



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

March 28, 2013

Mr. Michael D. Skaggs
Senior Vice President
Nuclear Generation Development and Construction
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 2 CONSTRUCTION - NRC INTEGRATED
INSPECTION REPORT 05000391/2013612

Dear Mr. Skaggs:

On February 16, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection of construction activities at your Watts Bar Unit 2 reactor facility. The enclosed integrated inspection report documents the inspection results, which were discussed on March 7, 2013, with you, and other members of your staff.

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

No findings were identified during this inspection.

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

M. Skaggs

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

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000391/2013612 w/Attachment

cc w/encl: (See next page)

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Sincerely,

/RA/

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cc w/encl:

Mr. Gordon P. Arent
Senior Manager, Licensing
WBN Unit Two
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, Tennessee 37381

Mr. O. J. Zeringue, General Manager
Engineering and Construction
WBN Unit Two
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, Tennessee 37381

Mr. R. A. Hruby, General Manager
Technical Services
WBN Unit Two
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City Tennessee 37381

Ms. Donna Guinn, Manager
Licensing and Industry Affairs
WBN Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, Tennessee 37381

Mr. Preston D. Swafford
Chief Nuclear Officer
and Executive Vice President
Tennessee Valley Authority
1101 Market Place
3R Lookout Place
Chattanooga, Tennessee 37402-2801

County Executive
375 Church Street
Suite 215
Dayton, Tennessee 37321

Mr. Dave Gronek
Plant Manager, WBN Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, Tennessee 37381

Mr. R. R. Baron, Senior Manager
Nuclear Construction Quality Assurance
WBN Unit Two
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, Tennessee 37381

Mr. Joseph Shea, Vice President
Nuclear Licensing
Tennessee Valley Authority
1101 Market Street
3R Lookout Place
Chattanooga, TN 37402-2801

Mr. E. J. Vigluicci
Assistant General Counsel
Tennessee Valley Authority
400 West Summit Hill Drive
6A West Tower
Knoxville, Tennessee 37402

Mr. Lawrence E. Nanney, Director
Tennessee Department of Environmental
Health & Conservation
Division of Radiological Health
3rd Floor, L&C Annex
401 Church Street
Nashville, TN 37243-1532

Mr. T. P. Cleary
Site Vice President
Watts Bar Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Spring City, Tennessee 37381

County Mayor
P.O. Box 156
Decatur, Tennessee 37322

Ms. Ann P. Harris
Public
341 Swing Loop
Rockwood, TN 37854

M. Skaggs

4

cc email distribution w/encl:
Greg Scott
Tennessee Valley Authority
Electronic Mail Distribution

Watts Bar 2 Licensing
Tennessee Valley Authority
Electronic Mail Distribution

Letter to Michael D. Skaggs from Robert C. Haag dated March 28, 2013.

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 2 CONSTRUCTION - NRC INTEGRATED
INSPECTION REPORT 05000391/2013612

Distribution w/encl:

Region II Regional Coordinator, OEDO (J. Cassidy)

J. Quichocho, NRR

J. Poole, NRR

A. Hon, NRR

C. Evans, RII

L. Douglas, RII EICS

S. Shaeffer, RII DRP

R. Monk, RII WBN Unit 1 SRI

OE Mail (email address if applicable)

ConE_Resource@nrc.gov

PUBLIC

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-391

Construction Permit No.: CPPR-92

Report No.: 05000391/2013612

Applicant: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Unit 2

Location: Spring City, TN 37381

Dates: January 1 – February 16, 2013

Inspectors: T. Nazario, Senior Resident Inspector, Construction Projects
Branch (CPB) 3, Division of Construction Projects (DCP)
Region II (RII)
R. Lewis, Resident Inspector, CPB3, DCP, RII
E. Patterson, Resident Inspector, CPB3, DCP, RII
D. Failla, Construction Inspector, Construction Inspection Branch
3, Division of Construction Inspection, RII
J. Baptist, Senior Construction Project Inspector, CPB 3, DCP,
RII, Section Q.1.1
P.K. VanDoorn, Senior Construction Project Inspector, CPB3,
DCP, RII, Sections Q.1.1, OA.1.5, OA.1.6, OA.1.7
A. Sengupta, Reactor Inspector, Engineering Branch 3, Division of
Reactor Safety, RII, Sections C.1.7, C.1.8, C.1.9, C.1.10,
C.1.11, C.1.12, C.1.13, OA.1.8

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

Enclosure

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, identification and resolution of construction problems, construction activities, and follow-up of other activities. The inspection program for Unit 2 construction activities is described in NRC Inspection Manual Chapter 2517, "Watts Bar Unit 2 Construction Inspection Program." Information regarding the WBN Unit 2 Construction Project and NRC inspections can be found at <http://www.nrc.gov/info-finder/reactor/wb/watts-bar.html>.

