation of Reactor Coolant System Pressure Boundary Resulting from Boric Acid Corrosion," as examples of boric acid corrosion problems and the resulting damage from boric acid leakage. As a result, Unit 1 developed a boric acid corrosion control program that addressed these generic communications.

Inspection Activities: Based on the information provided in the background section, the objective of this inspection was to gather and evaluate sufficient information to make a determination as to whether TVA had adequately addressed Bulletin 82-02 for WBN Unit 2. Specifically, the inspectors reviewed the boric acid corrosion control program documents, which are applicable to both Unit 1 and Unit 2, to ensure the issues addressed in the generic communications were captured in plant procedures. The inspectors reviewed valve maintenance and bolted connection procedures to confirm that appropriate maintenance instructions exist to address installation and removal of threaded fasteners. The inspectors reviewed TVA General Engineering Specifications P.S.4.M.1.1 and P.S.4.M.1.5 to verify that the use of molybdenum disulfide is prohibited.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified. Unit 2 will implement the same boric acid corrosion program and use the same valve maintenance procedures as Unit 1.

c. Conclusions

Based on a review of the final closure package and the aforementioned inspection activities, the inspectors determined that the applicant appropriately addressed Bulletin 82-02 for Unit 2. This item, TI 2515/71, is closed for Unit 2.

OA.1.16 (Closed) TI 2515/111, Electrical Distribution System Follow-up Inspection

a. Inspection Scope

Background: On May 13, 2011, the NRC issued IIR 05000391/2011606 (ADAMS Accession No. ML 111370681). This report documented the Electrical Distribution System Functional Inspection (EDSFI) which reviewed the loading on the various electrical sources (e.g., diesel generators, batteries, shutdown board, and distribution components), and the coordination and protection of safety-related electrical equipment. This report identified an unresolved item (URI 05000391/2011606-01) noting several examples of electrical issues. Each issue was addressed and subsequently closed during follow-up inspections documented under NRC IIR 05000391/2011608 (ADAMS Accession No. ML11311A082), IIR 05000391/2011612 (ADAMS Accession No. ML11348A081), and IIR 05000391/2012602 (ADAMS Accession No. ML12087A324). Corrective actions associated with NCV 05000391/2011606-02 for failure to provide an adequate technical basis for an increase in circuit breaker interrupting rating generated during the EDSFI inspection was reviewed and closed in IIR 05000391/2012602. The NRC issued TI 2515/111 to provide guidance for follow-up inspection of findings from EDSFIs.

Inspection Activities: In the IIRs listed in the above background section, the inspectors previously assessed the capability of the electrical distribution system (EDS) to perform its intended safety function during plant operating and accident conditions and reviewed design basis calculations for the EDS, including the loading on various electrical sources such as emergency diesel generators, batteries, and shutdown boards, to evaluate whether they were coherent, accurate, and complete for supporting dual unit operation. Specifically, the inspectors performed detailed review of 11 electrical calculations focusing on cable ampacity, voltage analysis, load flow, transformer sizing, circuit protection & coordination, vital battery system, and diesel generator loading. The inspectors also reviewed FSAR descriptions, design specifications, drawings, system descriptions, and other design documents to verify the assessment of the EDS design. The inspectors reviewed selected references supporting calculations to confirm selected design inputs and assumptions. The inspectors interviewed responsible personnel, performed field walk-downs, and observed software analysis. The inspection team reviewed the design inputs used in TVA's Electrical Transient Analyzer Program (ETAP) from the EDG loading calculation to verify that the ETAP program matched the assumptions and conclusions of the calculation in dealing with the time zero loads in the EDG loading sequence. Findings from the Unit 2 EDSFI were previously inspected to ensure appropriate corrective actions were implemented.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that findings from the Unit 2 EDSFI were previously addressed. There were no outstanding open or unresolved items. This item, TI 2515/111, is closed.

V. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

An exit meeting was conducted on August 29, 2013, to present inspection results to you and other members of your staff. The inspectors identified that no proprietary information had been received during the inspection and none would be used in the inspection report. The applicant acknowledged the observations and provided no dissenting comments.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Applicant personnel

J. Adair, TVA – Engineering
H. Baldner, TVA - Licensing
R. Baron, TVA – QA Manager
D. Beckley, Bechtel – Electrical Design
J. Boykin, TVA – QA Specialist
R. Brown, Bechtel - Engineering
D. Charlton, TVA – Licensing
J. Clark, TVA – QA Specialist
T. Das, Bechtel – Engineering
J. Dizon, FRC – Design Engineer
S. Eder, FRC – Design Engineer
J. Fisher, TVA – Licensing
B. Gillham, TVA - Licensing
R. Goyal, Bechtel – Civil Engineering
D. Helms, TVA - Engineering
R. Hruby, TVA – General Manager
J. Kepler, TVA – Control Systems Supervisor, Unit 2
K. Leko, Bechtel - Procurement
K. Lovell, TVA – PM and Refurbishment
B. Mahoney, Bechtel – Field Engineering
M. McGrath, TVA – Licensing
J. O'Dell, TVA - Regulatory Compliance
R. Onis, TVA – QA Oversight
R. Rieger, Bechtel – Field Engineering
D. Sibley, Bechtel – Civil Engineering
G. Scott, TVA – Licensing
M. Skaggs, TVA – Senior Vice President
J. Temples, Bechtel – Instrument Design
A. Terril, Bechtel – Instrument Design
E. Woods, TVA – Radiochemistry Laboratory
O. J. Zeringue, General Manager Engineering and Construction

