



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

March 27, 2014

EA-12-021
EA-13-019

Mr. Michael D. Skaggs
Senior Vice President
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Tennessee Valley Authority
6A Lookout Place
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Chattanooga, TN 37402-2801

**SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 2 CONSTRUCTION - NRC INTEGRATED
INSPECTION REPORT 05000391/2014602**

Dear Mr. Skaggs:

On February 15, 2014, 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 February 20, 2014 with Mr. Hruby 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. The enclosed report also documents the closure of three violations related to a Severity Level III issue that dealt with the commercial grade dedication program. Inspections were also completed for a Confirmatory Order involving falsification of records.

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).

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 05000391/2014602 w/Attachment

cc w/encl: (See next page)

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Letter to Michael D. Skaggs from Robert C. Haag dated March 27, 2014.

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 2 CONSTRUCTION - NRC INTEGRATED
INSPECTION REPORT 05000391/2014602

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PUBLIC

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-391

Construction Permit No.: CPPR-92

Report No.: 05000391/2014602

Applicant: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Unit 2

Location: Spring City, TN 37381

Dates: January 1-February 15, 2014

Inspectors:

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- E. Patterson, Resident Inspector, CPB3, DCP, RII
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- E. Michel, Senior Construction Inspector, Construction Inspection Branch (CIB) 3, Division of Construction Inspection (DCI), RII, Section OA.1.1
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- L. Suggs, Senior Construction Project Inspector, CPB2, DCP, RII, Sections E.1.1 and E.1.2
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- J. Baptist, Senior Construction Project Inspector, CPB3, DCP, RII, Sections P.1.1, P.1.2, P.1.3, P.1.4, P.1.6, OA.1.2, OA.1.14, and OA.1.15,
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- A. Wilson, Construction Project Inspector, CPB3, DCP, RII, Sections P.1.5, OA.1.7, OA.1.8, and OA.1.13

Enclosure

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, engineering and construction activities, pre-operational testing, 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 inspectors determined that the causal analysis and corrective actions for the three violations related to Severity Level III issue EA-13-019, for commercial grade dedication (CDG), were adequate and fully implemented, and compliance with the associated regulatory requirements has been restored. These violations are closed. (Section OA.1.1)
- The NRC identified a severity level (SL) IV non-cited violation (NCV) of 10 Code of Federal Regulations (CFR) 50, Appendix B, Criterion XVI, "Corrective Actions," for inadequate corrective actions associated with historical 10CFR21 issues. Specifically, the applicant failed to identify all historical WBN Unit 1 10CFR Part 21 issues with potential Unit 2 applicability, and was therefore unable to subsequently review for Unit 2 impact and resolution. The inspectors determined that the applicant's inadequate corrective action was a performance deficiency. This performance deficiency was considered more than minor in accordance with Inspection Manual Chapter (IMC) 0613, Appendix E because it represented an adverse condition that rendered the quality of structures, systems, or components (SSCs) indeterminate and required substantive corrective action to satisfy the original intent of the corrective action document. Based on the applicant's assessment, it was determined that the population of historical items that were originally omitted for resolution did not require re-work of any equipment. The finding was determined to be of very low safety significance in accordance with Section 6.5 of the NRC Enforcement Policy because it does not represent a breakdown in the QA process. The applicant issued PER 806990 to address the identified conditions. The inspectors reviewed this finding against cross-cutting area components as described in IMC 0310 "Components Within the Cross-Cutting Areas" and determined that no cross-cutting aspect applied. (Section OA.1.2)
- The inspections of action items for Confirmatory Order EA-12-021 which dealt with falsification of records were completed. This order is closed. (Section OA.1.3)
- The inspectors concluded that issues pertaining to several open items, including three Construction Deficiency Reports (CDRs), three Bulletins (BLs), one Generic Letter (GL), four Temporary Instructions (TIs), three Three Mile Island (TMI) Action Items (AIs), three Appendix HH items, three Inspection Procedures (IPs), one Unresolved Item (URI), 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 QA; piping and supports; mechanical systems and components; electrical systems and components; engineering activities; pre-operational testing activities; operational readiness activities; and various NRC inspection procedures.

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REPORT DETAILS

Summary of Plant Status

During the inspection period covered by this report, Tennessee Valley Authority (TVA) performed construction completion and pre-operational testing 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 PER 818910 to verify that the corrective actions removed the foreign material in the section of pipe upstream of 2-CKV-062-0507, the pipe section was boroscoped, and the cleaning plan for the section of piping adequately described the flushing path and acceptance criteria to verify cleanliness of the piping.

Inspectors also reviewed PERs 832900 and 830670 associated with a gasket failure of the temporary 2A sidestream filter during the Component Cooling Water System (CCS) flush. The inspectors reviewed corrective actions including personnel response, engineering evaluations, extent of condition review, and protection of adjacent equipment.

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 (Closed) Audit of Applicant's Surveillance of Contractor QA/QC Activities (Inspection Procedure 35020)

a. Inspection Scope

The inspectors reviewed the schedule for TVA projected oversight activities for 2014, dated November 4, 2013, to assess plans and aspects covered by the oversight team. The inspectors reviewed Nuclear Assurance – Oversight Reports to assess the

attainment of overall contractor surveillance objectives. The inspectors reviewed information on previously identified deficiencies, including a review of the planned and completed corrective actions, to determine corrective action effectiveness. 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 planned activities and corrective actions for identified deficiencies, and because the NRC has not identified any substantive deficiencies or concerns about the adequacy of the applicant's execution of contractor surveillance responsibilities, this inspection procedure (IP) is closed. However, if deficiencies are identified through observations of future activities, the inspectors will inspect them as necessary to satisfy the requirements of this inspection procedure.

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 activity observed included work associated with:

- Preoperational Test Instruction (PTI)-067-02-A, Essential Raw Cooling Water (ERCW) System Flow Balance Train A
- 2-CP-070-01-2, CCS Miscellaneous and Reactor Building Header Cleanliness Plan

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 as noted in this inspection report.

b. Observations and Findings

No findings were identified. Inspectors reviewed corrective actions associated with a gasket failure of the temporary 2A sidestream filter during the CCS Flush which occurred in the auxiliary building. The details are further discussed in Section Q.1.1 of this report.

c. Conclusions

Overall, adequate management oversight and controls were in place for observed construction activities that could potentially impact the operating.

C.1.2 (Closed) Structural Steel and Supports Work Observation (Inspection Procedure 48053)

a. Inspection Scope

Background: As described in Inspection Manual Chapter (IMC) 2517, TVA addressed WBN Unit 1 construction quality issues as part of the implementation of its nuclear performance plant (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 Manual Chapter 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. Integrated Inspection Report (IIR) 05000391/2009602 (ADAMS Accession No. ML091210420), Attachment 2, documented the reconstitution results for IP 48053 and determined that the requirements of the IP were met for Unit 2.

Inspection Activities: The purpose of this IP was to verify, by observation and independent evaluation of work performed and completed, that activities related to structural steel were accomplished in accordance with approved procedures and NRC requirements.

The following table lists the inspections that were previously performed under this IP.

IP Section	Inspection Report
02.02 Review the specifications, drawings, and QA/QC and construction procedures	05000391/2009603 (ADAMS Accession No. ML092120326) 05000391/2009604 (ADAMS Accession No. ML093030479) 05000391/2012605 (ADAMS Accession No. ML12220A536) 05000391/2013604 (ADAMS Accession No. ML13179A079)
02.03a Receipt Inspection and Storage	05000391/2009604 05000391/2010605 (ADAMS Accession No. ML110410680)
02.03b Use of Specified Materials and Components	05000391/2009604 05000391/2010605 05000391/2013604
02.03c Installation and Erection	05000391/2009603 05000391/2009604 05000391/2011602 (ADAMS Accession No. ML 110800483) 05000391/2012605 05000391/2013604
02.03d Inspection, Testing, NDE, and Records	05000391/2011603 (ADAMS Accession No. ML111370702) 05000391/2012608 (ADAMS Accession No. ML12319A368) 05000391/2013605 (ADAMS Accession No. ML13220A640)
02.04 Informal interviews with field craft and inspection (QA/QC) personnel	05000391/2009603 05000391/2010605 05000391/2013605

Section 2.01 of this IP required the review of the results of the inspection performed under IP 48051. The results of inspection performed under this IP were discussed and this IP was closed in NRC Inspection Report 05000391/2010605 (ADAMS Accession No. ML110410680).

Section 02.05 allowed for an expansion of the sample size as appropriate. At this time the additional sampling sections are not required based on assessment of TVA's performance of construction for Watts Bar Unit 2. No new inspections were performed during this reporting period.

b. Observations and Findings

No findings were identified.

c. Conclusions

The structural steel supports previously observed met procedural, specification, and drawing requirements. IP 48053 is considered closed; however, if additional structural steel or supports activities are performed, inspections may be performed at the NRC's discretion.

C.1.3 Electric Cable - Work Observation (Inspection Procedure 51063)

a. Inspection Scope

The inspectors observed in-process work associated with cable terminations at the pressurizer heater elements to evaluate if the materials used were as specified, material was installed at the proper location by qualified craft personnel using suitable tools, adequate documentation of installation activities was completed in a timely manner, and required inspections were performed by qualified Quality Control (QC) personnel. Additionally, the inspectors observed in-process work to verify if:

- cables were properly identified;
- crimping tools used were in proper working order;
- terminations were of the correct type;
- torqueing of connections was performed according to design;
- unterminated cable ends were protected;
- segregation was maintained;
- non-conforming heater insulators were replaced; and
- non-conformances of cables and associated materials were identified, controlled, and handled in accordance with the applicant procedures.

The inspectors reviewed work packages to determine whether the latest approved revision of applicable procedures and specifications were available and used by the craftsmen. Drawing revision authorization (DRA) 54179-065 was reviewed to evaluate if the final configuration of the equipment was in accordance with the DRA. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that adequate measures were in place to ensure that electrical cable work was performed in accordance with applicable procedures and drawings.

E.1 Engineering Activities

E.1.1 (Closed) Onsite Design Activities (Inspection Procedures 37055, 49063, 50073, and 50075)

a. Inspection Scope

Background: The purpose of IP 37055 was to determine whether the applicant's, architect engineer's, and contractor's onsite design activity, including controls for engineering and construction initiated field changes, was conducted in compliance with the technical and QA requirements described in the facility safety analysis report (SAR).

The 2009 readiness inspection, as documented in Attachment 3 of IIR 05000391/2009602 (ADAMS Accession No. ML091210420), determined that the inspection requirements for IP 37055 were fully met for all sections except Section 02.06. For Section 02.06, it was determined that the inspection of two more design activities would completely fulfill the requirements of IP 37055. Inspections associated with this IP were previously documented in the following inspection reports:

- IIR 05000391/2009602, Reconstitution Results (ADAMS Accession No. ML091210420)
- IIR 05000391/2008009, Section E.1.1 (ADAMS Accession No. ML083050404)
- IIR 05000391/2008010, Section E.1.1 (ADAMS Accession No. ML090291033)
- IIR 05000391/2010603, Section E.1.2 (ADAMS Accession No. ML102170465)
- IIR 05000391/2011608, Section OA.1.1 (ADAMS Accession No. ML11311A082)
- IIR 05000391/2012609, Section E.1.1 (ADAMS Accession No. ML12356A073)
- IIR 05000391/2012610, Section Q.1.7 (ADAMS Accession No. ML13035A201)

Inspection Activities: The inspectors reviewed documents, interviewed personnel, and performed walkdowns of as-built structures, systems, and components. The inspectors performed these activities to determine if:

- Bechtel's engineering and design controls complied with the technical and QA requirements described in the SAR;
- as-built design and construction drawings and specifications correctly reflected the as-built condition of the plant; and
- changes from the original design were properly reviewed and approved.

The inspectors performed these inspection activities on the following mechanical structures, systems, or components:

System 067 (ERCW):

- flood mode return valves 0-ISV-067-0558B and 0-ISV-067-0559B including associated spool pieces 0-SPPC-067-0558B and 0-SPPC-067-0559B;
- motor operated valve (MOV) 2-FCV-067-103, check valve 2-CKV-067-575B, and pipe supports 47A450-25-251 and 2-47A450-25-356 on drawing 2-47W450-237B;
- pipe section from cooler nozzles 119, 125, 134, and 138 to tee 99 on drawing 2-47W450-256B including pipe supports 47A450-25-152 and 47A450-25-162;

- pipe section from cooler 175 to tee 165 and from cooler 188 to elbow 182 on drawing 2-47W450-347 including pipe support 47A450-26-163;
- pipe support 47A450-26-78 on drawing 2-47W450-346;
- pipe section between nodes 1 and 12 on drawing 2-47W450-369 including support H-450-1-21B-70; and
- pipe section between nodes 64 and 81 on drawing 2-47W450-371 including support H-450-1-22B-72.

System 070 (CCS):

- pipe section between nodes 143 and 136 on drawing 2-47W464-254 including valve 2-THV-070-0684C and pipe support 2-70-270;
- pipe section between nodes C3E and C2B on drawing 2-47W464-255 including valves 2-FCV-070-133A and 2-FCV-070-134B;
- pipe section between nodes 169 and 144 on drawing 2-47W464-267A including supports 47A464-4-124, 184, and 185; valve 2-ISV-070-673B; and thermal barrier booster pump B, 2-PMP-070-130B;
- pipe section between nodes 119 and 94 on drawing 2-47W464-267 including supports 47A464-4-122, 123, and 183; valve 2-ISV-070-673A; and thermal barrier booster pump A, 2-PMP-070-131A;
- pipe section between nodes M39 and M24 on drawing 0-47W464-213F including valve 2-THV-070-546B;
- pipe section between nodes FL12 and C89 on drawing 0-47W464-208C including valve 2-ISV-070-545B and pipe supports 70-1CC-R630 and 70-1CC-V631;
- pipe section between nodes 280 and 215 on drawing 2-47W464-268 including supports 47A464-4-118 and 47A464-4-119; and
- pipe section between nodes 180 and 210 on drawing 2-47W464-268 including support 47A464-4-166.

For each of the above supports, the inspectors reviewed plant seismic calculations to determine if they were consistent with the as-built condition of the plant. Additionally, the inspectors reviewed valve manufacturer drawings and American Society of Mechanical Engineers (ASME) Form NV-1 valve data reports to determine if the valve materials, size, type, and ratings were consistent with the requirements in the purchase specification and the applicable valve data sheets. For each of the above MOVs, the inspectors reviewed the vendor drawings, design requirements, and valve data sheets to determine if the as-built conditions of the valves were consistent with the design inputs contained in the associated MOV calculation.

For both of the thermal barrier booster pumps, the inspectors reviewed the vendor test performance data on the replacement pumps to determine if the pump performance (head vs. capacity, net positive suction head required, and brake horse power) was similar to the original pumps.

The inspectors selected engineering and design control implementing procedures to determine the adequacy of their implementation for site design activities. The inspectors reviewed the following procedures:

- preparation of design documents: 25402-3DP-G046-00081, Engineering Document Construction Release (EDCR), Revision (Rev.) 16;
- design review/verification: 25402-3DP-G04G-00027, Design Verification, Rev. 4;
- design and field initiated changes and revisions: 25402-3DP-G04-00062, Field Change Request, Rev. 20;
- design and field initiated changes and revisions: 25402-000-GPP-0000-N3105, Field Change Requests, Rev. 16;
- interface with the home office and applicant: 25402-3DP-G04G-00025, Design Interface Control, Rev. 4; and
- interface with the home office and applicant: 25402-000-GPP-0000-N3112, ASME Section III Design Interface Control, Rev. 6.

The inspectors sampled 15 field changes initiated by the construction organization to determine whether the following aspects were adequate:

- reason/need for the change was annotated;
- change did not appear to compromise original design intent and was performed as described by the QA manual;
- change was reviewed and approved subject to controls commensurate with the original design and approved by an independent reviewer/approver;
- review and approval considered impact on overall design by review of the adequacy of the change, impact on other disciplines, and changes necessary to prior analysis;
- design drawings were updated/revised to reflect new design changes and were available in the electronic document control system;
- changes were processed as required by the quality assurance program for design conducted onsite;
- design input and design change documentation was controlled.