Inspection Results

- The inspectors concluded that an NRC Bulletin, a temporary instruction (TI); multiple inspection procedures, a Supplemental Safety Evaluation Report (SSER) Appendix HH open item, and various construction deficiency reports (CDRs) had been appropriately addressed for WBN Unit 2. These items are closed.
- Other areas inspected were adequate with no findings identified. These areas included quality assurance; piping; concrete placement; mechanical systems and components; nondestructive testing and pre-service inspection; training; various NRC inspection procedures (IPs); CDRs; and refurbishment activities.

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REPORT DETAILS

Summary of Plant Status

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

I. QUALITY ASSURANCE PROGRAM

Q.1 Quality Assurance (QA) Oversight Activities

Q.1.1 Identification and Resolution of Construction Problems (Inspection Procedure [IP] 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 several PERs also discussed in Section C.1.2 Structural Concrete – Work Observation (IP 46053), of this report.

The inspectors also identified a number of final closure packages, which had been provided by the applicant and utilized by the NRC, to support closure of historic construction concerns. For the samples selected, the inspectors reviewed the applicant's final closure packages and supporting documentation, interviewed personnel knowledgeable of the issue, and performed walkdowns of physical plant changes. For six items that had been closed by the NRC prior to the issuance of a final closure package, the inspectors reviewed the applicant's final closure packages to ensure that actions previously identified by the applicant were properly translated into engineering and physical plant changes. Additionally, the inspectors reviewed 10 final item closure packages, which had been revised after closure by NRC staff, to verify that changes within the revision did not alter or invalidate previous conclusions. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified. The inspectors identified that most changes, to the closure packages reviewed, were minor administrative changes or increased support documentation as a result of the applicant's effort to provide for a more complete final closure package.

c. Conclusions

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

Q.1.2 Safety Conscious Work Environment (IP 35007)

a. Inspection Scope

The inspectors reviewed existing program requirements and recent safety-related concerns identified by the applicant's and contractor's employee concerns program (ECP). The inspectors also met with the ECP coordinator and reviewed monthly and quarterly reports to verify that significant problems were properly identified, addressed, and resolved under the corrective action program. The inspectors also met with the Senior Vice President for Division of Labor Relations responsible for the site's ECP who indicated that the program would continue to meet existing requirements.

b. Observations and Findings

No findings were identified.

c. Conclusions

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

II. MANAGEMENT OVERSIGHT AND CONTROLS

C.1 Construction Activities

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

a. Inspection Scope

The inspectors independently assessed applicant controls, associated with Unit 2 construction work activities, to prevent adverse impact on Unit 1 operational safety. The inspectors attended routine Unit 1/Unit 2 interface meetings to assess the exchange and sharing of information between the two site organizations. Periodic construction and planning meetings were observed, at least once per week, to assess the adequacy of the applicant's efforts to identify those construction activities that could potentially impact the operating unit. This included the review of select work activities, which the applicant had screened as not affecting Unit 1, to verify the adequacy of that screening effort. Additionally, the inspectors independently assessed select construction activities to verify that potential impacts on the operating unit had been identified and adequately characterized with appropriate management strategies planned for implementation. Furthermore, the inspectors performed independent walkdowns of select construction work locations to verify that controls to protect the operating unit provided an adequate level of protection and had been properly implemented. The inspectors also followed up on certain work activities which did affect the operating unit (PER 679214(U1)/680266(U2)).