INSPECTION PROCEDURES USED

IP 35007	Quality Assurance Program Implementation During Construction and Pre-Construction Activities
IP 35742	QA Program (Document Control)
IP 35744	QA Program (Design Changes and Modifications)
IP 37002	Construction Refurbishment Process - Watts Bar Unit 2
IP 37051	Verification of As-Builts
IP 42451	Maintenance Procedures
IP 46055	Structural Concrete Record Review
IP 49051	Reactor Coolant Pressure Boundary Piping QA Review
IP 49053	Reactor Coolant Pressure Boundary Piping - Work Observation
IP 49063	Piping - Work Observation
IP 49065	Safety-Related Piping-Records Review

IP 50073	Mechanical Components – Work Observation
IP 51055	Electrical Components and Systems – Record Review
IP 51063	Electrical Cable – Work Observation
IP 51065	Electrical Cable – Record Review
IP 52053	Instrument Components and Systems - Work Observation
IP 52055	Instrument Components and Systems - Record Review
IP 55050	Nuclear Welding General Inspection Procedure
IP 55093	Reactor Vessel Internals (Welding) Observation of Welding and Associated Activities
IP 64051	Procedures - Fire Prevention/Protection
IP 92701	Follow-up
IP 92702	Follow-up on Corrective Actions for Violations and Deviations
TI 2500/19	Inspection of Licensee's Actions Taken to Implement Unresolved Safety Issue A-26: Reactor Vessel Pressure Transient Protection for Pressurized Water Reactors
TI 2512/015	Inspection of Watts Bar Nuclear Plant Employee Concerns Program
TI 2512/018	Inspection of Watts Bar Nuclear Plant Electrical Conduit and Supports Corrective Action Program Plan
TI 2512/019	Inspection of Watts Bar Nuclear Plant Design Baseline Corrective Action Program Plan
TI 2512/036	Inspection of Watts Bar Nuclear Plant Environmental Qualification Special Program
TI 2515/66	Inspection Requirements for IE Bulletin 84-03, Refueling Cavity Water Seals
TI 2515/71	Inspection of Licensees' Actions in Response to IE Bulletin 82-02
TI2515/111	Electrical Distribution System Follow-up Inspection

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000391/2013607-01	NCV	Failure to Properly Translate Design Basis Requirements into Design Documents and Specifications (Section C.1.4)
<u>Closed</u> 49051	IP	Reactor Coolant Pressure Boundary Piping QA Review (Section C.1.5)
51065	IP	Electric Cable – Record Review (Section C.1.10)
46055	IP	Structural Concrete – Record Review (Section C.1.11)
49065	IP	Safety-Related Piping – Records Review (Section C.1.12)
TMI II.F.1.2.b	AI	Iodine and Particulate Sampling (Section OA.1.8)
05000391/2012610-01	URI	Discrepancies in Determining Reportability under 50.55(e) (Section OA.1.9)
CATD 50400-WBN-04	OTHER	Cracking Problems in Safety Injection Accumulators (Section OA.1.10)

391/86-14-03	VIO	Failure to Establish Measures to Ensure that Deviations from Specifications are Controlled (Section OA.1.11)
391/79-22-07	CDR	Electrical Junction Boxes in Containment (Section OA.1.12)
391/84-13	CDR	Moisture Intrusion into Safety-Related Equipment (Section OA.1.13)
391/85-30	CDR	Incorrect Equipment Cable Terminations in Harsh Environments (Section OA.1.14)
2515/71	TI	Inspection of Licensees' Actions in Response to IE Bulletin 82-02 (Section OA.1.15)
2515/111	TI	Electrical Distribution System Follow-up Inspection (Section OA.1.16)
<u>Discussed</u>		
49053	IP	Reactor Coolant Pressure Boundary Piping – Work Observation (Section C.1.6)
51063	IP	Electrical Cable – Work Observation (Section C.1.7)
52053	IP	Instrument Components and Systems - Work Observation (Section C.1.8)
52055	IP	Instrument Components and Systems – Document Review (Section C.1.9)
37002	IP	Construction Refurbishment Process - Watts Bar Unit 2 (Section C.1.13)
55050	IP	Nuclear Welding General Inspection Procedure (Section C.1.14)
55093	IP	Reactor Vessel Internals (Welding) Observation of Welding and Associated Activities (Section C.1.15)
64051	IP	Procedures - Fire Prevention/Protection (Section F.1.1)
TMI II.F.1.a	AI	Noble Gas Effluent Monitors (Section OA.1.1)
TMI.II.F.1.c	AI	In-Containment High-Range Radiation Monitors (Section OA.1.2)
1989-19	GL	Request for Actions Related to Resolution of Unresolved Safety Issue A-47 "Safety Implication of Control Systems in LWR Nuclear Power Plants" Pursuant to 10 CFR 50.54(f) (Section OA.1.3)
2500/19	TI	Inspection of Licensee's Actions Taken to Implement Unresolved Safety Issue A-26: Reactor Vessel Pressure Transient Protection for Pressurized Water Reactors (PWRs) (Section OA.1.4)
2515/66	TI	Inspection Requirements for IE Bulletin 84-03, Refueling Cavity Water Seals (Section OA.1.5)
2512/018	TI	Inspection of Electrical Conduit and Conduit Supports Corrective Action Program (Section OA.1.6)
2512/019	TI	Inspection of Watts Bar Nuclear Plant Design Baseline Corrective Action Program Plan (Section OA.1.7)

LIST OF DOCUMENTS REVIEWED

I. QUALITY ASSURANCE (QA) OVERSIGHT ACTIVITIES

Q.1.1 Identification and Resolution of Construction Problems

Miscellaneous

QTR10T3000-06, "Qualification Report for Cutler-Hammer Relay P/N: AR880AR", Rev. 1, dated 1/6/2012

II. MANAGEMENT OVERSIGHT AND CONTROLS

C.1.1 Piping – Reactor Coolant System and Safety-Related Piping Work Observations and Verification of As-Builts