Additionally, for each of the sampled field changes, the inspectors compared final detailed construction drawings and specification requirements with the actual installation by performing field walkdowns to determine if:

- final design drawings and specifications reflected as-built conditions for supports (location, type, and configuration) and piping (location, size, configuration, component location, and valve/operator orientation);
- materials of construction, configuration, and orientation conformed to the applicable design specifications;
- an adequate process was in place to ensure that final as-built design documents (drawings, specifications, and calculations) would be readily available to site operations personnel at the initiation of commercial operation; and
- design verification records were adequate by ensuring their consistency with the actual field configuration.

From the field changes sampled, the inspectors reviewed training records for a sample of three project quality assurance managers, six field change preparer/checkers, two approvers, one engineering group supervisor, and two 10CFR50.59 reviewers. The inspectors reviewed the training records to determine if the personnel were qualified to perform the applicable activity for which they signed.

The inspectors interviewed four engineering staff members who prepared, checked, reviewed, and/or approved field changes to determine if:

- the staff was knowledgeable of the design control procedure requirements; and
- design control procedures were available for the design activities being conducted.

The inspectors interviewed engineering staff to determine if the staff was knowledgeable on drawing control requirements. The inspectors reviewed the method used to control drawings in the applicant's electronic document management system to determine if the drawings were sufficiently legible, retrievable, and protected from damage, loss, or unauthorized alteration.

The inspectors reviewed surveillances and audits, and interviewed staff to determine if:

- the applicant had identified and verified the qualifications of all constructors who prepared or issued design documents for construction;
- audits were scheduled and performed for design control, document control, and records;
- the scope and depth of the audits were consistent with the stated purpose for each audit;
- auditors were selected in accordance with the QA manual;
- appropriate standards were referenced;
- the audited organization received a copy of the audit report; and
- adverse findings were entered into the corrective action program and effective corrective actions were taken.

The following samples were inspected during this inspection:

- IP 37055 Section 02.02 – six samples
- IP 37055 Section 02.03.a – 15 samples
- IP 37055 Section 02.03.b – 15 construction organization initiated samples
- IP 37055 Section 02.03.c – one sample
- IP 37055 Section 02.04.a – one sample
- IP 37055 Section 02.04.b – two sample
- IP 37055 Section 02.05.a – 15 samples
- IP 37055 Section 02.05.c – two samples
- IP 37055 Section 02.06 – 15 samples

Additionally, as part of the as-built review, inspectors covered applicable sections of the following IPs:

- IP 49063 Section 02.03-two samples (two piping systems outside reactor coolant system (RCS))
- IP 49063 Section 02.04-two samples (two piping systems outside RCS)
- IP 50073 Section 02.04-eight samples (eight drawings and thirteen safety-related mechanical components)
- IP 50075 Section 02.03.d-eight records/samples (eight drawings and 13 safety-related mechanical components)

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified. Below is a summary of each section of IP 37055:

- Section 02.01 – Not required
- Section 02.02 – Complete
- Section 02.03 – Complete
- Section 02.04 – Complete
- Section 02.05.a – Complete
- Section 02.05.b – Not required
- Section 02.05.c – Complete
- Section 02.06 – Complete

c. Conclusion

Based on the activities reviewed in this and previous inspections, the inspectors concluded that the applicant's and contractor's onsite design activity, including controls for engineering and construction initiated field changes, was being conducted in compliance with the technical and QA requirements described in the facility SAR. Based on the historical NRC inspections and the recent inspection efforts, a sufficient number of samples have been reviewed and IP 37055 is closed.

E.1.2 Verification of As-Built for safety-related piping systems (Inspection Procedures 37051, 49063, 50073, and 50075)

a. Inspection Scope

As discussed in Section E.1.1 of this report, the inspectors performed field walkdowns of selected portions of two safety-related piping systems to determine if:

- as-built design and construction drawings and specifications correctly reflected the as-built condition of the plant (including supports, pipe welds, and piping); and
- changes from the original design were properly reviewed and approved.

The following samples were inspected:

- IP 37051 Section 02.01.b.1 – two samples
- IP 37051 Section 02.02 – two samples

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusion

Based on the limited sample of as-built inspections conducted during this inspection, no additional conclusion is warranted. Additional inspection samples are required to meet the requirements of this IP.

P.1 Pre-Operational Activities

P.1.1 Pre-Operational Test Program Implementation Verification (Inspection Procedure 71302)

a. Inspection Scope

02.01 (Weekly Inspection Activities): The inspectors verified that the applicant's management control system was effectively discharging its responsibilities over the preoperational testing program by direct observation of activities, tours of the facility, interviews and discussions with applicant personnel, and review of facility records. Preoperational testing activities were limited during the inspection period and included the following systems or portions thereof:

- System 70, CCS
- System 67, ERCW
- System 74, Residual Heat Removal (RHR)

As systems became available for preoperational testing, inspectors toured the accessible areas of the facility to make an independent assessment of equipment conditions, plant conditions, security, and adherence to regulatory requirements. Inspectors also verified the following, as available and on a sampling basis during the tours:

- general plant/equipment conditions;
- activities in progress (e.g., maintenance, preoperational testing, etc.) were being conducted in accordance with applicant's procedures; and
- construction work force was authorized to perform activities on systems or equipment.

02.02 (Monthly Inspection Activities): During this inspection period, the inspectors reviewed the turnover package for the Unit 2 portion of the Safety Injection System (System 63) as part of Startup Manual Procedure (SMP) 4.0, "System Completion and Turnover," Rev.9, to verify jurisdiction controls were appropriate and applicant procedures were followed. Additionally, the inspectors reviewed the turnover package to ensure required preventative maintenance was incorporated into a schedule for accomplishment.

The inspectors reviewed maintenance plans on safety-related equipment, to determine if the maintenance was scheduled in accordance with developed procedures and that these procedures were adequate for the maintenance being performed. The maintenance had not been performed but the methodology was discussed with the Refurbishment and Preventative Maintenance Manager to determine how systems with completed preoperational testing would be protected.

b. Observations and Findings

No findings were identified.

c. Conclusions

The applicant's preoperational test program was implemented in accordance with procedures for those activities observed during the inspection period.

P.1.2 Preoperational Test Procedure Review (Inspection Procedures 70300 and 70311)

a. Inspection Scope

Background: The purpose of IMC 2513, Light Water Reactor Inspection Program - Preoperational Testing and Operational Preparedness Phase, issue date January 1, 1984, is to verify through direct observation, personnel interviews, and review of facility records that:

- Systems and components important to the safety of the plant are fully tested to demonstrate that they satisfy their design requirements.
- Management controls and procedures, including quality assurance programs, necessary for operation of the facility have been documented and implemented.

IMC 2513 defines the minimum inspection program for a finding of readiness for license issuance (IP 94300, Status of Plant Readiness for an Operating Licensee). IMC 2513 requires the procedural review of the mandatory tests defined in IMC 2513 and five of the primal tests defined in IMC 2513. The following inspection was performed in relation to satisfying the required procedural review.

Inspection Activities: The inspectors reviewed pre-operational test instruction 2-PTI-063-05-B, Safety Injection System Pump/Valve Logic Test – Train B, Rev.0001 to verify that the procedure contained the following administrative good practice attributes:

- the title described the purpose of the procedure
- the cover page had appropriate information and approval signatures
- each page had appropriate identification information
- the last page was clearly identifiable by markings
- a clear statement of procedure purpose/objectives
- planning information such as prerequisites, precautions, required tools, reference documents, and coordination requirements
- signoff requirements including concurrent and independent verification steps established where appropriate
- equipment alignment instructions are clear and concise
- equipment identifiers are accurate
- actions to be taken within the steps are specifically identified
- instrumentation units consistent for data collection
- graphs, charts, tables, data sheets, and work sheets are clearly usable
- calculation sheets were technically accurate
- clear coordination instructions for test activities involving multiple test personnel
- clear instructions for system restoration

- guidance for follow-up actions and points of contact
- overall, clear concise steps for testing with action critical (acceptance criteria) steps identified
- clear quantitative acceptance criteria with acceptability and contingencies
- overall sequence of the procedure consistent with the obtaining the intended result

The inspectors also reviewed the procedure to verify that precautions or explanations were placed immediately ahead of the steps to which they applied. The inspectors performed a detailed review which included a discussion with the responsible test engineer to verify that the acceptance criteria met design requirements. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the applicant's test procedure was written in a manner consistent with NRC requirements and the guidance of applicant procedure SMP-8.0, "Watts Bar Nuclear Plant Unit 2 Administration of Preoperational Test Instructions," Rev. 9.

P.1.3 Pre-Operational Test Procedure Review (Inspection Procedures 70300 and 70311)

a. Inspection Scope

Background: The purpose of IMC 2513, Light Water Reactor Inspection Program - Preoperational Testing and Operational Preparedness Phase, issue date January 1, 1984, is to verify through direct observation, personnel interviews, and review of facility records that:

- Systems and components important to the safety of the plant are fully tested to demonstrate that they satisfy their design requirements.
- Management controls and procedures, including quality assurance programs, necessary for operation of the facility have been documented and implemented.

IMC 2513 defines the minimum inspection program for a finding of readiness for license issuance (IP 94300, Status of Plant Readiness for an Operating Licensee). IMC 2513 requires the procedural review of the mandatory tests defined in IMC 2513 and five of the primal tests defined in IMC 2513. The following inspection was performed in relation to satisfying the required procedural review.

Inspection Activities: The inspectors reviewed pre-operational test instruction 2-PTI-063-05-A, Safety Injection System Pump/Valve Logic Test – Train A, Rev.0001 to verify that the procedure was written to the same standard as 2-PTI-063-05-B, Safety Injection System Pump/Valve Logic Test – Train B. The inspectors performed a detailed review which included a discussion with the responsible test engineer to verify that the acceptance criteria met design requirements. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the applicant's test procedure was written in a manner consistent with NRC requirements and the guidance of applicant procedure SMP-8.0, "Watts Bar Nuclear Plant Unit 2 Administration of Preoperational Test Instructions," Rev. 9.

P.1.4 Preoperational Test Procedure Review (Inspection Procedures 70300 and 70311)

a. Inspection Scope

Background: The purpose of IMC 2513, Light Water Reactor Inspection Program - Preoperational Testing and Operational Preparedness Phase, issue date January 1, 1984, is to verify through direct observation, personnel interviews, and review of facility records that:

- Systems and components important to the safety of the plant are fully tested to demonstrate that they satisfy their design requirements.
- Management controls and procedures, including quality assurance programs, necessary for operation of the facility have been documented and implemented.

IMC 2513 defines the minimum inspection program for a finding of readiness for license issuance (IP 94300, Status of Plant Readiness for an Operating Licensee). IMC 2513 requires the procedural review of the mandatory tests defined in IMC 2513 and five of the primal tests defined in IMC 2513. The following inspection was performed in relation to satisfying the required procedural review.

Inspection Activities: The inspectors reviewed pre-operational test instruction 2-PTI-067-02-A, ERCW System Flow Balance – Train A, Rev. 0004 to verify that the procedure was written to the same standard as 2-PTI-067-02-A, ERCW System Flow Balance – Train A, Rev. 0003. The inspectors had previously reviewed 2-PTI-067-02-A Rev. 0003 in IIR 05000391/2013610 (ADAMS Accession No. ML14049A158) but the applicant had made a revision to the test acceptance criteria. This change warranted additional inspection review of the procedure due to the importance of the revised acceptance criteria. The inspectors performed a detailed review which included a discussion with the responsible test engineer to verify that the acceptance criteria met design requirements. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the applicant's test procedure was written in a manner consistent with NRC requirements and the guidance of applicant procedure SMP-8.0, "Watts Bar Nuclear Plant Unit 2 Administration of Preoperational Test Instructions," Rev. 9.

P.1.5 Preoperational Test Procedure Review (Inspection Procedures 70300 and 70333)

a. Inspection Scope

Background: The purpose of IMC 2513, Light Water Reactor Inspection Program - Preoperational Testing and Operational Preparedness Phase, issue date January 1, 1984, is to verify through direct observation, personnel interviews, and review of facility records that:

- Systems and components important to the safety of the plant are fully tested to demonstrate that they satisfy their design requirements.
- Management controls and procedures, including quality assurance programs, necessary for operation of the facility have been documented and implemented.

IMC 2513 defines the minimum inspection program for a finding of readiness for license issuance (IP 94300, Status of Plant Readiness for an Operating Licensee). IMC 2513 requires the procedural review of the mandatory tests defined in IMC 2513 and five of the primal tests defined in IMC 2513. The following inspection was performed in relation to satisfying the required procedural review.

Inspection Activities: The inspectors reviewed preoperational test instruction 2-PTI-062-01, Charging and Letdown Logic Test, Rev. 0000, to verify that the procedure contained the following administrative good practice attributes:

- the title described the purpose of the procedure
- the cover page had appropriate information and approval signatures
- each page had appropriate identification information
- the last page was clearly identifiable by markings
- a clear statement of procedure purpose/objectives
- planning information such as prerequisites, precautions, required tools, reference documents, and coordination requirements
- signoff requirements including concurrent verification steps established where appropriate
- equipment alignment instructions are clear and concise
- equipment identifiers are accurate
- actions to be taken within the steps are specifically identified
- instrumentation units consistent for data collection
- graphs, charts, tables, data sheets, and work sheets are clearly usable
- clear coordination instructions for test activities involving multiple test personnel
- clear instructions for system restoration
- guidance for follow-up actions and points of contact
- overall, clear concise steps for testing with action critical (acceptance criteria) steps identified
- clear quantitative acceptance criteria with acceptability and contingencies

- overall sequence of the procedure consistent with the obtaining the intended result

The inspectors also reviewed the procedure to verify that precautions or explanations were placed immediately ahead of the steps to which they applied. The inspectors performed a detailed review which included a discussion with the responsible test engineer to verify that the acceptance criteria met design requirements. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the applicant's test procedure was written in a manner consistent with the guidance of procedure SMP-8.0, "Watts Bar Nuclear Plant Unit 2 Administration of Preoperational Test Instructions," Rev. 9.

P.1.6 Preoperational Test Witnessing (Inspection Procedures 70312 and 70302)

a. Inspection Scope:

Background: The purpose of IMC 2513, Light Water Reactor Inspection Program - Preoperational Testing and Operational Preparedness Phase, issue date January 1, 1984, is to verify through direct observation, personnel interviews, and review of facility records that:

- Systems and components important to the safety of the plant are fully tested to demonstrate that they satisfy their design requirements.
- Management controls and procedures, including quality assurance programs, necessary for operation of the facility have been documented and implemented.

IMC 2513 defines the minimum inspection program for a finding of readiness for license issuance (IP 94300, Status of Plant Readiness for an Operating Licensee). IMC 2513 requires the pre-operational test witnessing of the mandatory tests defined in IMC 2513 and five of the primal tests defined in IMC 2513. The following inspection was performed to in relation to satisfying the required pre-operational test witnessing.

Inspection Activities: The inspectors witnessed the performance of pre-operational test instruction 2-PTI-067-02A, ERCW System Flow Balance -Train A, Rev. 0003 and 0004 to verify that the testing was conducted in accordance with approved procedures and to verify the adequacy of test program records and preliminary evaluation of test results. The inspectors assessed the following attributes associated with this test observation:

- All test personnel were on station and had the latest revision of the procedure
- Test prerequisites were performed
- Plant systems were in service to support the test
- Test equipment was installed and within calibration
- Testing was performed in accordance with the approved procedure

- Test interruptions and continuations were handled in accordance with approved procedures
- Testing events and discrepancies were properly documented
- Testing was executed and coordinated properly
- Data was properly collected
- Temporary equipment was installed and tracked appropriately
- Administrative test controls were properly followed
- Test personnel were using approved drawings and vendor manuals

The inspectors observed the test to verify that the overall test acceptance was met. The inspectors conducted a review with the responsible test engineer to assure that the preliminary test evaluations were consistent with the inspector's observations. During the test inspectors observed important data gathering activities to ensure the data was properly gathered and recorded. A posttest cursory review of the test data was performed to verify legibility, traceability, and permanence of the data sheet entries.