Specific work activities that the applicant had screened out as not affecting Unit 1 included, but were not limited to, lower containment heating, ventilation, and air conditioning (HVAC) ductwork and cooling coil installations, component cooling water hydrostatic tests, refurbishment activities associated with the steam generators and 2B

residual heat removal (RHR) heat exchanger, and the flowable fill placement activities, as discussed in this report.

b. Observations and Findings

No findings were identified.

c. Conclusions

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

C.1.2 Structural Concrete – Work Observation (IP 46053)

a. Inspection Scope

The inspectors observed the batching and placement of the commercial grade dedicated flowable fill material under the existing refueling water storage tank apron. The inspectors reviewed the approved flowable fill mix design and associated field change requests to verify the mix was adequate and approved in accordance with TVA's specification, G-2, "General Engineering Specification for Plain and Reinforced Concrete," Appendix C, Revision (Rev.) 8. The inspectors reviewed the purchase order, procurement engineering packages, and observed the batch plant operations to verify that the measures were established to assure that the purchased material conformed to the purchase documents. The inspectors reviewed the National Ready Mixed Concrete Association (NRMCA) certification, walked down the batch plant facility, and reviewed the batch plant calibration records to verify that the batch plant was in compliance with its NRMCA certification, that scales and meters were calibrated, and that the commercial grade dedicated materials were traceable and protected.

The inspectors observed the placement of the backfill material, reviewed the work order (WO), and interviewed four engineers to verify the placement planning had been completed, the concrete truck was suitable and in acceptable condition, the batch ticket record had been reviewed and approved, and placement dimensions had been verified.

In addition, the inspectors reviewed the technical services subcontract for quality control (QC) and testing to verify that inspection and testing requirements were established and implemented in accordance with the applicant's procedure MAI-5.12, "Modification/ Addition Instruction Backfill," Rev. 5, and that test methods were conducted for temperature control, weight, flowability, and strength in accordance with American Society for Testing and Materials (ASTM) D5971, "Standard Practice for Sampling Freshly Mixed Controlled Low-Strength Material," and ASTM D6023, "Standard Test Method for Density, Yield, Cement Content, and Air Content of Controlled Low-Strength Material." The inspectors also reviewed QC personnel qualification records to ensure that QC personnel were qualified in accordance with ASTM C94. To verify the curing requirements and test acceptance criteria were met, the inspectors reviewed the temperature records, calibration records, and the strength test results. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The activities associated with the flowable fill material were completed in accordance with applicable drawings, procedures, and specifications.

C.1.3 Piping – Work Observation (IP 49063)

a. Inspection Scope

The inspectors observed the hydrostatic tests for the component cooling water system (CCS) thermal barrier booster pump sensing lines from root valve 2-RTV-70-313A to panel isolation valve 2-ISV-70-313C and sensing line from root valve 2-RTV-70-311A to panel isolation valve 2-ISV-70-311C. The inspection was completed by the inspectors to verify the test was implemented in accordance with applicant procedure 25402-000-GPP-0000-N3506, "Pressure Testing of Piping, Tubing and Components," Rev. 8, the test acceptance criteria was met, and the test results were recorded in accordance with the test procedure. In addition, the inspectors reviewed the training records for the test director and supervisors to verify the personnel completing the test were qualified and knowledgeable of the test procedure requirements. Also, the inspectors reviewed measuring and test equipment (M&TE) calibration records for two pressure gauges and a thermometer to verify that the M&TE were labeled to indicate the due date or interval of the next calibration. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The Unit 2 CCS thermal barrier booster pump sensing line hydrostatic test was completed in accordance with the procedures, and the test acceptance criteria were met.

C.1.4 Mechanical Components – Work Observation and Construction Refurbishment Process (IPs 50073 and 37002)

a. Inspection Scope

The inspectors observed weld clad repairs to steam generator 1 hot leg side, a foreign object search and retrieval (FOSAR) inspection on steam generator 2, and observed steam generators 1 and 2 tube plugging activities. The inspections were conducted to determine whether the clad repairs and the mechanical plug installations were in accordance with procedures and the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code 2007 edition. The FOSAR inspections were performed to determine whether precautions were taken to maintain the integrity of steam generator 2. The inspectors reviewed WO 112345412 to determine whether work instructions were adequate and being followed. The inspectors reviewed FOSAR

inspection reports for all four steam generators to determine whether potential loose parts were identified and retrieved or evaluated to leave in place.