PERs

PER 759414, Core Drilling Creates Anchor Bolt Violation for U1 Conduit Support

PER 760945, Core Drilling Creates Anchor Bolt Violation for U1 Conduit Support (Duplicate)

C.1.2 Piping – Reactor Coolant System and Safety-Related Piping Work Observations and Verification of As-Builts

Work Orders

WO 113518551, WBN-SGEN-068-SG1 Perform Cleaning of Residue

WO 111099021, WBN-2-DRV-063-0653 ASME Section III

Drawings

2-47W437-205, Problem N3-72-04A-072, Containment Spray Discharge Piping from HX-2A-2B in Aux BLDG to RWST, Rev. 0

2-47W437-206, Problem N3-72-05A-072, Containment Spray Discharge from @a-a to Containment Spray Heat Exchanger 2A, Rev. 0

C.1.4 Refurbishment Activities

Drawing

3703-4-1 LAMCO Ice condenser Door, Rev. 4

PER

747744 Historical, wood insulation discovered in ice condenser personnel access door

C.1.5 Reactor Coolant Pressure Boundary Piping QA Review

Audit Plan

Watts Bar nuclear Plant Unit 2-Quality Assurance two-year internal audit schedule (2013-2014), dated July 25, 2013

C.1.7 Electrical Cable – Work Observation

Miscellaneous

TVA-NQA-PLN89-A, Nuclear Quality Assurance Plan (NQAP), Rev. 27

25402-QCD-0001, Project Nuclear Quality Control Plan for WBN U2, Rev. 2

NQCM 00645316, Nuclear Quality Control Manual, 2010

MAI-3.2, Cable Pulling for Insulated Cables Rated Up to 15,000 Volts, Rev. 26

Cable Standard Report for cables 2PM1071E, 2PM1416E, 2PM4791E, 2PM1771E, and 2PP625A

C.1.8 Instrument Components and Systems – Work Observation

Storage and Maintenance Surveillance Records

13-1506 WBC-Spring City WH, 01/31/2013
 13-1567 WBC-Spring City WH, 02/28/2013
 13-1591 WBC-Spring City WH, 04/01/2013
 13-1630 WBC-Spring City WH, 05/01/2013
 13-1670 WBC-Spring City WH, 06/03/2013
 13-1711 WBC-Spring City WH, 07/01/2013
 13-1765 WBC-Spring City WH, 08/01/2013

Vendor Manuals

VTD-R369-0630, Rosemount 1154 Series H transmitters, April 2007
 WBN-VTD-S382-0260, IEEE Qualified SOR Pressure Switches, Rev. 0

Drawings

DRA 53607-002, PT-1-2A and PT-1-27A, Rev. 2
 FCR 58985-A, PT-1-2A and PT-1-27A, Rev. 2
 DWG-I-5224, Connection Map for 2-PT-001-0027A, Rev. 0
 DWG-I-5221, Connection Map for 2-PT-001-0002A, Rev. 0
 DWG-I-5446, Connection Map (2-FT-68-29B-E), Rev. 0
 DWG-I-5002, Installation/Verification Panel 2-L-276-L478 & 2-FT-068-0006A & Associated Tubing and Components, Rev. 0
 DWG-I-5003, Installation/Verification Panel 2-L-276-L479 & 2-FT-068-006D & Associated Tubing and Components, Rev. 0
 DRA 53638-002, 2-FT-68-6D, 2-FT-68-6A, 2-FT-68-29B-E and 2-FT-68-29D, Rev. 0
 DRA-53638-001-2, 2-FT-68-6D, 2-FT-68-6A, 2-FT-68-29B-E and 2-FT-68-29D, Rev.1
 DRA-53638-003, 2-FT-68-6D, 2-FT-68-6A, 2-FT-68-29B-E and 2-FT-68-29D, Rev.1
 DWG-I-142, Connection Map for 2-PS-003-138A, 7/8/2010
 WM-I-058, Associated with 2-PS-003-128A, 6/17/2010
 2-47W600-21, Electrical instruments and controls, Rev. 0
 2-47W600-14, Electrical instruments and controls, Rev. 0
 DRA 53615-041, 2-PS-3-138A, Rev. 0

Work Orders

WO 09-952505-006, SG1 Main Steam Pressure (PT-1-2A and PT-1-27A), Rev.1
 WO 09-954317-000, Sys 68 Panel 2-PNL-276-L226 & 2-FT-68-29B, Rev. 1
 WO11369657, Sys 68 install/verify local panel 2-PNL-276-L227 & 2-FT-68-29D-F, 3/28/2012
 WO 09-954317-006, EDCR 53638 install/verify local panel 2-PNL-276-478 & 2-FT-68-6A, 2/28/2012
 WO 09-954317-007, EDCR 53638 install/verify local panel 2-PNL-276-L479 & 2-FT-68-6D, 9/24/2012
 WO 09-952504-008, EDCR-2 53615 complete installation and perform inspection on all components located between panels

C.1.9 Instrument Components and Systems – Document Review

Procurement Documents

T49090331843 PEG CPH035J, Rev. 1
 T49090416823 PEG CPH052J, Rev. 1

PO 00000151R324-1, Transmitters, Rev. 1

Receipt Records

MRI 25402-011-MRI-JP02-00005, Rosemount Transmitters (sample associated with reactor coolant flow low trip), Rev. 1

MRR 06642, Rosemount Transmitters (sample associated with reactor coolant flow low trip), October 2009

MRI 25402-011-MRI-JP02-00004, Rosemount Transmitters (sample associated with steam line pressure low ESFAS actuation), Rev. 1