The inspectors verified through direct questioning that the on-shift operations supervisor and test engineer were familiar with administrative controls covering the conduct of corrective and preventative maintenance during testing.

The inspectors reviewed four drawings used by test personnel to verify that they were the correct revisions as compared to master indices.

The inspectors conducted interviews and reviewed training records for two personnel involved in the above test to verify they had received appropriate training for performing the test. Documents reviewed are listed in the Attachment.

The following samples were inspected:

- IP 70302 Section 02.03.a – one sample
- IP 70302 Section 02.03.b – four samples
- IP 70302 Section 02.05 – two samples
- IP 70302 Section 02.06 – two samples

b. Observations and Findings

No findings were identified. This test was performed twice in its entirety due to a change of acceptance criteria after completion of the first test (Rev. 0003).

c. Conclusions

The inspectors determined that the applicant's test procedure was performed in a manner consistent with the guidance of procedure SMP-9, "Watts Bar Nuclear Plant Unit 2 Conduct of Test," Rev. 2.

P.1.7 Preoperational Test Results Evaluation (Inspection Procedure 70400)

a. Inspection Scope:

Background: The purpose of IMC 2513, Light Water Reactor Inspection Program - Preoperational Testing and Operational Preparedness Phase, issue date January 1,

1984, is to verify through direct observation, personnel interviews, and review of facility records that:

- Systems and components important to the safety of the plant are fully tested to demonstrate that they satisfy their design requirements.
- Management controls and procedures, including quality assurance programs, necessary for operation of the facility have been documented and implemented.

IMC 2513 defines the minimum inspection program for a finding of readiness for license issuance (IP 94300, Status of Plant Readiness for an Operating Licensee). IMC 2513 requires the pre-operational test results review of the mandatory tests defined in IMC 2513 and five of the primal tests defined in IMC 2513. The following inspection was performed to in relation to satisfying the required pre-operational test results review.

Inspection Activities: The inspectors performed a detailed review of the results for pre-operational test procedure 2-PTI-072-02, Containment Spray System Air Flow Test, Rev. 1 to verify that the applicant's evaluation of the procedure performance and results was conducted in accordance with approved procedures. This review was performed to provide assurance that the test data was within the established acceptance criteria and the applicant's methods for identifying and correcting deficiencies were adequate. The inspectors performed the following activities associated with this test results review:

- Reviewed all changes made to the test procedure to verify they were properly annotated, did not affect the objective of the test, and were performed in accordance with administrative procedures.
- Reviewed the test summary and evaluation to verify that the system was evaluated to meet design requirements and acceptance criteria.
- Reviewed the original "as-run" copy of the test to verify completion of data sheets, calculations and signatures/initials.
- QA inspection records were reviewed to verify they were completed as required by the test procedure.
- The approval of the test results was reviewed for completeness with respect to the acceptance of the test results.

The inspectors reviewed the test results to verify that the overall test acceptance was met. The inspectors conducted a review with the responsible test engineer to assure that the test evaluation was performed in accordance with established procedures.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the applicant's test procedure was written in a manner consistent with the guidance of procedure SMP-10.0, "Watts Bar Nuclear Plant Unit 2 Packaging and Processing Test Results," Rev. 1.

III. OPERATIONAL READINESS ACTIVITIES

O.1 Operations

O.1.1 Pre-Licensing Review of Training and Qualification Programs (Inspection Procedure 41301)

a. Inspection Scope

Inspectors attended one session of each of the five Licensed Operator Requalification training topics for Unit 1 and Unit 2 differences Cycle One. Training material for the following topics was reviewed to verify that specific elements of IP 41301 were met (as discussed below):

- Knowledge and Abilities of NUREG 1122, Revision 2, The Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized-Water Reactors,
 - 2.2.3 Knowledge of the design, procedural, and operational differences between units; and
 - 2.2.4 Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.

The specific training sessions observed were:

- U1/U2 Power Distribution Monitoring System Differences (WINCISE)
- U1/U2 RVLIS, CETs, SCM Differences (Common Q)
- Common Systems Impacted by U2
- U1/U2 Electrical & FP Differences
- "Other" U1/U2 Differences

Inspectors observed that the first three elements described in paragraph 03.01.b of IP 41301, as listed below, were met:

- systematic analysis of the jobs to be performed
- learning objectives derived from the analysis which describe desired performance after training
- training design and implementation based on the learning objectives

b. Observations and Findings.

No findings were identified.

c. Conclusion.

Instructors were well prepared and the lesson material was adequate. Students were attentive as the information was new.

IV. OTHER ACTIVITIES

OA.1.1 Review of Actions for Violations (VIOs) associated with EA-13-019 for Commercial Grade Dedication (Inspection Procedure 92702)

OA.1.1.1 (CLOSED) VIO 05000391/2013611-01, Commercial Grade Dedication Program Breakdown

OA.1.1.2 (CLOSED) VIO 05000391/2013611-02, Failure to Make a Required 10 CFR 50.55(e) Report

OA.1.1.3 (CLOSED) VIO 05000391/2013611-03, Failure to Identify Significant Condition Adverse to Quality

a. Inspection Scope

The inspectors reviewed the applicant's response to the Severity Level III problem (EA-13-019) described in NRC inspection report 05000391/2013614 (ADAMS Accession No. ML13169A030). This SL III problem consisted of three violations all related to the CGD program. The first violation involved a breakdown of the 10 CFR Part 50, Appendix B QA program in the single work area of CGD. Specifically, TVA failed to translate or include the 10 CFR Part 21 definition of critical characteristic in its procedure NEDP-8, "Technical Evaluation for Procurement of Materials and Services." As such, TVA had not verified critical characteristics for an unknown number of safety-related items procured for the WB2 project starting from the resumption of construction activities in 2008. A second violation involved a failure to report the aforementioned breakdown in the QA program as required by 10 CFR 50.55(e)(4) and (5). The apparent cause of this violation was the failure of procedure NC-PP-13, "Reporting Requirements," Rev. 0 to require a significant breakdown of the QA program to be reportable whether or not the breakdown actually resulted in a defect. The third violation involved the failure to identify a significant condition adverse to quality related to the previously mentioned breakdown in the QA program. The inspectors reviewed the applicant's letter in response to EA-13-019 (ADAMS Accession No. ML13204A383), which addressed reasons for the violations, corrective steps, and the date when full compliance was achieved for all three violations.

With regard to the Criterion III violation, the inspectors reviewed the applicant's root cause analysis reports, self-assessments, associated PER, verified that all corrective actions to prevent recurrence (CAPR) were completed, sampled completion of other corrective actions, and reviewed the available effectiveness reviews for those corrective actions. Corrective actions that were verified included ensuring that the TVA and Bechtel CGD procedures were revised to reflect current regulatory requirements, audits and surveillances of the CGD program were scheduled and being completed, and that training for Bechtel CGD personnel was accomplished and adequate. The inspectors also reviewed a sample of five sets of CGD procurement data sheets (PDS) and associated technical evaluations (TE) to ensure the revised CGD packages met current regulatory requirements. In addition, for any items procured under the original, unrevised PDSs within the sample, the inspectors also reviewed the results of testing to ensure those items met the new PDS and TE critical characteristic requirements.

With regard to the 10 CFR 50.55(e) violation, the inspectors reviewed the applicant's causal analysis, extent of condition review, PER, and the revised reporting procedure to ensure it accurately reflected current regulatory requirements. Corrective actions for this violation also included a review of past PERs for reportability.

With regard to the Criterion XVI violation, the inspectors reviewed the applicant's causal analysis, PER, and extent of condition review. The cause of this violation was related to the failure to present the results of PER 403095 Corrective Action #008 (conduct a full 100% CGD extent of condition review) to the Construction Completion Management Review Committee (CCMRC). The CCMRC was to consider whether the results of the extent of condition review indicated a significant condition adverse to quality, and therefore whether PER 403095 should be reassigned as a Level A PER. The requirement to conduct this review was adequately captured in procedure NC-PP-3, "Watts Bar Unit 2 Corrective Action Program," Rev 15, and had been documented in the applicant's corrective action program prior to the violation. Completed corrective actions taken for this violation included presenting the results of the 100% extent of condition review to the CCMRC; and briefing PER coordinators on this issue.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The applicant's causal analysis and corrective actions for the three violations related to EA-13-019 were adequate and fully implemented, and compliance with the associated regulatory requirements has been restored. These violations are closed.

OA.1.2 (Closed) Historical 10CFR21 Reviews and Unresolved Item 05000391/2013609-02, Potential Inadequate Corrective Actions for Historical Issues (Inspection Procedure 92701)

a. Inspection Scope:

The applicant committed to perform a review of historical 10CFR21 (Part 21) issues that were applicable to WBN Unit 1 for applicability and potential resolution for WBN Unit 2. The review process was captured in applicant procedure 25402-3DP-G04G-00501, "Historical Document Review Process" and subsequently expanded upon in applicant PER 494917. The procedural guidance utilizes a review of all issues documented in the applicant's historical database (Watts Bar Nuclear Plant Unit 2 Startup Integration Task Equipment List (WITEL)) and PER 494917 outlined the methodology the applicant planned to use to quantify, qualify, and subsequently resolve issues identified from historical Part 21's. The inspectors reviewed the procedure, assessed the methodology of the review, and performed an independent verification of the applicants historical Part 21 results to ensure that the review encompassed all applicable historical issues. Additionally, the inspectors held interviews with applicant staff to understand the rationale for screening historical Part 21's for applicability to WBN Unit 2.

b. Observations and Findings:

The following SL IV NCV was identified.

Introduction: The inspectors identified a SL IV NCV associated with the corrective actions of PER 49417 to identify and correct historical issues contained in the applicant's WITEL database. This issue was previously identified as URI 05000391/2013609-02, Potential Inadequate Corrective Actions for Historical Issues.

Description: The review of PER 494917 revealed that the applicant's intention was to "obtain a listing of all 10CFR Part 21 issues applicable to Unit 1, perform a review for Unit 2 applicability, and assign the Unit 2 applicable 10CFR21 issues to the appropriate Unit 2 design discipline." The applicant's search returned 15 historical items, of which, 11 were identified as applicable to Unit 2. The inspectors performed an independent sample of historical items in the WITEL database and identified additional WBN Unit 1 Part 21's, which were not identified by the applicant, and WBN Unit 2 applicable Part 21's with inadequate justification for closure. The applicant subsequently dedicated additional efforts towards identifying the total population and concluded in PER 806990 that a total of 236 items existed. Of the 236 items identified, 49 were screened as applicable to WBN Unit 2 and required efforts to ensure that the Part 21 issue had been resolved for Unit 2. Along with this disparity in population was the rationale for closure of some items that were classified as applicable. The resolution of PER 806990 also corrected the issue of inaccurate closure rationale.

The inspectors determined that the applicant's inadequate corrective action was a performance deficiency. This performance deficiency was considered more than minor in accordance with IMC 0613, Appendix E because it represented an adverse condition that rendered the quality of structures, systems, or components (SSCs) indeterminate and required substantive corrective action to satisfy the original intent of the corrective action document. Based on the applicant's assessment, it was determined that the population of historical items that were originally omitted for resolution did not require re-work of any equipment. The finding was determined to be of very low safety significance in accordance with Section 6.5 of the NRC Enforcement Policy because it does not represent a breakdown in the QA process. The applicant issued PER 806990 to address the identified conditions. The inspectors reviewed this finding against cross-cutting area components as described in IMC 0310 "Components Within the Cross-Cutting Areas" and determined that no cross-cutting aspect applied.

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that, "conditions adverse to quality are promptly identified and corrected." PER 494917 directed, in part, to "obtain a listing of all 10CFR Part 21 issues applicable to Unit 1, perform a review for Unit 2 applicability, and assign the Unit 2 applicable 10CFR21 issues to the appropriate Unit 2 design discipline."

Contrary to the above, on November 8, 2013 the applicant failed to identify all potential 10CFR Part 21 issues and was therefore unable to subsequently review for Unit 2 applicability and potentially resolve. Specifically, the questioning from NRC led the applicant to identify that 221 potential conditions adverse to quality were omitted from the corrective action review.

Because this was a SL IV violation and it was entered into the applicant's corrective action program as PER 806990, 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 05000391/2014602-01, "Inadequate Corrective Actions for Historical Issues."

c. Conclusion

Based on a review of the applicant's corrective actions outlined in PER 806990 and the aforementioned inspection activities, the inspectors determined that the applicant had implemented actions that would be sufficient to address the review of historical 10CFR21 reviews. This inspection item, historical 10CFR21 reviews, is closed. Additionally, this closes URI 05000391/2013609-02, Potential Inadequate Corrective Actions for Historical Issues.

OA.1.3 (Closed) Confirmatory Order EA-12-021, Completeness and Accuracy of Information (Inspection Procedure 35007)

a. Inspection Scope

Background: In July 2012, the NRC issued a Confirmatory Order (ADAMS Accession No. ML12173A020) as the result of an agreement reached during an alternative dispute resolution (ADR) mediation session conducted on May 21, 2012, regarding falsification at WBN Unit 2. In early 2012, the NRC's Office of Investigations completed an investigation regarding activities at the Watts Bar Nuclear Plant. Based on the evidence developed during the investigation, the NRC staff concluded that, in August 2010, an electrician and foreman employed by a subcontractor at WBN Unit 2 deliberately falsified work order packages for primary containment penetrations and caused the applicant, TVA, to be in apparent violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and 10 CFR 50.9, "Completeness and Accuracy of Information."

At the ADR session, TVA discussed the corrective actions and enhancements taken shortly after its identification of the incident in August 2010. In addition, TVA agreed to a number of corrective actions to preclude recurrence of the violation.

The NRC reviewed actions taken in response to the order as documented in IIR 05000391/2013604 (ADAMS Accession No. ML13179A079) issued on June 27, 2013. The inspection report documented that six of the nine actions specified in the Confirmatory Order for WBN Unit 2 had been implemented (actions V.3.a, V.3.b, V.3.c, V.3.d, V.3.f, and V.3.g).

On August 29, 2013 TVA issued a letter (ADAMS Accession No. ML13248A457) to the NRC providing a status update to the Confirmatory Order. In this letter, TVA documented confirmed completion of actions V.3.a, V.3.b, V.3.c, V.3.d, V.3.f, V.3.g, and V.3.h.

Inspection Activities: The inspectors reviewed and verified that actions to preclude recurrence were implemented. The actions are numbered by section as contained in Section V of the Confirmatory Order (ADAMS Accession No. ML12173A020). Review and inspection of most of these actions were previously documented in IIR 05000391/2013604.

The actions specified in the Confirmatory Order for Watts Bar Unit 2 were implemented with the exception of those noted below (Actions V.3.e and V.3.i).

Action	Inspector Activities
V.3.a	Documented in inspection report 05000391/2013604
V.3.b	Documented in inspection report 05000391/2013604
V.3.c	Documented in inspection report 05000391/2013604
V.3.d	Documented in inspection report 05000391/2013604.
	Inspectors reviewed an updated list of individuals trained in 2013 and the list of those who did not receive training because of extended sick leave, assignments to other plants, or because they were part of an independent organization.
V.3.e	Documented in inspection report 05000391/2013604.
	The inspectors reviewed actions documented in PER 533342 and tracked by TVA's corrective action program. These actions specifically include 10 CFR 50.9 refresher training to be provided by November of 2014 and 2016.
V.3.f	Documented in in inspection report 05000391/2013604
V.3.g	Documented in inspection report 05000391/2013604.
	Inspectors reviewed the results from the follow-up survey performed in 2013 and did not identify any significant adverse trends.
V.3.h	Documented in inspection report 05000391/2013604.
	The inspectors reviewed results from the effectiveness review performed in 2013 and documented in PER 533342 and did not identify any significant adverse trends.
	Additionally, the inspectors reviewed SR 843165 which documented a review of the Employee Concerns Program (ECP) database and the Corrective Action Program (CAP) for any potential falsification issues between January 1, 2013 and February 5, 2014. The evaluation determined that actions taken as a result of the ADR remained effective.
V.3.i	Documented in inspection report 05000391/2013604.
	On August 29, 2013 TVA issued a letter (ADAMS Accession No. ML13248A457) to the NRC providing a status update to the Confirmatory Order. The August 29, 2013 letter stated that upon completion, TVA will issue a letter to the NRC discussing its basis for concluding the Order action items are completed.

b. Observations and Findings

No findings were identified.

c. Conclusions

The actions specified in the Confirmatory Order for WBN Unit 2 have been fully implemented with the exception of actions V.3.e and V.3.i.