In addition, the inspectors observed the passive refurbishment inspections, engineering evaluations, and the inlet and outlet flange seating area repairs associated with the reassembly of the RHR 2B heat exchanger to verify the appropriate refurbishment inspections were conducted in accordance with applicant procedures 25402-00-GPP-000-T1216, "Watts Bar Unit 2 Completion Project Refurbishment Program," Rev. 9, and 25402-3DP-G04G-0090, "Engineering Evaluation for Commodity Refurbishment," Rev. 8. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified. The FOSAR inspection identified a foreign object in steam generator 2 between the fourth and fifth tube support plates. An evaluation of the object will be conducted and a retrieval plan will be initiated if deemed appropriate. The four steam generators have been visually inspected in: 1) the area between the shell and wrapper; 2) the area between the wrapper and tube bundle; and 3) the steam drum area. The space between the second and ninth tube support plates in the four steam generators could not be visually inspected due to the support plates being completely sealed. This area has been inspected by eddy current.

c. Conclusions

The observed refurbishment activities on steam generators 1 and 2 were conducted in accordance with applicant procedures and ASME B&PV Code 2007 edition. The RHR 2B heat exchanger refurbishment evaluations were conducted in accordance with the applicable procedures.

C.1.5 Reactor Vessel and Internals Work Observation (IP 50053)

a. Inspection Scope

The inspectors conducted inspections of the reactor pressure vessel (RPV) and reactor vessel internals storage, preservation, housekeeping, and protection activities to determine whether requirements, work procedures, and inspection (quality control) procedures were being met. These activities are controlled by applicant procedure 25402-000-GPP-0000-N2102, "Housekeeping," Rev. 8. During the inspection period, the inspectors observed the RPV head lift from the head stand to the reactor cavity. In addition, the inspectors reviewed the heavy lift plan, the Unit 2 crane load capacity report, crane operator qualifications, rigger qualifications, and load cell calibration records to verify the RPV head lift was completed in accordance with WO 112219339. The inspectors completed the head lift inspection to verify that the RPV was protected from foreign objects, the RPV was protected from construction damage, and that cleanliness requirements were being met. The inspectors observed the use of platforms and scaffolding inside the vessel to verify the scaffolding was treated to prevent the spread of accidental fires. The core barrel and internals were inspected to verify storage locations were adequate and controls were in place to protect from construction damage. Access controls were inspected to verify all entries into the RPV were controlled and the entry logs documented each entry into the RPV.

The following samples were inspected:

- IP 50053 Section 02.01.c - one sample
- IP 50053 Section 02.02.a - one sample
- IP 50053 Section 02.03.b - one sample
- IP 50053 Section 02.03.d - one sample

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

Adequate controls were in place to protect the reactor vessel and internals.

C.1.6 Heating, Venting, and Air Conditioning (HVAC) Systems and Cooling Coil Installation Observations (IP 50100)

a. Inspection Scope

The inspectors observed the QC inspection of a completed internal ductwork seal, associated with the lower containment cooling (HVAC) system, to verify the inspections were being performed in accordance with procedural requirements. The inspectors reviewed the associated WO, material withdraw records, and inspection data sheets to verify the work was completed and approved in accordance with applicant procedure Modification/Addition Instruction (MAI)-4.3, "HVAC Duct Systems," Rev. 9, that applicable WOs and approved drawings were available and in use, and that appropriate QC reviews were completed. The inspectors interviewed one HVAC field engineer and one QC inspector, for the completed lower containment cooling ductwork, to verify personnel were following approved procedures, personnel were knowledgeable with the associated procedures, and field installations were installed in accordance with the approved drawings.

In addition, the inspectors reviewed construction component hydrostatic re-tests for two lower containment cooling coils associated with corrective actions for PER 658832, "Leaks identified during info only hydrostatic test of System 067 LCC Cooling Coils," and observed cooling coil installation activities associated with the lower containment cooler 2-CCU-030-0077-A. The test inspections were conducted to verify the tests were completed in accordance with applicant procedure 25402-000-GPP-0000-N3506, "Pressure Testing of Piping, Tubing and Components," Rev. 8, and the test acceptance criteria were observed and recorded as required by the test procedure. The cooling coil installation inspections were performed to verify that the cooling coil was installed in accordance with the approved procedures. In addition, the inspectors interviewed QC personnel and reviewed the training records for the test director and supervisors to verify the personnel completing the tests and inspections were qualified and knowledgeable of the procedural requirements.

The following samples were inspected:

- IP 50100 Section 02.04.a - two samples
- IP 50100 Section 02.04.b - one sample

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the HVAC system installations quality control inspections were completed in accordance with the approved procedures and that the HVAC cooling coil construction hydrostatic tests were completed in accordance with the approved procedures and met the test acceptance criteria.