MRR 07331 Rosemount Transmitters (sample associated with steam line pressure low ESFAS actuation), November 2009, Rev. 1

Storage and Maintenance Surveillance Records

13-1506 WBC-Spring City WH, 01/31/2013

13-1567 WBC-Spring City WH, 02/28/2013

13-1591 WBC-Spring City WH, 04/01/2013

13-1630 WBC-Spring City WH, 05/01/2013

13-1670 WBC-Spring City WH, 06/03/2013

13-1711 WBC-Spring City WH, 07/01/2013

13-1765 WBC-Spring City WH, 08/01/2013

Storage QC Qualification Records

Certificate of Qualification for Employee Number 141446 for Receiving and Material Control, 1/24/2013

Certificate of Qualification for Employee Number 885974 for Receiving and Material Control, 9/12/2012

Receipt QC Qualification Records

Certificate of Qualification for Employee Number 169310 for Receiving and Material Control, 1/23/2013

Certificate of Qualification for Employee Number Sun 469 for Receiving and Material Control, 2/5/2013

Installation QC Qualification Records

Required Reading Training Record for 25402-000-GP-0000-N6204 R19 EPC-A

Certification Record, 3/7/2010, and Required Reading Record (RRR) for Badge #104348

Certification of Qualification for Employee Number 141439 for Piping Installation/Fabrication (including instrument tubing), 12/14/2012, Project Endorsement for Employee # 141439 and RRR for Badge #102903

Certification Record, 12/10/2012 and RRR for Badge #106316

Certification Record, 2/12/2013 and Project Endorsement and RRR for Badge #103863

Certification Record, 7/25/13 and Project Endorsement for Employee #ZW9883 and RRR for Badge #102470

Procedures

TVA-NQA-PLN89-A, Nuclear Quality Assurance Plan (NQAP) (Quality Assurance Program Description), Rev. 27

25402-QCD-0001, Project Nuclear Quality Control Plan for WBN U2, Rev. 2

NQCM 006045316 Nuclear Quality Control Manual, 2010

25402-000-GPP-0000-N6204, Field Material Control and Traceability, Rev. 19

N3E-934 Instrument and Instrument line installation and inspection, Rev. 8

25402-000-GPP-0000-N3401, Instrument and Instrument Line Installation, Rev. 10

MAI 4.4B, Instrument and Instrument Panel Installation, Rev. 6

Audits

Audit 25402-WBN-AR-12-0004, Work Completion, Revision 000

Audit Finding PERs

PER608756, ASME Storage area did not get monthly surveillance
 PER 608758, ASME Related: Staging/ Temporary Laydown areas noncompliance issues
 PER 610375, Staging Areas in Aux Control Building
 PER 608762, Nonconforming Identified without controls to prevent use

Surveillance Report

2502-WBN-SR-13-2690, Instrument Sense Line Air Blow (Backshift), 7/12/2013

Drawings

FSK-I-320, Install Sense Line WBN-2-SENL-003-305A System 003, rev. 4
 FSK-I-771, Welding Map for Engineered Condensate Pot 2-RTV-003-0305A, Rev. 0
 DRA 53607-002, PT-1-2A and PT-1-27A, Rev. 2
 FCR 58985-A, PT-1-2A and PT-1-27A, Rev. 2
 DWG-I-5224, Connection Map for 2-PT-001-0027A, Rev. 0
 DWG- I-5221, Connection Map for 2-PT-001-0002A, Rev. 0
 DWG-I-5446, Connection Map (2-FT-68-29B-E), Rev. 0
 DRA 53638-002, 2-FT-68-29B-E, Rev. 0
 DRA-53638-001-2, 2-FT-68-29B-E, Rev.1
 DRA-53638-003, 2-FT-68-29B-E, Rev.1

Other

MEL Data for 2-RTV-003-0305A from Maximo as of 8/9/2013

Work Orders

WO 09-952505-006, SG1 Main Steam Pressure (PT-1-2A and PT-1-27A), Rev.1
 WO 09-954317-000, Sys 68 Panel 2-PNL-276 & 2-FT-68-29B, Rev. 1

C.1.11 Structural Concrete: Record ReviewReceipt Inspection and Material Certification Records

25402-011-V1A-SY01-00095-001, Certified Materials Test Report – Cylinders
 25402-011-V1A-SY01-00004-001, Certified Materials Test Report – Cylinders
 25402-011-V1A-SY01-00118-001, Certified Materials Test Report – Cylinders
 25402-011-V1A-SY01-00109-001, Certified Materials Test Report – Cylinders
 25402-011-V1A-SY01-00115-001, Certified Materials Test Report – Cylinders
 25402-011-V1A-SY01-00102-001, Certified Materials Test Report – Cylinders
 25402-011-V1A-SY01-00012-001, Certified Materials Test Report – Cylinders
 25402-011-V1A-SY01-00059-001, Certified Materials Test Report – Cylinders
 25402-011-V1A-SY01-00005-001, Certified Materials Test Report – Cylinders
 25402-011-V1A-DY00-00005-001, Plant Certification Check List – Certification of Ready Mix
 Concrete Production Facilities, Harrison concrete DY00
 25402-011-V1A-DY00-00017-002, BASF Admixture for Concrete, Harrison Concrete DY00
 25402-011-V1A-DY00-00020-002, BASF Certificate of Conformance, Harrison Concrete DY00

Installation Inspection Records

MAI-5.4 Data Sheet, Support 47A450-25-138
 MAI-5.4 Data Sheet, Concrete for Conduit Missile Protection

Non-conformance/Deviation Records

PER 230811, Concrete Mixing Placement Violations, 06/17/2010
 PER 237820, PER 230811 has inappropriately closed, 10/18/2010
 PER 313706, QC Observation, 2/25/2011