Action V.3.e is considered a continuing action tracked in TVA's corrective action program as PER 533342 and consists of refresher training which is to be provided every two years through 2016. Action V.3.i stated that TVA will provide a letter to the NRC discussing its basis for concluding the Order action items are completed.

Based on the review of actions completed to date, sufficient inspections of the Confirmatory Order implementation have been completed. Confirmatory Order EA-12-021 is closed.

OA.1.4 (Closed) SSER, Appendix HH, Item 49 Associated with Training Qualification Requirements (Inspection Procedure 92701)

a. Inspection Scope:

Background: The subject item was initially captured in NRC letter to TVA dated July 2, 2010, "Watts Bar Nuclear Plant, Unit 2 Program for Refurbishment" (ADAMS Accession No. ML101720050) which identified an NRC inspection follow-up item. At the time of review by NRC staff, the reviewer was unable to determine how the training qualification requirements from American National Standards Institute (ANSI) 45.2-1971 and procedure TI-119, "Maintenance Rule," were linked. This was deemed an item subject to future inspections.

As part of final closure, documentation associated with Item 49 was provided to NRC inspectors for review on December 17, 2013; the documentation included actions taken by Unit 1 and Unit 2 to address this item.

For Unit 1, TVA stated that the unit is an operating nuclear unit which complies with Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operations)." RG 1.33 endorses ANSI N18.7-1976/ American Nuclear Society (ANS) 3.2 which are found to be acceptable to the NRC staff and provide an adequate basis for complying with the quality assurance program requirements of 10CFR50 Appendix B for the operations phase. Additionally, TVA is committed to comply with requirements of ANSI N18.1-1971 and ANSI/ANS 3.1-1981 as endorsed by RG 1.8, Rev. 2, April 1987, "Qualification and Training of Personnel for Nuclear Power Plants." Both standards provide criteria for the selection of training of personnel for nuclear power plants. Implementation of these training requirements are outlined in procedure NPG-SPP-17.1, Rev. 9, "Systematic Approach to Training (SAT) Overview," and MMDP-1, Rev 27, "Maintenance Management System." As part of the closure documentation, the applicant stated that the [training] process is very similar to the process for Unit 2 where the use of a qualification matrix is utilized.

For Unit 2, TVA provided procedures 25402-000-GPP-0000-TI 216, "WBN Unit 2 Completion Project Refurbishment Program" and 25402-MGT-0002, "Training," which reference back to Bechtel's Project Nuclear Quality Assurance Plan (PNQAM). The PNQAM committed to ANSI 45.2-1971. In summary for Unit 2, TVA stated that implementing procedures define and/or contain qualification requirements.

Inspection Activities: The inspectors performed the following:

- Reviewed TVA's final closure package for Appendix HH, Item 49 associated with training requirements to verify how TVA documented the relationship between ANSI 45.2-1971 and TI 119;
- Reviewed TVA's Nuclear Quality Assurance Plan (NQAP), Rev. 28, specifically the following sections:
 - Section 11 which discusses the training program elements,
 - Appendix B contains a matrix of regulatory guides and standards which apply to quality assurance requirements,
 - Appendix F which delegates the WBN Unit 2 construction completion, construction phase tests and inspections, and related to QA activities to Bechtel and the Bechtel Quality Assurance Manual (QAM);
- Reviewed Bechtel's PNQAM, Rev 12 specifically Section 1.3 which outlines the requirements and responsibilities for indoctrination and training programs; and
- Reviewed two qualifications (one for each unit) for Unit 1 and Unit 2 personnel performing NDE and two qualifications (one for each unit) for personnel performing civil related examinations to verify that established training requirements and experience were comparable

Documents reviewed are listed in the Attachment.

b. Observations and Findings:

No findings were identified. Inspectors reviewed TVA's conclusion that there was no direct link between the training qualification requirements of ANSI 45.2 to TVA TI-119. Additionally, the inspectors reviewed TVA's NQAP which outlined the training program elements for personnel performing quality-related activities for Unit 1 and Unit 2.

Even though Unit 1 and Unit 2 personnel receive unique qualification to perform their tasks, the implementing procedures for both Unit 1 (operations) and Unit 2 (construction) are governed by the NQAP and have been written to meet 10CFR50 Appendix B requirements and training standards established by ASME, ANSI, and American Nuclear Society (ANS).

The inspectors determined that the training and qualification programs for both Unit 1 and Unit 2 contain unique aspects applicable to the construction, testing, and operations phases; nevertheless, Appendix B requirements and guidance established in industry standards such as ANSI 45.2 are addressed throughout procedures for Unit 1 and Unit 2.

c. Conclusions:

Based on the review of the final closure package, the inspectors determined that Appendix HH, Item 49 associated with training qualification requirements is closed.

OA.1.5(Closed) SSER, Appendix HH, Item 51 Associated with the Definition of Significant Cracks (Inspection Procedure 92701)

a. Inspection Scope:

Background: The subject item was initially captured in NRC letter to TVA dated July 2, 2010, "Watts Bar Nuclear Plant, Unit 2 Program for Refurbishment" which identified an NRC inspection follow-up item.

The NRC staff reviewed TVA's Maintenance Rule Programs Procedure TI-119 and found in Section 3.3, "Structural Monitoring Database," that the procedure provided the types of degradation for inspection (e.g., under Concrete and Masonry Walls). At the time of review by the NRC staff, the reviewer noted that the procedure specified actions for significant cracks; however, the term "significant crack" was not quantified. Therefore, the implementation of Procedure TI-119 was deemed as an inspection follow-up item to determine if the program requirements were adequately implemented.

Inspection Activities: The inspectors performed the following:

- Reviewed 0-TI-445, Examination of Structures for Maintenance Rule, Rev. 0 and verified 0-TI-445 was consistent with American Concrete Institute (ACI) 349.3R-02

b. Observations and Findings:

No findings were identified. TVA's Maintenance Rule Programs Procedure TI-119 was not revised to quantify cracks; instead, 0-TI-445, Examination of Structures for Maintenance Rule, Rev. 0 was revised. The programmatic requirements for the examinations of existing structures are contained in TI-119. Procedure 0-TI-445 provides the technical guidance for periodic examination of existing structures in support of the implementation and continued compliance with the Maintenance Rule. Attachment 2 of 0-TI-445 contains specific acceptance criteria to classify cracks as acceptable, acceptable with deficiency, or as a condition that requires further evaluation/remediation.

c. Conclusions:

Based on the review of the final closure package, the inspectors determined that Appendix HH, Item 51 associated with the definition of significant cracks is closed.

OA.1.6(Closed) SSER, Appendix HH, Open Item 64, Eagle 21 Rack 2 RTD Testing Results Review (Inspection Procedure 52055)

a. Inspection Scope

Background: This issue is documented in Supplemental Safety Evaluation Report (SSER) 23 to NUREG-0847 (ADAMS Accession No. ML11206A499) as Open Item 64 in Appendix HH. By letter dated June 18, 2010 (ADAMS Accession No. ML101940236), TVA stated that the Eagle 21 system factory acceptance test of Rack 2 revealed that the temperature inputs to the narrow range resistance temperature detector (RTD) were consistently reading about 0.2 degrees Fahrenheit higher than expected. Westinghouse

determined that it had incorrectly configured the inputs as a shared RTD in the loop calculation processor (LCP) software. Westinghouse initiated Corrective Action Item 10-140-M021 and performed an evaluation of a potential nuclear safety issue. It determined that this issue did not represent a substantial safety hazard even if it was left uncorrected. By letter dated October 29, 2010 (ADAMS Accession No. ML103120711), TVA described the final resolution proposed by Westinghouse. In accordance with the proposed resolution, the spare input available on the RTD input board will be wired to the active channels. The spare input will provide the parallel resistance to resolve the problem. Jumpers will be installed at the Eagle 21 termination frame to provide a parallel connection from each existing narrow-range RTD input to an existing spare input, thus simulating the hardware connection for shared RTDs. Therefore, as configured, the LCP will provide the correct temperature calculation for the narrow-range RTDs. TVA stated that "Post modification testing will be performed to verify that the design change corrects the Eagle 21, Rack 2 RTD accuracy issue prior to WBN Unit 2 fuel load." The Open Item was to review the testing.

Inspection Activities: The inspectors reviewed the test in WO 11347100 and the change package to verify that the 0.2 degree Fahrenheit bias was corrected. The inspectors also reviewed the WO to verify that the test equipment was properly calibrated. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

Based on a review of the final closure package, this item is closed.

OA.1.7 (Closed) Three Mile Island Action Item II.K.1.10, Operability Status (Inspection Procedure 92701)

a. Inspection Scope

Background: This commitment was documented in TVA framework letter dated January 29, 2008, Watts Bar Nuclear Plant (WBN) Unit 2 – Regulatory Framework for the Completion of Construction and Licensing for Unit 2 (ADAMS Accession No. ML080320443). The commitment was contained in Enclosure 2, Item 129, II.K.1.10, "Operability Status" – Confirm multi-unit operation will have no impact on administrative procedures with respect to operability status. Standard Department Procedure OPDP-8, "Operability Determination Process and Limiting Conditions for Operation Tracking," Rev. 15, is the primary administrative procedure that controls operability status. This procedure is a common nuclear fleet corporate procedure that is presently in use on WBN Unit 1 and other TVA nuclear units.

Inspection Activities: The inspectors reviewed OPDP-8, and NPG-SPP-10.2, "Clearance Procedure to Safely Control Energy," Rev. 6, to verify that the procedures require the following:

- Each operating unit shall maintain an independent limiting condition for operation (LCO) tracking log.

- Each LCO tracking log record shall be assigned a unique identification number.
- Active LCOs shall be tracked and passed from shift to shift as part of the shift turnover.
- Operations shall verify the operability of redundant safety-related systems prior to the removal of any safety-related system from service.
- Operations shall have assurance that all work activities are complete before declaring any equipment affected by maintenance or surveillance activities operable.
- A means of notifying Operations personnel whenever a safety-related system is removed from and returned to service is required.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

Based on the above activities and review of the final closure package, the inspectors determined that two-unit operation will have no impact on administrative procedures with respect to operability status. This item, TMI Action Item II.K.1.10, is closed.

OA.1.8 (Closed) Generic Letter 1998-02, Loss of Reactor Coolant Inventory and Associated Potential for Loss of Emergency Mitigation Functions While in a Shutdown Condition, and Temporary Instruction 2515/142, Draindown During Shutdown and Common-Mode Failure (Temporary Instruction 2515/142 and Inspection Procedure 92701)

a. Inspection Scope

Background: Generic Letter (GL) 98-02 was issued following several nuclear industry events involving the inadvertent loss of RCS inventory while in a shutdown condition. The GL requested that licensees assess the susceptibility of their RHR and emergency core cooling systems (ECCS) to common-cause failure as a result of RCS draindown while in a shutdown condition.

Unit 1 Actions: WBN Unit 1 issued a response to GL 98-02, dated November 24, 1998 (ADAMS Accession No. ML082460081). The response identified susceptible RCS draindown pathways and vulnerabilities and described the Appendix B processes and controls in place that would prevent such an event from occurring. No corrective actions were identified, although several enhancements were documented. TVA's assessment was reviewed by the NRC using TI 2515/142, which was documented in NRC inspection report (IR) 50-390/99-11 and 50-391/99-11 (ADAMS Accession No. ML003683323). The inspectors concluded that TVA performed a thorough assessment of plant vulnerabilities. The inspectors also verified operational controls utilized, and found that TVA adequately implemented elements of the QA program described in the GL response at WBN.

Unit 2 Actions: The applicant submitted a supplemental response for GL 98-02, specific for Unit 2, on April 10, 2010 (ADAMS Accession No. ML100950044). This contained commitments for the applicant to document their review of ECCS designs to ensure they do not contain design features which can render them susceptible to common-cause failures. The NRC's Office of Nuclear Reactor Regulation found this approach acceptable as documented in the safety evaluation dated May 11, 2010 (ADAMS Accession No. ML101200155). WBN Unit 2 provided an endorsement of the Unit 1 GL 98-02 response in the document titled "Endorsement of Unit 1 Report on Generic Letter 1998-02, Watts Bar Unit 2," dated May 11, 2011. The applicant did not identify any substantial design differences that could become affected by this issue. Enhancements made following the WBN Unit 1 response were intended to be carried over into Unit 2 procedures.

Inspection Activities: The inspectors reviewed the applicant's conclusions to determine the adequacy of the applicant's assessment of the susceptibility of the plant to a draindown event while in a shutdown condition. The inspectors reviewed ECCS flow diagrams and the applicant's conclusions to verify that design features and administrative controls were in place to prevent inadvertent RCS draindown, in the shutdown mode, caused by misoperation of valves. The inspectors reviewed "Watts Bar Nuclear Plant Unit 2 – List of Design Differences," Rev. 1 (ADAMS Accession No. ML111010490) to verify that the ECCS design features between Unit 1 and Unit 2 do not have any appreciable differences. The inspectors reviewed general operating instruction GO-6, "Unit Shutdown From Hot Standby to Cold Shutdown," and GO-1, "Unit Startup From Cold Shutdown to Hot Standby," to verify that configuration controls are in place to prevent RCS draindown during shutdown. Specifically, when decreasing power, valve HCV-74-34, Refueling Water Return, has a hold order placed with specific release criteria before entry into Mode 4 and to remove the hold order before entry into Mode 3 when returning to power. The inspectors reviewed changes made to operating practices and procedures in response to GL 98-02 to verify that enhancements made following the WBN Unit 1 response were carried over into Unit 2 procedures. Additionally, the inspectors reviewed the operator training lesson plan to verify that training focused on draindown events is part of the continuous training program for licensed operators. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

Based on the above inspection activities and review of the engineering complete closure package, the inspectors determined that the applicant has performed an adequate assessment of plant vulnerabilities to RCS draindown events while in a shutdown condition. The applicant has adequately implemented QA program controls to prevent a similar event at WBN Unit 2. At the time of the inspection, the inspectors reviewed a copy of the corresponding Unit 2 procedures (2-GO-1 and 2-GO-6) that were approved but not issued. The procedures had received a qualified review, were sponsor approved, and contained the appropriate administrative controls with respect to the issues covered by GL 98-02. Therefore, GL 98-02 and TI 2515/142 are closed.

OA.1.9 (Closed) NRC Bulletin 76-02 and 84-02, Relay Coil Failures (Inspection Procedures 51053 and 92717)**a. Inspection Scope**

Background: Bulletin (BL) 76-02 documented an issue with relay coil failures associated with General Electric (GE) Type HFA, HGA, HKA, and HMA relays. A certain type on nylon coil spools (or bobbins), plus humid conditions, were determined to be the fundamental causes of corrosion and resulting coil failure. Bulletin 84-02 documented an issue with relay coil failures associated with GE Type HFA relays. Lexan coil spools were cracking due to the effects of aging, resulting in insulation failure, which caused shorted turns, increasing the coil temperature, and causing the eventual coil failure. The bulletins recommended replacing the affected relays.

In NRC IIR 05000391/2010603 (ADAMS Accession No. ML102170465), the inspectors reviewed the applicant's response letter and tracking letter associated with these bulletins. In NRC IIR 05000391/2011608 (ADAMS Accession No. ML11311A082), the inspectors reviewed a sample of relays that had been replaced and concluded that the activities performed at the time of the inspection to correct relay coil failures for GE type HFA, HGA, HKA, HMA relays were adequate. However, it was noted that additional inspection was needed for relays which did not yet have a unit identifier (ID) associated with them.

Inspection Activities: The inspectors reviewed the applicant's approach as detailed in the closure package. The inspectors interviewed engineers on the methodology for identification to determine whether the scope of potentially affected relays identified in the engineering complete closure package was adequate. Additionally, the inspectors reviewed two EDCRs, 59951-A and 58285-A, associated with issuing unit IDs for relays to determine whether the scope of potentially affected relays identified in the closure package was adequate.