C.1.7 (Closed) Nondestructive Examination (NDE) Visual Examination Procedure Review/Work Observation/Record Review (IP 57050)

a. Inspection Scope

Background: A review of the historical inspection activities associated with IP 57050, as noted in integrated inspection report (IIR) 050000391/2009602 (Agencywide Documents Access and Management System (ADAMS) Accession Number (No.) ML091210420), indicated that the requirements of IP 57050 had been met. The intent of the inspection efforts had been to ensure that new construction activities (2008 – present) were performed in compliance with procedural and regulatory requirements. While no requirements were outlined, many of the original IP 57050 attributes were re-inspected for new work. These inspection efforts and the applicable IP sections can be found in the following IIRs:

- Section 02.01 – IIR 2010602 (ADAMS Accession No. ML101230144), 2010603 (ADAMS Accession No. ML102170465)
- Section 02.02 – IIR 2010602 (ADAMS Accession No. ML101230144), 2012607 (ADAMS Accession No. ML12276A028)
- Section 02.03 – IIR 2010603 (ADAMS Accession No. ML102170465), 2012607 (ADAMS Accession No. ML12276A028)

Inspection Activities: For the current inspection period, the inspectors reviewed 42 visual examination (VT) records to determine whether the records were in accordance with the procedures and ASME Section XI Code 2001 edition through 2003 Addenda, ASME Section III code of record (1971/1973 summer addenda), American Welding Society (AWS) code of record (D1.1 1972 with Rev. 1-73, 2-74), and ASME Section V Nondestructive Examination.

The inspectors also reviewed the 13 personnel qualification records for conformance with the requirements of the applicant's written practice. The inspectors reviewed qualification records of inspection personnel to verify that they properly reflected the

employer's names, persons certified, activities qualified to perform, effective period of certifications, proper signatures, basis, and annual vision acuity and periodic recertifications.

The inspectors also independently verified the VT results of six completed inspection records per applicant's/contractor's procedures and applicable codes. Documents reviewed are listed in the Attachment.

The inspectors performed the following sample:

- IP 57050 Section 02.03 – one sample (2.03.a - 13 samples, 2.03.b – 42 samples, 2.03.c - 6 samples)

b. Observations and Findings

No findings were identified.

c. Conclusions

The VT procedures, VT records, and NDE personnel qualification records reviewed by the inspectors met the requirements of 10 *Code of Federal Regulations (CFR) Part 50, Appendix B*, the applicant's ASME Section III code of record (1971 edition through the 1973 summer addenda), ASME Section XI (2001/2003 addenda), ASME Section V (1971 edition through the summer 1973 addenda) and AWS codes of record (D1.1 1972 with Rev. 1-73, 2-74).

Based on the review of historical inspection activities and subsequent inspection, this IP is considered closed; however, if major changes to the applicant's instructions and procedures are identified through observation of future work activities, the inspectors will inspect those as necessary to satisfy the requirements in this procedure.

C.1.8 (Closed) NDE Liquid Penetrant Examination Procedure Review/Work Observation/Record Review (IP 57060)

a. Inspection Scope

Background: A review of the historical inspection activities associated with IP 57060, as noted in IIR 050000391/2009602 (ADAMS Accession No. ML091210420), indicated that the requirements of IP 57060 had been met; however, minimal field observations were credited. The intent of the inspection efforts had been to ensure that new construction activities (2008 – present) were performed in compliance with procedural and regulatory requirements. While no requirements were outlined, many of the original IP 57060 attributes were re-inspected for new work. These inspection efforts and the applicable IP sections can be found in the following IIRs:

- Section 02.01 – IIR 2010602 (ADAMS Accession No. ML101230144), 2010603 (ADAMS Accession No. ML102170465), 2010604 (ADAMS Accession No. ML103060240);

- Section 02.02 – IIR 2010602 (ADAMS Accession No. ML101230144), 2010604 (ADAMS Accession No. ML103060240), 2010605 (ADAMS Accession No. ML110410680), 2012605 (ADAMS Accession No. ML12220A536); and
- Section 02.03 – IIR 2009602 (ADAMS Accession No. ML091210420), 2010603 (ADAMS Accession No. ML102170465), 2010604 (ADAMS Accession No. ML103060240), 2012607 (ADAMS Accession No. ML12276A028)

Inspection Activities: For the current inspection period, the inspectors reviewed 21 liquid penetrant testing (PT) records to determine whether the examinations were conducted in accordance with applicable procedures and ASME B&PV Code 1971 edition through 1973 addenda (Bechtel) as well as ASME Section XI Code 2001 edition through 2003 Addenda (TVA) requirements. Specific criteria examined were as follows:

- The PT equipment and materials were certified and on location;
- test attributes were specified and followed;
- proper evaluation of indications was performed; and
- post-examination cleaning was completed.