Training/Qualification Records of Craft, QA, and Inspector (QC) Personnel

25402-011-V1A-SY01-00077-001, ACI Concrete Field Testing Technician – Grade 1
 25402-011-V1A-SY01-00079-001, ACI Concrete Field Testing Technician – Grade 1

IV. OTHER ACTIVITIES**OA.1.1 TMI Action II.F.1, Noble gas effluent monitors**Drawings

DRA 55801-049, Rev. 2, Changes to Electrical Connection Drawing, Panel 0-H-12
 45N1651-14, Rev. 14, Wiring Diagrams, Unit Control Board Panel 0-M-12, Connection Diagrams Sh-14
 45N2646-3, Rev. 3, Wiring Diagrams, Unit Control Board Panel 2-M-7, Connection Diagrams Sheet 3
 45M2646-1, Rev. 3, Wiring Diagrams, Unit Control Board Panel 2-M-7, Connection Diagrams Sheet 1
 45N708-2, Rev. 13, Wiring Diagram, Misc. 120V AC Distribution Panels, Connection Diagrams Sheet 2
 1-45W709-3, Rev. 17, Wiring Diagrams, Chargers Inverters & Misc Eqpt, Connection Diagrams Sh-3
 1-45W709-2, Rev. 33, Wiring Diagrams, Chgr Invr and Misc Eqpt, Connection Diagrams 0 Sheet 2
 DRA 52340-101, Rev. 0, Changes to Electrical Connection Drawing for 2-RE-90-119, Condenser Vacuum Air Exhaust Monitor
 1-45W708-3, Rev. 21, Wiring Diagram, Misc 120V AC Distribution Pnl's, Connection Diagram
 2-45W2646-4, Rev. 2, Wiring Diagram, Unit Cont Bd Panel 2-M-7, Connection Diagram Sh 4
 DRA 52340-110, Rev. 0, Changes to Electrical Connection Drawing for Panel 2-M-31 (RMS Monitors 2-RM-90-255 & 256)
 DRA 52342-014, Rev. 1, Changes to Electrical Connection Drawing for Panel 2-PNL-90-L404 (RMS 2-RE-90-423B)
 DRA 52342-011, Rev. 1, Changes to Electrical Connection Drawing for Panel 2-PNL-90-L406 (RMS 2-RE-90-421B)
 DRA 52342-013, Rev. 1, Changes to Electrical Connection Drawing for Panel 2-PNL-90-L405 (RMS 2-RE-90-424B)
 DRA 52342-012, Rev. 1, Changes to Electrical Connection Drawing for Panel 2-PNL-90-L403 (RMS 2-RE-90-422B)
 1-45W708-4, Rev. 20, Wiring Diagram, Misc 120V AC Distribution Pnl's, Connection Diagrams
 1-45W709-3, Rev. 17, Wiring Diagrams, Chargers Inverters & Misc Eqpt, Connection Diagrams Sh-3

Miscellaneous

Service Request 757417, (NRC Identified) "A Main Steam Line Radiation Detector Cannot be Mounted due to Interferences,") dated 7/24/2013
 Material Receiving Report MRR-29787, RM-80 Gas Monitor, completed 2/23/2012
 WBN-DCD-40-24, Radiation Monitoring Unit 1/Unit 2, Rev 25
 WBN-DCD-30-7, Post Accident Monitoring Instrumentation, Rev 24

WBNAPS3048, Range and Accuracy Requirements and Demonstrated Range of Instrumentation Provided to Measure Regulatory Guide 1.97 Type E Variables, Appendix G, Evaluation of U2 Radiation Monitors, Rev 21
 25402-011-V1A-HARA-0140-003, General Atomics HARA Qualification Basis for 04034201-001 (2RE-90-255 and -256)
 Factory Calibration for CHRM S/N 0942-G-01, -02, -03 and -04 dated 06/04/2010

OA1.2 TMI Action II.F.1, In-containment radiation-level monitors

Drawings

DRA 52338-107, Rev. 1, Changes to Electrical Connection Drawing for Panel 2-M-30 (RMS Monitors 2-RM-90-273 & 271)
 2-45W2651-2, Rev. 0, Wiring Diagrams, Unit Cont Bd Pnl 2-M-30, Connection Diag – Sh 2
 2-45W2651-7, Rev. 0, Wiring Diagrams, UCB Pnl 2-M-31, Connection Diagrams S-7
 45W2651-3, Rev. 3, Wiring Diagrams, Unit Cont Bd Pnl 2-M-30, Connection Diagrams Sh-3
 45N1651-13, Rev. 11, Wiring Diagrams, Unit Control Board Panel O-M-12, Connection Diagrams Sh-13
 45W2651-4, Rev. 3, Wiring Diagrams, Unit Cont Bd Pnl 2-M-30, Connection Diagram Sh 4

Miscellaneous

Service Request 757742, (NRC Identified) “A Layup Preventive Maintenance Activity was not established for the Containment High Range Monitors,” dated 7/25/2013
 Document Release 926750, Corrections for Equipment Qualification Basis Reports for Condenser Vent Exhaust Monitors 255 and 256, dated 7/24/2013
 Material Receiving Instruction 25402-011-MRI-HARA-00001, R5, General Atomics RD-1, RD-2A, and RD-23 Radiation Detectors, completed 2/22/2012
 Electronic Message from D. McBride, Eckert & Zeigler Isotope Products, dated 7/24/2013, with attachment containing statement from D. J. Van Dalsem - Calibration Laboratory Head, regarding working life of radioactive sources

OA.1.3 Generic Letter 1989-19, Request for Actions Related to Resolution of Unresolved Safety Issue A-47 "Safety Implication of Control Systems in LWR Nuclear Power Plants" Pursuant to 10 CFR 50.54(f)