The inspectors also chose two relays, WBN-2-RLY-057-SG4A and WBN-2-RLY-003-SG4BR, which previously did not have unit IDs for Unit 2 and had been identified as not within the scope of these bulletins. The inspectors reviewed drawings, 45N26952-1 and 45N2688-1, to determine whether the relays were within the scope of these bulletins.

The inspectors chose two HFA relays associated with 6.9kV Shutdown Board 2A-A, WBN-2-RLY-074-0010C-A and 2-RLY-074-0010B-A, which were identified as potentially within the scope of the bulletins and did not have unit IDs at the time of the inspection in IIR 05000391/2011608. The results of the applicant's inspection of these relays to determine if they needed replacement were documented in Work Order (WO) 112753729. The inspectors walked down the shutdown board and reviewed WO 112763729, PERs, and GE service advice notifications to verify that the applicant was correctly applying the information in the bulletins to existing HFA relays. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified. The inspectors noted that the engineering department used mark IDs, not unit IDs, from drawings in their evaluation of the relays at Watts Bar. In order to issue WOs associated with the relays, unit IDs needed to be issued for the relays.

c. Conclusions

Based on the above inspection activities, review of the engineering complete closure package, and the results of IIR 05000391/2011608, the inspectors concluded that the applicant has adequately captured the relevant relays in the scope of their evaluation and, for the sample selected, has adequately implemented the WO. While some WOs associated with these relays remain open, the NRC has reasonable assurance that the applicant is adequately addressing this issue. These items, BL 76-02 and 84-02, are closed.

OA.1.10 (Closed) NRC Bulletin 85-01 and Temporary Instruction 2515/069: Steam Binding of Auxiliary Feedwater Pumps (Inspection Procedure 92717 and Temporary Instruction 2515/069)

a. Inspection Scope

Background: BL 85-01 (ADAMS Accession No. ML031210845) was written in response to a potentially serious safety problem that occurred at certain operating facilities involving the operability of auxiliary feedwater (AFW) pumps as a result of steam binding. Numerous events were reported where backleakage of hot water into AFW systems flashed to steam, disabling the AFW pumps. It was determined that this could occur in any pressurized water reactor (PWR) and that this issue could affect multiple trains of the AFW system. BL 85-01 and subsequent GL 88-03 (ADAMS Accession No. ML031200470) requested licensees to (1) develop procedures for monitoring fluid conditions within the AFW system on a regular basis, and (2) develop procedures for recognizing steam binding and for restoring the AFW system to operable status should steam binding occur. TI 2515/069 (ADAMS Accession No. ML091520286) was issued to define inspection, reporting, and evaluation responsibilities for NRC inspectors.

WBN Unit 1 & 2 historical commitment actions were initially accomplished thru procedure revision without the need for hardware modifications and were accepted and closed by the NRC in an NRC letter dated Sept 25, 1990 "Notice of Violation (Inspection Report Nos. 50-390/90-20 and 50-391/90-20)" (ADAMS Accession No. ML072610300). A subsequent NRC inspection was performed in January and February of 1991 and documented in an NRC letter dated March 22, 1991 "Watts Bar Integrated Design Inspection (50-390/91-201)" (ADAMS Accession No. ML072970646). This inspection identified a deficiency in AFW temperature monitoring related to the commitment to GL 1988-03. TVA accepted the deficiency and identified the necessary modifications for Unit 1. TVA letter dated August 1, 1991 "Watts Bar Nuclear Plant (WBN) Unit 1-Response to NRC Integrated Design Inspection (IDI) Issues (50-390/91-201) at WBN" (ADAMS Accession No. ML072880150) documented TVA's commitments. Design Change Notice (DCN) M-16269-A was issued to relocate the temperature elements (TE-3-143 & 151) identified in the deficiency. The requested change identified that two temperature elements were too far away to be accurate (Loops 2 & 3). However, the two temperature indicators for Loops 1 & 4 were too close to the heat source (Feedwater By-Pass piping). Since the four TE's were relocated, new numbers were assigned (1-TE-3-6381, 2, 3, 4) and the old numbers (1-TE-3-143, 151, 159, & 166) were deleted. Deficiency 91-D-7 (found in TVA letter dated August 1, 1991 "Watts Bar Nuclear Plant (WBN) Unit 1-Response to NRC Integrated Design Inspection (IDI) Issues (50-390/91-201) at WBN" (ADAMS Accession No. ML072880150) was subsequently closed and documented in NRC letter dated June 29, 1993 "Integrated Design Inspection Follow-up at Watts Bar Unit 1 (NRC inspection Report No. 50-390/93-201)" (ADAMS Accession

No. ML072690552). The monitoring of the Unit 1 AFW system temperatures is procedurally directed and included in the Operator Rounds.

Inspection Activities: The inspectors reviewed the procedures developed to monitor fluid conditions in the AFW system and to recognize and recover from a possible steam binding event. The procedure to monitor the AFW system temperature was reviewed to verify its adequacy in meeting both applicant commitments and NRC requirements by measuring discharge piping temperature once per shift on operator rounds. The inspectors reviewed the procedures for recognizing and recovering from a possible steam binding event to verify that they were adequate to perform both functions. The NRC inspectors reviewed the procedures to verify that they were properly approved by the applicant. The inspectors interviewed Main Control Room staff to verify that the procedures will be available for use in the appropriate Unit 2 work stations and included in operator rounds. Documents reviewed are in the Attachment

b. Observations and Findings

No findings were identified. The Unit 1 procedures, which are identical to those for Unit 2, were available in the main control room and in use by the operations staff. The Unit 2 procedures are approved but will not be issued or implemented until Unit 2 operations commence.

c. Conclusion

Based on a review of the applicant's engineering complete closure package and the aforementioned inspection activities, the inspectors determined that the applicant had implemented actions that are sufficient to address the requirements of BL 85-01. Therefore, BL 85-01 and TI 2515-69, are closed.

OA.1.11 (Closed) Construction Deficiency Report 391/85-37: Incorrect Use of AMP PIDG Terminals (Inspection Procedure 35007)

a. Inspection Scope

Background: This CDR involved the discovery that AMP Products Corporation pre-insulated diamond grip (PIDG) terminals had been used on solid conductor component leads despite the fact that the vendor did not recommend using these terminals for solid copper wire applications. This use was identified on Class 1E discrete electrical components in Foxboro control loops and test points, relay racks, and local panels. Additional background information is provided in IIR 05000391/2013610 (ADAMS Accession No. ML14049A158).

Inspection Activities: The applicant's PP-19-2 Open Item/Commitment Completion Form (Engineering Complete closure package) tracking number PER 172698 R2, was reviewed and interviews with responsible engineering personnel were conducted. Legacy change documents were reviewed, to identify terminals in Unit 2 circuits that had been excluded from the scope of work to address this CDR in Unit 1. The samples selected were design change notices affecting systems 3, 30, 43, 68, and 251. The inspectors then cross-referenced those areas that had been excluded from the scope of work, with Unit 2 design output documents, to verify that those Unit 2 areas have been included in the new scope of work to address the CDR in Unit 2. The inspectors

reviewed a document titled “Table cross-referencing work excluded from Unit 1 scope to Unit 2 EDCRs” provided in Tab #8 of the PP-19-2 Engineering Complete package, to verify that the actions taken to address the CDR were inclusive of all the areas possibly affected in Unit 2. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

Based on the review of the engineering complete closure package, as well as previous NRC inspection reports, the inspectors determined that the applicant’s proposed corrective actions are adequate to address the concerns identified in CDR 391/85-37. CDR 391/85-37 is closed.

OA.1.12 (Closed) Construction Deficiency Report 86-14: Failure to Follow Procedures (Inspection Procedures 50073 and 50075)

a. Inspection Scope

Background: A deficiency concerning improper installation of ASCO model 8316 solenoid valves was identified and reported to the NRC in accordance with 10 CFR 50.55(e). All thread bolts were used in place of the solenoid valves original bonnet screws and mounting brackets. Additionally, field modifications to the mounting brackets were not performed in accordance with approved procedures. The modifications negated the seismic and environmental qualification of the solenoid valves. This item was previously inspected in IIR 05000391/2012608 (ADAMS Accession No. ML12319A368).

Inspection Activities: The inspectors reviewed a sample of ASCO 8316 solenoid valves that were replaced as part of the refurbishment program. The inspectors reviewed completed WOs to verify that the corrective actions related to this item were included in the work instructions. The inspectors reviewed the corrective actions to verify the installation requirements contained in the vendor manual and Modification/Addition Instruction (MAI) 4.4B were referenced in the WOs, and that the WOs addressed the proper mounting of the valves in accordance with the work order processing procedure. The inspectors performed a walkdown of a sample of valves to verify that the valves were installed in accordance with procedures and design documents. 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 engineering closure report, completed work orders, and a walkdown of installed valves, CDR 86-14 is closed.

OA.1.13 (Closed) Three Mile Island Action Item I.C.8, Pilot Monitoring of Selected Emergency Procedures for Near-Term Operating License Applicants (Inspection Procedure 92701)

a. Inspection Scope

Background: This TMI Action Item was intended to pilot monitor select emergency operating procedures (EOPs) at near-term operating license applicant plants. Action Item I.C.8 was originally made a license condition for Watts Bar Unit 1 and 2 as documented in NUREG-0847, dated June, 1982 (ADAMS Accession No. ML0720604900). NUREG-0737, Clarification of TMI Action Plan Requirements (ADAMS Accession No. ML102560051), provided clarification that the pilot monitoring would be discontinued following NRC approval of plant emergency procedures. Action Item I.C.8 was closed in NRC IRs 50-390/85-08 and 50-391/85-08 (ADAMS Accession No. ML082190701). The inspectors documented that the applicant had implemented the Westinghouse Owner's Group generic procedures, which had been approved by NRC staff. The inspectors determined that action item I.C.8 was no longer applicable. Unit 1 actions were further explained in TVA letter to NRC dated July 27, 1992 (ADAMS Accession No. ML073520471). This letter explains that the WBN EOPs conform to the Westinghouse generic guidelines and that WBN no longer depends on EOPs developed by identifying differences between Sequoyah Nuclear Plant and WBN. In Supplement 10 to the Safety Evaluation Report for Watts Bar Nuclear Units 1 and 2 (ADAMS Accession No. ML072060473), dated October, 1992, the NRC staff indicated that WBN procedures conformed to the Westinghouse Owner's Group guidelines and that the license condition was no longer necessary.

For Unit 2, EOPs are mimicked from the Unit 1 procedures presently in use and are different only when hardware or other minor design features dictate that they be different. Unit 2 procedures are currently approved but not issued. Final issuance of Unit 2 procedures requires Plant Operations Review Committee approval and will happen just prior to Unit 2 licensing.

Inspection Activities: The inspectors reviewed the applicant's engineering complete closure package, NCO820253100, to verify that the intent of TMI Action Item I.C.8 had been met for WBN Unit 2. The inspectors reviewed procedure 2-ECA-1.2, "LOCA Outside Containment" and compared it to 1-ECA-1.2, "LOCA Outside Containment," Rev. 5, to verify that that the Unit 2 procedure mirrored Unit 1 and performed the same functions.

b. Observations and Findings

No findings were identified.

c. Conclusions

Based on the above inspection activities and review of the engineering complete closure package, the inspectors determined that TMI Action Item I.C.8 is no longer applicable to WBN Unit 2. The WBN EOPs conform to Westinghouse Owner's Group guidelines, which have been approved by the NRC. This item, TMI Action Item I.C.8, is closed.

OA.1.14 (Closed) Control Room Design Review Special Program and Three Mile Island Action Item I.D.1 (Temporary Instruction 2512/035 and Inspection Procedure 92701)

a. Inspection Scope

The inspectors continued inspection efforts initiated in NRC IIR 05000391/2010602 (ADAMS Accession No. ML101230144) Section C.1.18 and NRC IIR 05000391/2010605 (ADAMS Accession No. ML110410680) Section OA.1.3 regarding the applicant's resolution of the main control room (MCR) design review. The inspectors focused on the actions supporting the remaining scope of the applicant's control room design review (CRDR) special program (SP). Specifically, the inspectors performed the following actions:

- Reviewed 15 safety-related MCR components on panels 2-M-4, 2-M-5, and 2-M-6 to verify that the components satisfied panel design output spatial arrangement, scale, mimic bus arrangement, component identification, and alarm window arrangement.
- Reviewed self-assessment report 25402-SA-ENG-11-006 to verify critical aspects of the program were inspected and that any corrective actions were captured in the applicant's corrective action program.
- Reviewed open commitments with a future closure date to ensure they were tracked by a controlled process.
- Reviewed five completed CRDR human engineering deficiency (HED) closure packages, where no change was made from Unit 1 CRDR SP, to verify field implementation was performed and the scope of the modification was accurately implemented.
- Reviewed five completed CRDR HED closure packages, where a change was made from the methodology used in Unit 1 CRDR SP, to verify that field implementation was performed and an evaluation was performed to ensure no new human factors were introduced.
- Reviewed procedure 25402-3DP-G04G-00507, Closing Out Control Room Human Engineering Concerns and Discrepancies, Rev.000, to verify that HED closure packages adhered to established procedures.
- Reviewed Unit 2 MCR mimic buses to verify they satisfied the intent of Appendix D of NUREG-0847, Safety Evaluation Report- WBN Unit 2, June 1982.
- Observed operation of Unit 2 pumps and valves from the Unit 2 MCR to verify controls and indications properly responded.
- Reviewed a sample of the corrective action database to verify no significant issues have been encountered when operating components from the Unit 2 MCR.
- Reviewed WITEL punchlist, PL-11-4262, to verify outstanding HED design packages were tracked using a controlled program.
- Reviewed Engineering Complete Closure Package.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the documents reviewed and actions performed complied with applicable requirements. Proper justification of remaining actions accompanied each commitment and planned corrective actions, when applicable, were appropriate. This inspection effort, coupled with previous inspections and conclusions, supports closure of this item. These items TI 2512/035, Control Room Design Review Special Program, and TMI Action Item I.D.1, Control Room Design Reviews, are closed.

OA.1.15 (Closed) Inspection of Watts Bar Nuclear Plant Employee Concerns Program (Temporary Instruction 2512/015)

a. Inspection Scope

The inspectors continued inspection efforts initiated in NRC IIR 05000391/2008010 (ADAMS Accession No. ML090291033) Section Q.1.3 and NRC IIR 05000391/2010602 (ADAMS Accession No. ML110800483) Section OA.1.7 regarding the applicant's identification and resolution of historic corrective action tracking documents (CATDs). Specifically, the inspectors utilized the guidance in TI 2512/015 to evaluate the applicant's implementation of procedure 25402-3DP-G04G-00501, Historical Document Review Process, Rev. 4. The inspection focused on reviewing the historical issue corrective actions to ensure that, for each CATD "applicable" to Unit 2, the assigned corrective actions were completed or transferred to a controlled program/process. The selected items for review represented a spectrum of construction and technical disciplines. The list of CATDs reviewed is listed in the Attachment to this report.

The following inspection requirements of TI 2512/015 were inspected:

- Section 05.03.m - 22 samples
- Section 05.07 – 1 sample

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the sample of documents reviewed complied with applicable requirements. Proper justification of corrective actions accompanied each CATD and planned corrective actions, when applicable, were appropriate. This inspection effort, coupled with previous inspections and conclusions, supports closure of this item. This item, TI 2512/015, Watts Bar Nuclear Plant Employee Concerns Program, is closed.

OA 1.16 (Closed) Construction Deficiency Report 391/91-31: Use of Non-Dedicated Commercial Grade Electrical Devices in Safety-Related Applications (Inspection Procedure 35007)

a. Inspection Scope

Background: The deficiency was initially reported to the NRC on June 28, 1991, as significant corrective action report (SCAR) WBP890634SCA in accordance with 10 CFR 50.55(e). The issue was documented as CDR 390/91-31 for Unit 1 and CDR 391/91-31 for Unit 2.