Closure Package

WBN Open Item/Commitment Closure Package , Tracking Number NCO080008046

Drawings

2-47W611-3-2, WBN Unit 2, Electrical Logic Diagrams Feedwater System
 2-47W610-3-1, Electrical Control Diagram Main Aux. Feedwater System
 2-47W610-3-1B, Electrical Control Diagram Main Aux. Feedwater System

Additional Documents

WBN Unit 2 Developmental Technical Specifications
 WBN Unit 2 Final Safety analysis Report, Amendment 109, ML12244A079

OA.1.4 TI 2500/19, Inspection of Licensee's Actions Taken to Implement Unresolved Safety Issue A-26: Reactor Vessel Pressure Transient Protection for Pressurized Water Reactors (PWRs)

Drawings

2-69247-08F02403-FD-2402-1, Electrical – Loop 1 & 2 Hot and Cold Leg Temperature Validation, Conversion, Sheet 1, Rev. 0

2-69247-08F02403-FD-2402-2, Electrical – Loop 1 & 2 Hot and Cold Leg Temperature Validation, Conversion, Sheet 2, Rev. 0
 2-69247-08F02403-FD-2402-3, Electrical – Pressurizer PORV Interlocks, Rev. 0
 2-69247-08F02403-FD-2403-1, Electrical – Loop 1 & 2 Hot and Cold Leg Temperature Validation, Conversion, Sheet 1, Rev. 0
 2-69247-08F02403-FD-2403-2, Electrical – Loop 1 & 2 Hot and Cold Leg Temperature Validation, Conversion, Sheet 2, Rev. 0
 2-69247-08F02403-FD-2403-3, Electrical – Pressurizer PORV Interlocks, Rev. 0

Miscellaneous

Final Safety Analysis Report Section 5.2.2.4, RCS Pressure Control During Low Temperature Operation
 WB-DC-40-31.2, Seismic/Structural Qualification of Seismic Category I Electrical and Mechanical Equipment, Rev. 14
 WBT-D-2899, Cold Overpressure Mitigation System (COMS) Setpoint Analysis for the Watts Bar Unit 2 Completion Program

Procedures

2-PTI-068-15, Pressurizer Pressure and Level Control, Rev. 0
 GO-1, Unit Startup from Cold Shutdown to Hot Standby, Rev. 73
 GO-6, Unit Shutdown from Hot Standby to Cold Shutdown, Rev. 52

System Description

NPG-SDD-WBN2-68-4001, Reactor Coolant System, Rev. 2

OA.1.5 TI 2515/66, Inspection Requirements for IE Bulletin 84-03, Refueling Cavity Water Seals

Calculation

EPMJB102092, Unit 2 Reactor Cavity Water Seal Maximum Leak Rate During Refueling, Rev. 0

Drawing

44N293-3_B, Seals and Gaskets Sheet 3, Reactor Cavity Annulus Seal, Rev. 1

Procedures

0-MI-68.029, Refuel Floor Pre-Outage Preparations, Rev. 2
 1-AOI-29, Dropped or Damaged Fuel or Refueling Cavity Seal Failure, Rev. 0
 1-MI-68.001, Disassembly and Reassembly of the Unit 1 Reactor Pressure Vessel, Rev. 2
 MI 17.008, Flood Preparation and Installation of the Reactor Cavity Seal, Rev. 7

Miscellaneous

EDC 52238, Replace Inflatable Reactor Cavity Seal with a Segmented Passive Seal
 TVA Letter to the NRC dated December 6, 1984, IE Bulletin 84-03 Refueling Cavity Water Seal

Work Order

110959805, Install Inflatable Cavity Seal per Drawing 44N293-3

OA.1.6 Inspection of Electrical Conduit and Conduit Supports Corrective Action Program

Procedures, Standards and Specifications

WDP-GEN-1, Walkdown Procedure for General Walkdown Requirements, Rev. 14
 WDP-C-3, Walkdown Procedure for Civil, Rev. 3
 MAI-3.1, Installation of Electrical Conduit Systems & Conduit Boxes, Rev. 25

G-40, Installation, Modification and Maintenance of Electrical Conduit Cable Trays, Boxes, Containment Electrical Penetrations, Electric Conductor Seal Assemblies, Lightning and Miscellaneous Systems, Rev. 16
 25402-000-GPP-0000-N1213, Walkdown Verification for Construction Area Completion and Damaged, Loose, or Missing Hardware, Rev. 1

Walk-down Packages

WBN2-C-292-815-00
 WBN2-C-293-817-02
 WBN2-C-293-817-14
 WBN2-C-293-817-21
 WBN2-C-293-817-46
 WBN2-C-293-817-47
 WBN2-C-293-817-59
 WBN2-C-299-818-00
 WBN2-C-293-817-15
 WBN2-C-293-817-20
 WBN2-C-293-817-36
 WBN2-C-293-817-34
 WBN2-C-293-817-39
 WBN2-C-293-817-48
 WBN2-C-293-817-57

Engineering Design Construction Release (EDCR)

53104
 52938

Field Change Request (FCR)