The construction deficiency report concerned the seismic qualification program for instrumentation and electrical equipment at WBN based on the requirements of Institute of Electrical and Electronics Engineers (IEEE)-344, "IEEE Recommended Practice for Seismic Qualification for Class 1E Equipment for Nuclear Power Generating Stations." Specifically, seismic sensitive electrically active (SSEA) devices were released from inventory for safety-related applications and were not procured or qualified to IEEE-344. These incidents occurred between February 1984 and January 1989.

The deficiency involved problems associated with replacement item procurement policies, procedures, and practices that did not adequately prescribe/control engineering involvement in the procurement process.

The applicant implemented the replacement items program (RIP) CAP which committed, in part, to a review of inventory and installed SSEA commercial grade QA level II devices. The SSEA review consisted of 416 items in which 56 cases were determined as not satisfying IEEE-344 requirements. TVA corrective actions for Unit 1 included the replacement or an engineering disposition for the applicable installed equipment. After a review of the adequacy and effectiveness of root cause determination, extent of condition, corrective actions, recurrence controls, proper closure, and a review of the RIP CAP for Unit 1, the inspectors determined that CDR 390/91-31 was adequately resolved for Unit 1 as documented in NRC IRs 50-390/94-66 (ADAMS Accession No. ML072980640) and 50-390/94-201 (ADAMS Accession No. ML072750758).

The SSEA review for Unit 1 included Unit 2 components. One component exception was noted during the review that did not meet the IEEE-344 requirements. The corrective actions for Unit 2 were documented in PER 144235. Unit 2 solid state protection system (SSPS) Train B, Midtex 156-14T300 relay K201 did not meet the requirements of IEEE-344. After a review of the Unit 2 RIP CAP, the inspectors determined the CAP was adequately resolved for Unit 2 as documented in NRC IIR 05000391/2010605 (ADAMS Accession No. ML110410680). The inspectors reviewed the engineering completed documents to install the K201 relay as documented in NRC IIR 05000391/2013612 (ADAMS Accession No. ML13088A066).

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

- reviewed PER 144235 to verify the corrective actions were implemented for Unit 2;
- reviewed certificate of conformance for Westinghouse SSPS start-up kit, Train B, 4/6/10, to verify the relay was purchased by a qualified vendor;

- reviewed Westinghouse Technical Bulletin TB-04-2 for SSPS Relays, 1/6/04, and reviewed TVA WO 09-954267-001 Train B Master Relay Data Sheets, 6/21/10, to verify that the components noted in the technical bulletin were identified by the applicant;
- reviewed WO 113314474 and inspected the as-built installation of the K-201 relay to verify that the relay was installed in accordance with the approved procedures and drawings; and
- interviewed two engineers and reviewed the Westinghouse seismic testing qualifications for the K-201 relay. The review was conducted to verify that the seismic qualifications met the requirements of the Final Safety Analysis Report (FSAR) and IEEE-344, "Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations," 1975.

Documents reviewed are listed in the Attachment

b. Observations and Findings

No findings were identified.

c. Conclusions

Based on the review of the final closure package, and other activities completed during this and previous inspections, the inspectors determined that the applicant's corrective actions were adequate. CDR 390/91-31 is closed.

OA.1.17 (Discussed) QA Records Corrective Action Program Plan (Temporary Instruction 2512/028 and Inspection Procedure 51055)

a. Inspection Scope

The inspectors reviewed a sample of QA records for electrical conduit and instrument subassemblies. The inspectors reviewed the applicant's sample assessment of the records 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. To verify that records were retrievable, the inspectors observed document control personnel locate independent samples of records from within the vault. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspection results are too limited to support a conclusion on the QA Records CAP at this time.

OA.1.18 (Discussed) Inspection to Determine Compliance with ATWS Rule, 10 CFR 50.62 (Temporary Instruction 2500/020)

a. Inspection Scope

Background: On June 1, 1984, the Commission approved publication of a final rule, 10 CFR 50.62, regarding the reduction of risk from Anticipated Transient Without Scram (ATWS) events for light water cooled nuclear power plants. At the same time, the Commission directed the staff to complete and issue (in the form of a generic letter) QA guidance for equipment that is not safety related, but is encompassed by the ATWS rule. The ATWS rule required that each licensee develop and submit (to the Director, Nuclear Reactor Regulation (NRR)) a proposed schedule for meeting the requirements of the rule within 180 days after the QA guidance is issued. On April 16, 1985, NRR issued GL 85-06. The enclosure to GL 85-06 provided the explicit QA guidance required by 10 CFR 50.62. The lesser safety significance of the equipment encompassed by 10 CFR 50.62, as compared to safety-related equipment, necessarily resulted in less stringent QA guidance. TI 2500/20 required an inspection focused on the implementation of the ATWS rule requirements, 10 CFR 50.62, and on the effectiveness of the QA controls applied to ATWS activities.

Inspection Activities: The inspectors reviewed EDCR 52408, an ATWS specification, and setpoint documents to verify that the designs and specifications conform to the applicant's plan as endorsed through the NRR safety evaluation and the FSAR. This included verifying that the systems do not compromise the safety features of the existing safety-related protection system and that the applicant's design is being properly implemented. This also included verifying that no open items exist in the SSER regarding ATWS. The inspectors also reviewed a purchase order for the dedicated pressure transmitters to verify they were meeting technical requirements. The inspectors reviewed a material receiving report for the dedicated pressure transmitters, which included a receipt inspection, to verify that the receipt inspection and identification controls were properly applied. The inspectors reviewed Bechtel's PNQAM to verify that there was a documented ATWS QA program plan.

The inspectors reviewed WOs 110809957 and 11211601 to verify that the latest installation standards and procedures were used for the installation of the dedicated pressure transmitters and that QA controls were implemented. The inspectors performed walk downs of the transmitters and wiring to verify that the equipment in place met the configuration specified, and that identification designations were being maintained. The inspectors also walked down the transmitters, inspected the terminations, and reviewed the WO to verify that the instrumentation was installed in the proper location, the installers used suitable equipment and tools, and the installation met the physical separation criteria. The inspectors reviewed the WOs to verify that applicant inspections were performed. The inspectors reviewed the test procedure and scoping document to verify they had adequate acceptance criteria. Documents reviewed are listed in the Attachment.

b. Observations and Findings.

No findings were identified.

c. Conclusions

The inspectors concluded that the current design, purchasing requirements, and installation (for the sample observed) were in accordance with the approved design. The inspectors also concluded that the QA program was properly implemented for ATWS equipment. This TI will remain open pending completion of TI 2500/20 Section 04.05; Confirmation of Completed Work and verification of the instrument channel location, orientation, and support.

OA.1.19 (Discussed) Construction Deficiency Report 391/85-19: Potential Interaction of Flux Mapping System and Seal Table (Temporary Instruction 2500/16 and Inspection Procedure 35007)

a. Inspection Scope

Background: In 1985, Westinghouse identified a potential issue with the interaction between the non-safety related incore flux mapping system and the safety-related seal table and bottom mounted instrument tubing. Specifically, elevated non-seismically qualified portions of the incore flux mapping system could fall on the safety-related seal table during a seismic event. Watts Bar was notified of this potential condition in a Westinghouse letter, WAT-D-6590, to TVA. The NRC communicated this potential condition to all power reactor facilities in Information Notice (IN) 85-45 (ADAMS Accession No. ML082890914). The NRC issued TI 2500/16 (ADAMS Accession No. ML091530077) to provide inspectors with inspection and reporting guidance for IN 85-45. TVA acknowledged this condition and communicated its planned corrective actions to the NRC in a final report dated July 15, 1985 (ADAMS Accession No. ML082410337). This condition was documented as CDR 390/85-20 for Unit 1 and CDR 391/85-19 for Unit 2.

For Unit 1, TVA performed a seismic analysis of the Movable Incore Detector Systems (MIDS). TVA determined that a portion of the MIDS, the movable frame assemble (MFA), mounted directly over the seal table, required modifications to meet the seismic design. TVA added additional anchor bolts, tie-down legs, and welds to the MFA to meet the seismic category 1L requirements. These modifications were accomplished through Engineering Change Notice (ECN) 5765. After review of ECN 5765 and associated documents, NRC inspectors closed CDR 390/85-20 for Unit 1 in NRC IR 50-390/90-20 and 50-391/90-20 (ADAMS Accession No. ML072610303).

ECN 5766 was issued coincident with 5765 so that identical modifications could be performed on the Unit 2 MFA. Subsequently, TVA made the decision to utilize the Westinghouse In-Core Information Surveillance & Engineering (WINCISE) system in Unit 2, instead of the MIDS that is utilized in Unit 1. Although the Unit 2 MFA was supplied as a portion of the MIDS, TVA elected to utilize it to support portions of the new WINCISE system. Therefore, the Unit 2 MFA will also require modifications to meet the seismic category 1L requirements. The applicant issued Field Change Request (FCR) 60311-A to EDCR 52815 to verify and upgrade the existing Unit 2 MFA.

Inspection Activities: The inspectors reviewed the proposed modifications contained in EDCR 52815; but because the EDCR was undergoing revision at the time of the inspection, the inspectors were unable to verify the adequacy of the modifications.

b. Observations and Findings:

No findings were identified.

c. Conclusions

The inspectors determined that further inspection of the applicant's design package will be required to verify resolution of the original construction deficiency.

V. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

An exit meeting was conducted on February 20, 2014, to present inspection results to Mr. Hruby and other members of his 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

A. Bangalore, Bechtel – Electrical Engineer
R. Baron, TVA - QA Manager, Unit 2
E. Brumfield, Bechtel PQAM
D. Charlton, TVA Regulatory Compliance
J. W. Clark, TVA - QA Specialist, Unit 2
R. Daniels, TVA Regulatory Compliance
T. Das, Bechtel - Civil Engineering
B. Enis, TVA Oversight
J. Hickman, TVA QA Sr. Program Manager
R. Hruby, TVA - General Manager Technical Services
J. Iqbal, Bechtel Engineering
G. Lee, Bechtel - MOV Engineer
D. Morgan, Bechtel Construction
T. Niessen, TVA Audits & Assessment Manager
J. O'Dell, TVA - Regulatory Compliance
K. Parker, TVA Construction
L. Peteron, TVA CGD
T. Raley, Bechtel Engineering Manager
J. Robertson, Bechtel Project Director
G. Scott, TVA – Licensing
M. Skaggs, TVA – Senior Vice President
N. Welch, TVA - Preoperational Startup Manager
R. Yager, Bechtel PEG
O. J. Zeringue, TVA - General Manager Engineering and Construction

INSPECTION PROCEDURES USED

IP 35007	Quality Assurance Program Implementation During Construction and Pre-Construction Activities
IP 35020	Inspection of Applicant's Surveillance of Contractor Quality Assurance (QA) Activities
IP 37051	Verification of As-Builts
IP 37055	Onsite Design Activities
IP 41301	Pre-Licensing Review of Training and Qualification Programs
IP 48053	Structural Steel and Supports Observation
IP 49063	Piping – Work Observation
IP 50071	Safety Related Components – Procedure Review
IP 50073	Mechanical Components – Work Observation
IP 50075	Safety Related Components – Record Review
IP 51053	Electrical Components and Systems – Work Observation
IP 51055	Electrical Components and Systems – Record Review
IP 51063	Electrical Cable – Work Observation
IP 52055	Instrument Components and Systems – Record Review
IP 70300	Preoperational Test Procedure Review
IP 70302	Preoperational Test Program Implementation

IP 70311	Preoperational Testing Procedure Verification
IP 70312	Preoperational Test Witnessing
IP 70333	Chemical Control System Test – Preoperational Test Procedure Review
IP 70400	Preoperational Test Review Evaluation
IP 71302	Preoperational Test Program Implementation Verification
IP 92701	Follow-up
IP 92702	Follow-up on Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, Confirmatory Orders, and Alternative Dispute Resolution Confirmatory Orders
IP 92717	IE Bulletins for Information and IE Information Notice Follow-up
TI 2500/16	Inspection to Determine if a Potential Seismic Interaction Exists Between the Movable In-Core Flux Mapping System and Seal Table at Westinghouse Designed Facilities or Facilities with Similar Designs
TI 2500/20	Inspection to Determine Compliance with ATWS Rule, 10 CFR 50.62
TI 2512/015	Inspection of Watts Bar Nuclear Plant Employee Concerns Program
TI 2512/028	Inspection of Watts Bar Nuclear Plant QA Records Corrective Action Program Plan
TI 2512/035	Inspection of Watts Bar Nuclear Plant Control Room Design Review Special Program
TI 2515/69	Inspection of Response to IE Bulletin 85-01
TI 2515/142	Draindown During Shutdown and Common-Mode Failure (NRC Generic Letter 98-02)

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000391/2014602-01	NCV	Inadequate Corrective Actions for Historical Issues (Section OA.1.2)
<u>Closed</u>		
35020	IP	Inspection of Applicant's Surveillance of Contractor Quality Assurance Activities (Section Q.1.2)
37055	IP	Onsite Design Activities (E.1.1)
48053	IP	Structural Steel and Supports Observation (Section C.1.2)
10CFR21	Other	Historical 10CFR21 Reviews (Section OA.1.2)
EA-13-019	Severity Level III Problem	Commercial Grade Dedication
05000391/2013611-01	VIO	Commercial Grade Dedication Program Breakdown (Section OA.1.1)

05000391/2013611-02	VIO	Failure to Make a Required 10 CFR 50.55(e) Report (Section OA.1.1)
05000391/2013611-03	VIO	Failure to Identify Significant Condition Adverse to Quality (Section OA.1.1)
EA-12-021	Confirmatory Order	Completeness and Accuracy of Information (Section OA.1.3)
Item 49	SSER Appendix HH	Training Requirements (Section OA.1.4)
Item 51	SSER Appendix HH	Definition of Significant Cracks (Section OA.1.5)
Item 64	SSER Appendix HH	Eagle 21 Rack 2 RTD Testing Results Review (Section OA.1.6)
TMI I.C.8	AI	Pilot Monitoring of Selected Emergency Procedures for Near-Term Operating License Applicants (Section OA.1.13)
TMI I.D.1	AI	Control Room Design Reviews (OA.1.14)
TMI II.K.1.10	AI	Operability Status (Section OA.1.7)
1998-02	GL	Loss of Reactor Coolant Inventory and Associated Power Loss of Emergency Mitigation Functions While in Shutdown Conditions (Section OA.1.8)
2512/035	TI	Control Room Design Review Special Program (OA.1.14)
2512/015	TI	Inspection of Watts Bar Nuclear Plant Employee Concerns Program (OA.1.15)
2515/069	TI	Inspection of Response to IE Bulletin 85-01 (Section OA.1.10)
2515/142	TI	Draindown During Shutdown and Common-Mode Failure (Section OA.1.8)
76-02	BL	Relay Coil Failures (Section OA.1.9)
84-02	BL	Failures of General Electric Type HFA Relays (Section OA.1.9)
85-01	BL	Steam Binding of Auxiliary Feedwater Pumps (Section OA.1.10)
391/85-37	CDR	Incorrect Use of AMP PIDG Terminals (Section OA.1.11)

391/86-14	CDR	Failure to Follow Procedures (Section OA.1.12)
391/91-31	CDR	Use of Non-Dedicated Commercial Grade Electrical Devices in Safety-Related Applications (OA.1.16)
05000391/2013609-02	URI	Potential Inadequate Corrective Actions for Historical Issues
<u>Discussed</u> 2500/16	TI	Inspection to Determine if a Potential Seismic Interaction Exists Between Movable Incore Flux Mapping System and Seal Table at Westinghouse Designed Facilities or Facilities with Similar Designs (OA.1.19)
2500/020	TI	Inspection to Determine Compliance with ATWS Rule, 10 CFR 50.62 (Section OA.1.18)
2512/028	TI	Inspection of Watts Bar Nuclear Plant QA Records Corrective Action Program Plan (OA.1.17)
391/85-19	CDR	Potential Interaction of Flux Mapping System and Seal Table (OA.1.19)

LIST OF DOCUMENTS REVIEWED

I. QUALITY ASSURANCE PROGRAM

Q.1.2 Audit of Applicant's Surveillance of Contractor QA/QC (Inspection Procedure 35020)