57609
 60524-A
 61286-A
 57130-A

Calculations

WCG-2-891, WBN2 Shakespace Evaluation Program Closure Summary Calculation, Rev. 0
 WCG-2-890, WBN2 Shakespace Crossings – Resolution of Flexible Conduit Outliers, Rev. 1
 WCG-2-759, WBN2 Shakespace Crossings – Resolution of Conduit Outliers, Rev. 1
 WCG-2-445, WBN2 Shakespace Walkthrough Screening Evaluation Guidelines, Rev. 4
 WCG-2-1313, Thermal Affected Conduit, Rev. 3
 WCG-2-361, Walkthrough Procedure of Unique Evaluations for Electrical Conduits and Conduit Supports, Rev. 1
 WCG-2-308, Engineering Walkthrough and Evaluation of Conduit and Conduit Supports, Rev. 1
 WCG-2-349, WBN2 Seismic Category I(L) Conduit and Supports Walkthrough Screening Evaluation Guidelines, Rev. 4
 WCG-2-614, WBN2 Seismic Category I(L) Conduit and Supports Program Closure Summary Calculation, Rev. 0
 WCG-2-366,
 WCG-2-378,
 WCG-2-405,
 WCG-2-407, Adequacy of Typical 55s, Typical 66s, and Conduits with Over Span Where Peak OBE Horizontal Seismic Acceleration is Less Than 1.58g, Rev. 1
 WCG-2-796,

WCG-2-866, Evaluation of Conduits and Conduit Supports for Conduit Overweight Condition for the Unit 2 Conduit and Conduit Support CAP, Rev. 1

WCG-2-863, WBN2 Overweight Seismic Category I(L) Conduit, Rev. 0

WCG-2-883, Safety Related Conduits Attached to the Unit 2 SCV, Rev. 0

Drawings

45W876-2, Conduit and Grounding EL 756.63 Ceiling Plan, Rev. 23

45W872-9, Conduit and Grounding Floor-EL 716.0 Detail Sheet 7, Rev. 33

45W872-14

Typical 66 General Drawings, 47A056-66

Typical 55 General Drawings, 47A056-55

Work Orders

111686972

114884482

Design Revision Authorization (DRAs)

47W872-9, Rev. 33

45W2412-1, Rev. 17

Limited Scope Walkdown Packages (LSWDs)

LSWD-3187, WBN2 Shakespace Evaluations, Rev. 0,

LSWD-3220, WBN2 Shakespace Evaluations, Rev. 0,

LSWD-3233, WBN2 Shakespace Evaluations, Rev. 0

LSWD-3058, WBN2 Seismic Category I(L) Conduit and Supports, Rev. 0

LSWD-3021, WBN2 Seismic Category I(L) Conduit and Supports, Rev. 0

LSWD-488, Walkdown of Unique Evaluations for Electrical Conduits and Conduit Supports, Rev. 2

LSWD-495, LSWD for Snapshot Self-Assessment on Christmas Tree Configurations for the Conduit and Conduit Supports CAP, Rev. 0

Miscellaneous Documents:

ICRDS QA Report, Conduit 2PLC61D

ICRDS QA Report, Conduit 2PLC64

ICRDS QA Report, Conduit 2-VC-4400

ICRDS QA Report, Conduit 0P06014

ICRDS QA Report, Conduit 2-VC-293-1528B

ICRDS QA Report, Conduit 2-3VC-293-2056A

ICRDS QA Report, Conduit 2-4PLC-293-1136A

ICRDS QA Report, Conduit 2-VC-9696

ICRDS QA Report, Conduit 2-VC-293-01593B

ICRDS QA Report, Conduit 2PM6469, Rev. 1

SR 755077, Non-Standard conduit clamp installation not identified by walkdown

U2 Conduit CAP CR, "Watts Bar Nuclear Plant Unit 2 Conduit and Conduit Supports Corrective Action Program Closure Report," Revision 1

WCG-1-1415, Initial Assessment Report, Rev. 3

OA.1.7 NRC Inspection Report 50-390/92-201, Integrated Design Inspection, Follow-up of Unit 1 Issues

Miscellaneous

Design Criteria, WB-DC-20.21.1, Category I Cable Tray Supports, Rev.10

Design Criteria, WB-DC-40.31.7, Analysis of Category I and I(L) Piping Systems, Rev.23

Design Criteria, WB-DC-40.31.9, Criteria for Design of Piping Supports and Supplemental Steel in Category I Structures, Rev.21
 Design Criteria, WB-DC-40.31.10, Seismically Qualifying Conduit Supports, Rev.11
 Design Criteria, WB-DC-40.31.50, Evaluating the Effects of a Pipe Failure Inside and Outside Containment, Rev.12
 Design Standard, DS-C1.7.1, General Anchorage to Concrete, Rev.11

OA.1.8 TMI Action II.F.1.2.b, Iodine and Particulate Sampling

Closure Package

Final Closure Package, NCO-080008062, Rev. 1, "Complete Modifications on Unit 2 for In-Plant Monitoring of Iodine Radiation"

OA1.9 URI 05000391/2012610-01, "Discrepancies in Determining Reportability under 50.55(e)"

PERs

PER 654428, "NRC Identified - The Review of PER 378571 did not consider reportability of procedure/programmatic issues," dated 12/6/2012
 PER 653083, "NRC Identified - PER 403095 - 50.55e Reportability Review Timeliness," dated 12/6/2012

Procedure

NC PP-13, Rev. 5, "NRC Reporting Requirements"

OA.1.10 Corrective Action Tracking Document 50400-WBN-04: Cracking Problems in Safety Injection Accumulators

Drawings

DRA 52482-025, Rev.1
 DRA 52482-026, Rev.0
 DRA 52482-243, Rev.0
 Drawing 47A435-14-92, Rev.2

Miscellaneous

EDCR 52482, Rev. C

Walkdown Packages

WBN2-PD-062-1498-29, p.8, Rev.1
 WBN2-PD-062-1498-29, p.9, Rev.1
 WBN2-PD-063-2340-44, p.21, Rev.6

OA.1.11 VIO 391/86-14-03: Failure to Establish Measures to Ensure that Deviations from Specifications are Controlled

Closure Package

NGDC PP-19, Final Complete Package for VIO 391/8-14-03, dated July 7, 2013

Drawings

DRA 2-01A305-1, Rev. 903
 DRA 47A435-14-61, Rev. 1
 DRA 2-01A340-1, Rev. 902
 DRA 2-01A384-1, Rev. 902