T03-131104 001, Watts Bar Unit 2 Quality Assurance Assessment Schedule, 11/4/13

II. MANAGEMENT OVERSIGHT AND CONTROLS

C.1.3 Electric Cable - Work Observation (Inspection Procedure 51063)

Form 25402-GMT-0003, Conditional Release 214-48 (PER 840240); Dated 1/31/2014
 Drawing # 2-45W2724-2; Dated: 2/29/2012
 Drawing # 2-45W760-68-3; Dated: 12/15/2008
 Drawing # 2-45W760-68-4; Dated: 12-15/2008
 DRA 54179-065 (Drawing # 45W872-3)
 FCR 55830 (page 106)
 MRR 40370
 MRR 40373
 PER 840240; Dated: 2/3/2014
 WO 09-954167-001
 WO 115289047

WO 115449547

E1.1 Engineering Activities

E.1.1 and E.1.2 Verification of As-Built and Onsite Design Activities (Inspection Procedures 37051 and 37055)

Field Change Requests

FCR 54350, Install of 0-ISV-067-0558B and -0559B for ERCW return, 2/17/11
 FCR 56295, Install Conduit Support, 8/11/10
 FCR 56615-A, Replace Piping Section, 9/21/10
 FCR 56615-A, AA-11, Temporary support recommendation, 10/11/11
 FCR 56615-A, AA-14, Reinstall pipe support, 11/09/11
 FCR 56801-A, Red Line Roll Up, 12/9/10
 FCR 57066-A, AA-04, Allow Use of Attached 47A051-42B to Support, 2/4/11
 FCR 57066-A, AA-17, Support 47A051-42B Not Used, 4/8/11
 FCR 57354, Rework Conduit and Supports, 1/27/11
 FCR 57395-A, Red Line Roll Up, 2/8/11
 FCR 57497-A, Pipe Support Shall Not Attach to More Than One Building, 3/21/11
 FCR 57947-A, Red Line Roll Up, 5/4/11
 FCR 58165-A, Loose Pipe Clamp Assembly and Questions on Torque Valves Used, 6/17/11
 FCR 60564-A, AA-05/AA-06, Pipe support (47A464-4-166) removed for pump re-alignment, 5/15/13
 FCR 61904, Install spool pieces permanently and replace blind flanges with spectacle flanges, 3/22/13

Engineering Document Construction Releases

EDCR 57264, Installation of 0-ISV-067-0558B and -0559B for ERCW return, 2/11/10
 EDCR 53537B, Remove Blind Flange from Downstream side of WBN-2-ISV-070-0669 and Install New, 5/30/13
 EDCR 52796-A, Missing Equipment or Other Discrepancies Identified from Either Walkdowns or Equipment Removal Log, 3/24/09
 EDCR 52506-A, Remove Shim Plate, 11/6/09
 EDCR 52566, Modification of pipe supports on Essential Raw Cooling Water, (Sys. 067), Rev. A

Corrective Action Documents

PER 229789
 PER 288519
 PER 378571
 PER 620518
 PER 628463
 PER 675337
 PER 656081
 PER 628478
 PER 629847
 PER 499060
 PER 530698
 PER 564199
 PER 745890
 PER 441998
 SR 842704
 SR 842637
 SR 842629

SR 847825

Work Orders

111464233, CCM EDCR 52764 System 067 WBN 0-ISV-067-0558B Install Missing Valves, 2/19/2011
 114305698, CCM EDCR 53537 SR 304838 System 067 0-SPPC-067-0558B ASME Section XI TVA Class C, 5/29/2013
 114305703, CCM EDCR 53537 SR 304838 System 067 0-SPPC-067-0558B ASME Section XI TVA Class C, 5/20/2013
 114488532, Remove RCP #3 upper oil cooler flex hose to support flushing, 01/27/2014

Calculations

N3-67-63A, Summary of Piping Analysis problem No. N3-67-63A, Rev. 002
 MDQ0020702008-0280, Required Thrust/Torque Calculation for 2-FCV-70-133A, Rev. 3
 MDQ0020702008-0281, Required Thrust/Torque Calculation for 2-FCV-70-134B, Rev. 3
 MDQ0020672008-0261 Required Thrust/Torque Calculation for 2-FCV-67-103, Rev. 2
 47A450-25-251, Calculation for Pipe Support, Rev. 2
 47A450-25-251, Calculation for Pipe Support, Rev. 3
 47A450-26-078, Calculation for Pipe Support, Rev. 2
 47A450-25-152, Calculation for Pipe Support, Rev. 1
 47A450-25-162, Calculation for Pipe Support, Rev. 3
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 WMG3567, "ERCW System Pipe Wall Thickness, Rev. 8
 MDQ00006720080341, ERCW System Pressure Drop Calculation, Rev. 8
 MDQ00007020090200, CCS Pressure Drop Calculation, Rev. 3
 EPMMEC010290, CCS Minimum Wall Thickness, Rev. 5
 EPMJN071789, CCS Pump NPSHa Calculation, Rev. 6
 270270, Calculations for Pipe Support 2-70-270, Rev. 2
 47A464-04-118, Calculation for Pipe Support, Rev. 2
 47A464-04-119, Calculation for Pipe Support, Rev. 4
 47A464-04-120, Calculation for Pipe Support, Rev. 2
 47A464-04-121, Calculation for Pipe Support, Rev. 2
 47A406-14-123, Calculation for Pipe Support, Rev. 3
 47A464-04-183, Calculation for Pipe Support, Rev. 0
 47A464-04-184, Calculation for Pipe Support, Rev. 1
 47A464-04-185, Calculation for Pipe Support, Rev. 1
 2-47W450-369, Prob 67205 067-ERCW Supply Line from an In-Line Anchor with Stress Problem 67200 to RHR Pump 2A-A Room Cooler, Rev. 2
 2-47W450-371, Prob 67207 067-ERCW RTN Line from RHR Pump Room Cooler 2A-A to AN In-Line Anchor with N3-67-89A, Rev. 8

Drawings

1-47W845-2, Mechanical Flow Diagram Essential Raw Cooling Water System, Rev. 089
 2-47W450-223, Problem N3-67-63A, 067-Train "B" Flood Mode Return Line from Component Cooling System, Rev. 4
 47A450-25-251, DRA No. 56241-618, Rev. 1
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 47A450-25-162, DRA No. 52506-062, Rev. 0
 25402-011-V1E-JV08-00004-004, Gate Valve Assembly with SMB-000 Actuator, Rev. D
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2-47W845-107, Stress Analysis Problem Boundary Drawing, Essential Raw Cooling Water System, Rev. 0
 SK 450-1 SH 21B, ERCW (RHR Pump Rm Cooler 2A-A Supply), Rev. 12
 SK-H-450-1-22B-72, Mechanical Pipe Support for Essential Raw Cooling Water System Category 4-4, Rev. 0
 2-47W464-254, CCS Return Piping From RCP Thermal Barriers to SCV Penetration, Rev. 3
 WBN-E-2882-IC-90, CCS Weld Map, Rev. 6
 2-47W464-255, CCS Isometric Piping, Rev. 4
 2-47W464-267A, CCS Isometric Piping, Rev. 2
 WBN-E-2882-IC-56, CCS Weld Map, Rev. 5
 2-47W464-267, CCS Isometric Piping, Rev. 0
 47W464-14 – Mechanical Component Cooling System, Rev. 26
 2-47W464-268, Problem N3-70-54A, Analysis Isometric of CCS Piping, Rev. 2
 WBN-E-2882-IC-72, Component Cooling Weld Map, Rev. 5
 47A464-4-118 (RB), Component Cooling, DCA P06194-02-0
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 41N315-1, Concrete EL 713.0 Floor Outline, Rev. 13
 0-47W464-208C, Problem N3-70-03A Analysis Isometric of CCS Piping, Rev. 01
 2-47W859-104, Stress Analysis Problem Boundary Drawing Component Cooling System, Rev. 0
 0-47W464-213F, Problem N3-70-04A Analysis Isometric of CCS Piping, Rev. 2
 WBN-E-2882-IC SH 127, Component Cooling Weld Map, Rev. 10
 0-47W464-208C, Problem N3-70-03A Analysis Isometric of CCS Piping, Rev. 1
 WBN-E-2882-IC-126, Component Cooling Weld Map, Rev. 5
 70-1CCR630-2, DRA 53537-042, Rev. A

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DCN 28175-A, Add FCNs and Drawings to DCN, 11/24/93
 DCN M-39923-A, Relocate ERCW & Glycol Bypass Check Valves, 8/18/98
 DCN F-16011-A pg 55-56, Relocate Pipe Support, 4/27/91
 DCN F-18868-A pg 8-9, Relocate Pipe Support, 9/15/92

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47VD464-37-1, Valve Data Sheet for 2-THV-070-0684C, Rev. 2
 47VD464-62-1, Valve Data Sheet for 2-FCV-70-133A, Rev. 1
 47VD464-63-1, Valve Data Sheet for 2-FCV-70-134B, Rev. 1
 47BM464-2-7, Valve Data Sheet for 2-ISV-70-673A and 2-ISV-70-673B, Rev. 3
 47VD450-73-1, Valve Data Sheet for 2-FCV-67-103, Rev. 3
 47VD450-74, Valve Data Sheet for 2-CKV-67-575B, Rev. 2
 47VD450-67, Valve Data Sheet for 0-ISV-067-559B and 0-ISV-67-558B, Rev. 5
 47VD450-73-1, Valve Data Sheet for 2-FCV-067-103, Rev. 3
 47VD450-74, Valve Data Sheet for 2-CKV-067-575B, Rev. 2
 47VD464-21, Valve Data Sheet for 2-THV-070-0546B-B and 2-ISV-070-0545B-B, Rev. 1

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 WBNP-DS-501433-0905, Design Specification for ASME Boiler and Pressure Vessel Code, Section III NPS 2 and Smaller (Class 2 and 3 Valves Only), Rev. 053

WBNP-DS-501433-1201, Design Specification for MOVs, Rev. 007
 47W450-A2504 – Valve Data Sheet for 0-ISV-067-0558B/-559B, Rev. 05
 25402-001-V1A-PV07-00050-002, SL-N2FII Nuclear Valve Cross-Section and Materials List
 ASME Section III Class 3, Rev. 2
 DS-M3.5.1, Pressure Drop Calculations for Raw Water Piping and Fittings, Rev. 7

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25402-3DP-G046-00081, Engineering Document Construction Release, Rev. 16
 25402-3DP-G04G-00027, Design Verification, Rev. 4
 25402-3DP-G04-00062, Field Change Request, Rev. 20
 25402-000-GPP-0000-N3105, Field Change Requests, Rev. 16
 25402-3DP-G04G-00025, Design Interface Control, Rev. 4
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 NC PP-27, Engineering Drawings, Rev. 1
 NEDP-3, Drawing Control, Rev. 18
 NPG-SPP-31.1, Document Control, Rev. 2
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Bechtel Audits/Surveillances

25402-WBN-SR-12-2110, "Review of Material Related Field Change Requests," 2/3/2012
 25402-WBN-SR-12-2153, "Off-Project Design Review Process," 4/3/2012
 25402-WBN-AR-12-0004, "Audit Report, Work Completion," 10/11/2012
 25402-WBN-AR-13-0001, "Audit Report, Bechtel Quality Assurance Manuals," 5/14/2013
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NGDC1201, "Watts Bar Nuclear Plant (WBN) Unit 2 – Quality Assurance (QA) Audit Report
 NGDC1201 – QA Program – Design Control and Procurement Document Control," 9/6/2012
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 NGDC1303 – System Design Completion and Turnover Process," 11/20/2013

Miscellaneous

WBN2-PD-067-1803-02, Support No. 47A450-25-162, Rev. 0, 5/26/09
 Test Results 2067-A450-25-251, Expansion Shell Anchor Proof Test Summary, 3/14/86
 Test Results 2067-A450-25-251, Expansion Shell Anchor Measurement & Test Results, 1/7/86
 25402-011-V1B-MPCA-00021-001, Pump Performance Test Reports, 6/30/10
 25402-011-MRA-MPCA-00002, Material Requisition for Thermal Barrier Booster Pumps, Rev. 3
 WBN-SDD-WBN2-67-4002, ERCW System Description, Rev. 3
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 Audit Schedule CY 2013-2014
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 ASME Form NPV-1 for 2-THV-70-684C, 3/7/11
 ASME Form NPV-1 for 2-FCV-70-134, 10/1/77
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 ASME Form NPV-1 for 2-FCV-70-673B, 7/26/77
 Material Receiving Report MRR-14627, 7/8/10
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 WBN-2-THV-070-546B-B, Valve Review Package
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P.1 Pre-Operational Activities

P.1.2 Pre-Operational Test Procedure Review (Inspection Procedures 70300 and 70311)

2-TSD-63-5, Safety Injection System Integrated Test: Pump/Valve Logic Test, Rev.1
 WBN2-63-4001, Safety Injection System, Rev. 0003
 Drawing 2-47W811-1, Flow Diagram Safety Injection System, Rev.32
 Drawing 2-47W611-63-3, Electrical Logic Diagram Safety Injection System, Rev.6
 Drawing 2-47W611-63, Electrical Logic Diagram Safety Injection System, Rev.6

P.1.3 Pre-operational Test Procedure Review (Inspection Procedures 70300 and 70311)

2-TSD-63-5, Safety Injection System Integrated Test: Pump/Valve Logic Test, Rev.1
 WBN2-63-4001, Safety Injection System, Rev. 0003
 Drawing 2-47W811-1, Flow Diagram Safety Injection System, Rev.32
 Drawing 2-47W611-63-3, Electrical Logic Diagram Safety Injection System, Rev.6
 Drawing 2-47W611-63-2, Electrical Logic Diagram Safety Injection System, Rev.6
 Drawing 2-47W611-63-8, Electrical Logic Diagram Safety Injection System, Rev. 4

P.1.4 Preoperational Test Procedure Review (Inspection Procedures 70300 and 70311)

2-PTI-067-02-A, ERCW System Flow Balance – Train A, Rev. 0004
 2-TSD-67, ERCW Test Scoping Document, Rev.9
 System Description, WBN2-67-4002, Essential Raw Cooling Water System, System 67, Rev. 0003
 System Description, WBN2-30AB-4001, Auxiliary Building Heating, Ventilation, Air Conditioning System (30, 31, 44) Rev.0004

P.1.5 Preoperational Test Procedure Review (Inspection Procedures 70300 and 70333)

2-47W809-1; Flow Diagram Chemical and Volume Control System; Rev. 25
 USAR Section 9.3.4; Chemical and Volume Control System
 2-PTI-062-01; Charging and Letdown Logic Test; Rev. 0
 2-TSD-62-1; Chemical and Volume Control System: Charging and Letdown Logic Test; Rev. 2
 2-TSD-88-5; Containment Isolation System; Rev. 3
 NPG-WBN2-62-4001; Chemical and Volume Control System; Rev. 2
 WBN2-63-4001; Safety Injection System; Rev. 3

P.1.6 Preoperational Test Witnessing (Inspection Procedures 70312 and 70302)

Drawing 1-47W845-2, Mechanical Flow Diagram Essential Raw Cooling Water System, Rev.89
 Drawing 2-47W845-2, Mechanical Flow Diagram Essential Raw Cooling Water System, Rev.7
 Drawing 1-47W845-3A, Mechanical Flow Diagram - Essential Raw Cooling Water System, Rev.6
 Drawing 1-47W845-3, Mechanical Flow Diagram - Essential Raw Cooling Water System, Rev.16

IV. OTHER ACTIVITIES

OA.1.1 Review of Actions for Violations associated with EA-13-019 for Commercial Grade Dedication (Inspection Procedure 92702)

Corrective Action Documents

PER 417006, Commercial grade item deficiencies not self-identified, 7/18/13
 PER 403095, NRC review of commercial grade dedication process for WBN Unit 2, 12/17/13
 PER 403095 Stand-down Training Materials and Attendance Records, 11/15-17/13
 PER 653007, NRC Identified – Procedure NC PP-13, “NRC Reporting Requirements,” 12/19/12
 PER 653083, NRC Identified – PER 403095 – 50.55e Reportability Review Timeliness,
 7/24/2013
 PER 653080, NRC Identified – Failure to complete CCMRC assigned action in a timely manner,
 1/10/2013
 SR 844803, Source note discrepancy, 2/11/2014

Procedures

NEDP-8, Technical Evaluation for Procurement of Materials and Services, Rev 023
 Bechtel, 25402-3DP-G06G-00502, Engineering Department Procedure Instruction, Commercial
 Grade Dedication, Rev 008
 NGDC PP-13, NRC Reporting Requirements, Rev 5

Miscellaneous

Unit 2 CCMRC Schedule Minutes with attached PER 403095 Effectiveness Review, 12/3/13
 Root Cause Analysis Report, NRC Review of Commercial Grade Dedication Process for WBN
 Unit 2, PER 403095, Rev 0
 WBNCCP Assessment Report NC-WB-13-017, PER 403095 Closure Commercial Grade
 Dedication, 12/17/13
 Technical Evaluations: WB4140-2-01, Rev 3; G5920-2-1387, Rev 10; G5940-2-1508, Rev 6;
 98B-000245, Rev 1; WBNEE-2007-94263, Rev 1
 Procurement Data Sheets: CAQ294F, Rev 5; BVM449R, Rev 5; AYH792M, Rev 1; CEF133X,
 Rev 2; CGE402N, Rev 2
 Test Results: CAQ294F-X-WBCEVAL, Rev 0; CEF133X-XFER, Rev 1
 Commercial Grade Dedication Program Corrective Action Program Closure Report, 8/5/13
 Bechtel, WB2CCP Project Quality Assurance 2014 Project Master Audit Schedule, Rev 0
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 Bechtel, 25402-WBN-SR-13-2920, Watts Bar Unit 2 Construction Completion Project, Quality
 Surveillance Report, “Assess PER 403095 Corrective Actions for Commercial Grade Item
 Dedication”
 Bechtel, WB2CCP, Individual Audit Plan Audit No. 25402-WBN-AR-14-0001, Feb 18-26, 2014
 Bechtel, 25402-SA-13-005, WBUNCCP Self-Assessment Report, WB2CCP Commercial Grade
 Dedication (CGD) Program, 10/1/2013-10/30/2013
 Bechtel Surveillance Schedule – First Quarter 2014, 2/11/13
 Bechtel list of planned surveillances for the first quarter 2014

OA.1.4 (Closed) Appendix HH, Item 49 Associated with Training Qualification Requirements (Inspection Procedure 92701)

TVA-NPG Fleet, Engineering Support Personnel Training, TDP-ESP, Training Program
 Description, Rev. #5

OA.1.6 (Closed): SSER 23 App HH Open Item 64, Eagle 21 Rack 2 RTD Testing Results Review (Inspection Procedure 52055)Closure Package

NGDC PP-19-2 Open Item/Commitment Completion Form (Engineering Complete) for IP&S
 521, Tracking Number 111905996

Work Orders

WO 113471100, SUTI SYS 099 WBN-2-PNL-099-R2-D

OA.1.7 (Closed) TMI Action Item II.K.1.10, Operability Status (Inspection Procedure 92701)

Open Items / Commitment Completion Form, Tracking No: NCO080008072

OA.1.8 (Closed) Generic Letter 1998-02, Loss of Reactor Coolant Inventory and Associated Potential for Loss of Emergency Mitigation Functions While in a Shutdown Condition, and Temporary Instruction 2515/142, Draindown During Shutdown and Common-Mode Failure (Temporary Instruction 2515/142 and Inspection Procedure 92701)Closure Packages

Open Items / Commitment Completion Form, Tracking No: NCO080008017

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Other

TVA letter to NRC dated April 6, 2011, "Watts Bar Nuclear Plant Unit 2 – List of Design Differences, Revision 1"

3-OT-GO600; Operations Lesson Plan, GO-6 Unit Shutdown From Hot Standby to Cold Shutdown; Rev. 5

Procedures

2-SOI-74.01; Residual Heat Removal System; Rev. 000U2

GO-6; Unit Shutdown From Hot Standby to Cold Shutdown; Rev. 53

GO-1; Unit Startup From Cold Shutdown to Hot Standby; Rev. 74

Drawings

2-47W809-1, Flow Diagram Chemical & Volume Control System, Rev. 25

2-47W810-1, Flow Diagram Residual Heat Removal System, Rev. 18

2-47W811-1, Flow Diagram Safety Injection System, Rev. 32

2-47W812-1, Flow Diagram Containment Spray System, Rev. 23

OA.1.9 (Closed) NRC Bulletin 76-02 and 84-02, Relay Coil Failures (Inspection Procedures 51053 and 92717)Closure Package

NGDC PP-19-2 Open Item/Commitment Completion Form (Engineering Complete) for IP&S 122, Tracking Number: 10187197

PERs

PER 363755 Unit 2 Design Engineering to evaluate/assign relay unit's in 2-PNL-275-R70 thru R79, Dated 9/18/2012

PER 545248 Hardware Nonconformance, Dated 4/30/2012

Miscellaneous

GE 721 (PSM)-139.1, Service Advice for HFA-HGA-HKA-HMA Relays Nylon Coil Bobbins, dated 09/05/1973

GE 721 (PSM) -139.1, Service Advice for HFA-HGA-HKA-HMA Relays Nylon Coil Bobbins, dated 04/28/1976

GE 721-PSM-152.2A, Service Advice for HFA Coil Failures, Dated 3-12-82

Work Orders

WO 112763729, WBN-2-BD-211-A-A Inspect/Test Relays in Compt 14,

Drawings

45N2688-1, Wiring Diagrams Separation Aux Relay PNL 2-R-73 Connection Diagrams SH1,
Rev 13

45N2692-1, Wiring Diagrams Separation Aux Relay PNL 3-R-77 Connection Diagrams SH 1,
Rev. 14

OA.1.10 (Closed) NRC Bulletin 85-01 and Temporary Instruction 2515/069: Steam Binding of Auxiliary Feedwater Pumps (Inspection Procedure 92717 and Temporary Instruction 2515/069)

Design Change Notices

DCN M-16269-A for AFW Discharge Piping Temperature Elements, dated 02/11/1995

Engineering Document Construction Releases

EDCR-2 # 54144, Electrical Work Scope for System 003 for equipment located in the Control Building, dated 02/19/2010

EDCR-2 # 53217, Electrical Work Scope for System 001 in all areas and System 003 for equipment located in the North Steam Valve Room and South Steam Valve Room, dated 5/19/2010

Procedures

2-SOI-3.02, Auxiliary Feedwater System, Revision 0000 (DRAFT)

OA.1.11 (Closed) Construction Deficiency Report 391/85-37: Incorrect Use of AMP PIDG Terminals (Inspection Procedure 35007)

NGDC PP-19-2 Open Item/Commitment Completion Form (Engineering Complete) for IP&S 384, Tracking Number: PER 172698 R2

DCA 16395-22 (Drawing # 45w2672-1)

DCA 16395-40 (Drawing # 45n2630-19)

DCA 16395-55 (Drawing # 45w2638-1)

DRA 52346-96 (Drawing # 45n2630-19)

DRA 52356-14 (Drawing # 45w2638-1)

DRA 52378-335 (Drawing # 45w2672-1)

DRA 52378-336, (Drawing # 45w2672-1)

DRA 54103-56 (Drawing # 45n2630-19)

DRA 54172-478 (Drawing # 45n2630-19)

OA.1.12 (Closed) Construction Deficiency Report 86-14: Failure to Follow Procedures (Inspection Procedures 50073 and 50075)

Work Orders

WO 111088307, VCT Vent to WDS, 5/29/13

WO 112783567, SIS Accumulator Tank 3 Makeup Valve, 8/22/13

WO 112392773, SIS Accumulator Tank 2 Fill Valve, 5/11/12

WO 112345811, SIS Accumulator Tank 1 Fill Valve, 11/15/11

Procedures

25402-000-GPP-0000-N1206, Work Order Processing, Rev. 18

25402-000-GPP-0000-N3401, Instrument and Instrument Line Installation, Rev. 11

Drawings

2-47W600-222, Electrical Instruments and Controls, Rev. 2
 2-47W600-191, Electrical Instruments and Controls, Rev. 4
 47W406-2, Mechanical Chemical and Volume Control System Piping, Rev. 30
 SD-C-102166, Air Operated Valve Schematic, Rev. 903
 2-47W600-195, Electrical Instruments and Controls, Rev. 5
 25402, Drawing Revision Authorization for EDCR 53580A, Rev. B
 54A0234, Air Operated Control Valve, Rev. B

Miscellaneous

V-5416, ASCO Installation and Maintenance Instructions for 3-Way Solenoid Valves 8316, Rev. 0
 MAI-4.4B, Instrument and Instrument Panel Installation, Rev. 6

OA.1.14 (Closed) Control Room Design Review Special Program and Three Mile Island Action Item I.D.1 (Temporary Instruction 2512/035 and Inspection Procedure 92701)

HED Packages

44, 73, 78, 81, 85, 88, 89, 106, 109, 111, 115, 117, 128, 144, 163, 173, 175, 186, and 195

OA.1.15 (Closed) Inspection of Watts Bar Nuclear Plant Employee Concerns Program (Temporary Instruction 2512/015)

CATDs

10900-BFN-04	23702-WBN-06
10900-WBN-01	23801-WBN-08
10900-WBN-03	23803-SQN-05
15100-WBN-02	24000-BFN-02
15100-WBN-03	24101-BFN-01
19201-NPS-01	31105-WBN-01
21506-WBN-01	40700-WBN-12
21506-WBN-02	50400-WBN-05
22911-BFN-01	10900-NPS-01
23702-WBN-05	21301-SQN-01

OA 1.16 (Discussed) Construction Deficiency Report 391/91-31: Use of Non-Dedicated Commercial Grade Electrical Devices in Safety-Related Applications (Inspection Procedure 35007)

Miscellaneous

WCAP-7817, Westinghouse Panel Qualification, December 1971
 WCAP-8673, Westinghouse Multi-Frequency and Direction Seismic Testing and Relays, December 1975
 WCAP-8373, Qualification of Westinghouse Seismic Testing Procedure for Electrical Equipment Prior to May 1974, August, 1974
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 WCAP-7817, Westinghouse Seismic Testing of Electrical and Control Equipment, Supplement 2, December 1971

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OA.1.17 (Discussed) QA Records CAP (Temporary Instruction 2512/028 and Inspection Procedure 51055)

2-IPM-292-6937, Inspection 25B
 2-IR-292-2001, Inspection 25A
 2-2M-293-3238, Inspection 25A
 2-2M-293-3287, Inspection 25A
 2-2RM-292-2988, Inspections 25A and 35B
 2-3AC-292-600, Inspections 25A and 35A
 2-3M-293-4133, Inspection 25A
 2-359-290-853-B, Inspections 25A and 35B
 2-3VC-292-1088-B, Inspections 25A and 35A
 2-3VC-293-2121-A, Inspection 25A
 2-4VC-293-2185-B, Inspection 25B
 2-001AC-021, Inspection 59B and 04B
 2-001AO-010, Inspection 04A
 2-003BG-012, Inspection 59A
 2-0036183C-0006, Inspections 52A and 58A
 2-030FS-078A1B, Inspections 52B, 58A, and 76A
 2-03AD-015, Inspection 59A
 2-003DH-011, Inspection 58D
 2-003BG-012, Inspection 59A
 2-032CD-007, Inspection 59C
 2-002L660-0001, Inspection 53A
 2-032GD-B, Inspections 30A, 52B, 58A, and 56A
 2-043AX-041, Inspection 59A
 2-065L343-0009, Inspection 52A, 55A, and 56A
 2-068AN-002, Inspection 59D
 2-068CV-012 – Inspection 59A
 2-276DO-001, Inspection 59A

OA.1.18 (Discussed) Inspection to Determine Compliance with ATWS Rule, 10 CFR 50.62 (Temporary Instruction 2500/20)

Drawings

Mounting

2-47W600-14, Electrical Instruments and Controls, Rev. 0
 2-47W600-23, Electrical Instruments and Controls, Rev. 1
 2-47W600-230, Electrical Instruments and Controls, Rev. 2
 FCR 57785-A, Revised DRA 52408-016 to relocate 2-PT-1-315
 2-47W600-151, Electrical Instruments and Controls, Rev. 1

Terminations

DRA 52408-003, Rev. 0

Engineering Design Change Requests

EDCR 52408, Rev. A

Specifications

WB-DC-40-57, Anticipated Transients Without Scram Mitigation System Actuation Circuitry (AMSAC), Rev. 5

Miscellaneous

2-P-1-315, Setpoint and Scaling Document for Loop 2-P-1-315, Rev. 1
 2-P-1-314, Setpoint and Scaling Document for Loop 2-P-1-314, Rev. 1
 WBN-VTD-R369-0390, Rosemount Model 1152 Alaphaline Pressure Transmitters for Nuclear
 Service [Pub. #00809-0100-4235], Rev. 7
 PMNQAM, Project Nuclear Quality Assurance Manual, Rev. 12

Work Orders

110809957, WBN-2-PT-001-314
 112116011, WBN-2-PT-001-315

Procurement Documents

Purchase Order 13729, 2504-011-MRA-JP02-00008, Rosemount Transmitters
 MRR-08373, Rosemount Transmitters, Dated 2/2/2010

Testing

2-PTI-003B-06, AMSAC Test, Rev. 0
 2-TSD-3B-6, AMSAC Test Scoping Document, Rev. 1

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ADR	Alternating Dispute Resolution
AFW	auxiliary feedwater
AI	Action Item
ANS	American Nuclear Society
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transient Without Scram
BL	Bulletin
CAP	Corrective Action Program
CAPR	Corrective Actions to Prevent Recurrence
CATD	Corrective Action Tracking Document
CCS	Component Cooling Water System
CCMRC	Construction Completion Management Review Committee
CDR	Construction Deficiency Report
CFR	<i>Code of Federal Regulations</i>
CGD	Commercial Grade Dedication
CRDR	Control Room Design Review
DCN	Design Change Notice
DRA	Drawing Revision Authorization
ECN	Engineering Change Notice
ECCS	Emergency Core Cooling System
EDCR	Engineering Document Construction Release
EOP	Emergency Operating Instruction
ERCW	Essential Raw Cooling Water
FCR	Field Change Request
FSAR	Final Safety Analysis Report
GE	General Electric
GL	Generic Letter
HED	Human Engineering Deficiency
ID	Identifier

IDI	Integrated Design Inspection
IMC	Inspection Manual Chapter (NRC)
IEEE	Institute of Electrical and Electronics Engineers
IP	Inspection Procedure (NRC)
IIR	Integrated Inspection Report
IN	Information Notice
IR	Inspection Report
LCP	Loop Calculation Processor
LCO	Limiting Condition of Operation
MAI	Modification/Addition Instruction
MFA	Movable Frame Assembly
MIDS	Movable Incore Detector System
MOV	Motor Operated Valve
NQAP	Nuclear Quality Assurance Program
NCV	Non-cited Violation
NPP	Nuclear Performance Plan
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation (NRC)
PARS	Publicly Available Records
PDS	Procurement Data Sheets
PER	Problem Evaluation Report
PNQAM	Project Nuclear Assurance Plan
PWR	Pressurized Water Reactor
PIDG	Pre-Insulated Diamond Grip
QA	Quality Assurance
QAM	Quality Assurance Manual
QC	Quality Control
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
Rev.	Revision
RG	Regulatory Guide
RHR	Residual Heat Removal System
RIP	Replacement Items Program
RTD	Resistance Temperature Detector
SAR	Safety Analysis Report
SAT	Systematic Approach to Training
SCAR	Significant Corrective Action Report
SL	Severity Level
SMP	Startup Manual Procedure
SP	Special Program
SSCs	Structures, Systems, and Components
SSEA	Seismic Sensitive Electrically Active
SSER	Supplemental Safety Evaluation Report
SSPS	Solid State Protection System
TE	Technical Evaluations
TI	Temporary Instruction
TMI	Three Mile Island
TVA	Tennessee Valley Authority
URI	Unresolved Item
VIO	Violation
WBN	Watts Bar Nuclear Plant

WINCISE	Westinghouse In-Core Information Surveillance & Engineering
WITEL	Watts Bar Integrated Task Equipment List
WO	Work Order