Procedures

CCPP 25402-000-GPP-0000-N1213, Walkdown Verification for Construction Area Completion and Damaged, Loose, or Missing Hardware, Rev. 1

OA.1.12 Construction Deficiency Report (CDR) 391/79-22-07: Electrical Junction Boxes in Containment

Closure Package

WBN Open Item/Commitment Closure Package, Tracking Number: PER 172639

Procedures

MAI-3.3 Cable Terminating, Splicing, and Testing for Cables rated Up To 15,000 Volts Rev 0031, Dated: 6/11/2013

WBN-VTM-R098-0870 Tyco Electronics Raychem Nuclear Products

WBN-VTM-R098-0520 Raychem Low Voltage Nuclear Plant Splice Kit, Rev 4

0-MI-57.107 Rev 0 Application of Raychem Material

Work Orders

114379005 BC cable terminations WBN-2-JB-292-1155-A Comp Splices

114378640 CCE EDCR 55117 SYS 072 099 BC Cable Splices, Dated: 7/12/13

114470579 BC cable terminations

113466943 CCE EDCR 52419 SYS 304 2-SLV-304-2RC1002A Core Drill Non-ABSCE

OA.1.13 Construction Deficiency Report (CDR) 391/84-13: Moisture Intrusion into Safety-Related Equipment

Closure Package

WBN Open Item/Commitment Closure Package, Tracking Number: PER 172615

Work Orders

114788018 CCE EDCR 54398 SR SYS 072 WBN-2-JB-292-1155-A Perform EQ Degradation Inspection

Additional Documents:

EQ Package Binder– Unit 2, Binder Number WBNEQ-SOL-003, Dated: 12/06/2012

Exhibit D-3, WB2 Environmental Qualification Testing of MSIV Solenoid Valves Technical Requirements

Calculation: EDQ299920090011, Rev 002, Dated: 1/18/2011

EDCR 54938

OA.1.14 CDR 391/85-30: Incorrect Equipment Cable Terminations in Harsh Environments

Closure Package:

WBN Open Item/Commitment Closure Package, Tracking Number: PER 143534 R1

Procedures:

MAI-3.3 Cable Terminating, Splicing, and Testing for Cables rated Up To 15,000 Volts Rev 0031, Dated: 6/11/2013

WBN-VTM-R098-0870 Tyco Electronics Raychem Nuclear Products

Work Orders

110966029 CCE EDCR 55117 SYS 074 WBN-2-MISC-074; Dated: 4/13/11

111027082

110870184 CCE EDCR2 54870 STS 063 WBN-2-FSV-063-0024; Dated: 9/17/10

OA.1.15 Temporary Instruction (TI) 2515/71, Inspection of Licensees' Actions in Response to IE Bulletin 82-02

Miscellaneous

P.S 4.M.1.1, General Engineering Specification G-29B, Material Fabrication and Handling Requirements for Austenitic Stainless Steel, Rev. 25

P.S 4.M.1.5, General Engineering Specification, Classification, Procurement, Receipt, and Use of Lubricants, Rev. 3

Procedures

0-MI-0.002, Valve Maintenance, Rev. 4

0-MI-0.031, Temporary Leak Repair Program, Rev. 1

MI-0.014, Pressure Related Bolted Connections, Rev. 16

MMTP-104, Guidelines and Methodology for Assembling and Tensioning Threaded Connections, Rev. 5

NPG-SPP-09.7.4, Boric Acid Corrosion Control Program, Rev. 0

TI-31.032, Boric Acid Corrosion Control Program, Rev. 10

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
AI	Action Item
ANSI	American National Standards Institute
AOI	abnormal operating instruction
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Plan
CATD	corrective action tracking document
CDR	Construction Deficiency Report
CFR	<i>Code of Federal Regulations</i>
COMS	cold overpressure mitigation system
Conduit CAP	Electrical Conduit and Conduit Supports Corrective Action Program
DCS	distributed control system
EDCR	Engineering Document Construction Release
EDG	Emergency Diesel Generator
EDS	Electrical Distribution System
EDSFI	Electrical Distribution System Functional Inspection
ESFAS	Engineered Safety Feature Actuation System
EQ	Environmental Qualification
ERCW	essential raw cooling water
ETAP	Electrical Transient Analyzer Program
FCR	Field Change Request
FSAR	Final Safety Analysis Report
GL	Generic Letter
HAAUP	hanger and analysis update program
ICRDS	Integrated Cable & Raceway Design System

IIR	integrated inspection report
IMC	Inspection Manual Chapter (NRC)
IP	Inspection Procedure (NRC)
kV	Kilovolts
LSWD	Limited Scope Walk-down
LWR	Light Water Reactor
NCR	Non-Conformance Report
NCV	Non-Cited Violation
NOV	Notice of Violation
NPP	Nuclear Performance Plan
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation (NRC)
PER	Problem Evaluation Report
PORV	power-operated relief valve
PTLR	Pressure and Temperature Limits Report
PWR	pressurized water reactor
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QC	Quality Control
RCL	Reactor Coolant Loop
RCS	Reactor Coolant System
Rev.	Revision
RTS	Reactor Trip System
RWST	refueling water storage tank
SALP	Systematic Assessment of Licensee Performance
SAR	Safety Analysis Report
SCV	Steel Containment Vessel
SG	steam generator
SL	Severity Level
SSC	structure, system, component
TI	Temporary Instruction
TMI	Three Mile Island
TS	Technical Specification
TVA	Tennessee Valley Authority
URI	Unresolved Item
VIO	violation
WBN	Watts Bar Nuclear
WO	Work Order