The inspectors also reviewed four personnel qualification records (PT examination), for conformance with the requirements of the applicant's written practice. The inspectors reviewed qualification records of inspection personnel to verify that they properly reflected the employer's names, persons certified, activities qualified to perform, effective period of certifications, proper signatures, basis, and annual vision acuity and periodic recertifications. Documents reviewed are listed in the Attachment.

The inspectors performed the following sample:

- IP 57060 02.03 – one sample (2.03.a – 4 samples, 2.03.c - 21 samples)

b. Observations and Findings

No findings were identified.

c. Conclusions

The PT records reviewed met the applicant's procedural and ASME Code requirements. Based on the review of historical inspection activities and subsequent inspection of new work, this IP is considered closed; however, if major changes to the applicant's instructions and procedures are identified through observation of future work activities, the inspectors will inspect those as necessary to satisfy the requirements in this procedure.

C.1.9 (Closed) NDE Magnetic Particle Examination Procedure Review/Work Observation/Record Review (IP 57070)

a. Inspection Scope

Background: A review of the historical inspection activities associated with IP 57070, as noted in IIR 050000391/2009602 (ADAMS Accession No. ML091210420), indicated that it was unclear if the requirements of IP 57070 had been met. The intent of the

inspection efforts had been to ensure that new construction activities (2008 – present) were performed in compliance with procedural and regulatory requirements and that a representative sample of field observations were observed. While requirements were outlined, many of the original IP 57070 attributes were re-inspected for new work with the objective of satisfying the intent of the applicable section. These inspection efforts and the applicable IP sections can be found in the following IIRs:

- Section 02.01 – IIR 2009604 (ADAMS Accession No. ML093030479), 2010603 (ADAMS Accession No. ML102170465), 2011603 (ADAMS Accession No. ML111370702);
- Section 02.02 – IIR 2009604 (ADAMS Accession No. ML093030479), 2010602 (ADAMS Accession No. ML101230144), 2010603 (ADAMS Accession No. ML102170465), 2010604 (ADAMS Accession No. ML103060240), 2011602 (ADAMS Accession No. ML110800483), 2011603 (ADAMS Accession No. ML111370702), 2011604 (ADAMS Accession No. ML111810890); and
- Section 02.03 – IIR 2009604 (ADAMS Accession No. ML093030479), 2010602 (ADAMS Accession No. ML101230144), 2010603 (ADAMS Accession No. ML102170465), 2011602 (ADAMS Accession No. ML110800483), 2011603 (ADAMS Accession No. ML111370702), 2012607 (ADAMS Accession No. ML12276A028)

Inspection Activities: For the current inspection period, the inspectors reviewed two magnetic particle (MT) examination records for the auxiliary feedwater (AFW) system to determine whether the report, evaluation of data, and results were in accordance with procedures and ASME Section XI Code 2001 edition through 2003 Addenda. The inspectors reviewed four MT equipment calibration records and MT material certification records to determine whether these records met procedure requirements and ASME Section XI Code 2001 edition through 2003 Addenda. The inspectors reviewed three MT examination personnel qualification records to determine whether the MT inspector was qualified and whether the quality records met procedure requirements and ASME Section XI Code 2001 edition through 2003 Addenda (TVA) requirements. The inspectors reviewed qualification records of inspection personnel to verify that they properly reflected the employer's names, persons certified, activities qualified to perform, effective period of certifications, proper signatures, basis, and annual vision acuity and periodic recertifications. Documents reviewed are listed in the Attachment.

The following samples were inspected:

- IP 57070 Section 02.03 – one sample (2.03.a – 3 samples, 2.03.b - 4 samples, 2.03.c - 2 samples)

b. Observations and Findings

No findings were identified.

c. Conclusions

The MT records reviewed met the applicant's procedural and ASME Code requirements. Based on the review of historical inspection activities and subsequent inspection of new work this IP is considered closed; however, if major changes to the applicant's

instructions and procedures are identified through observation of future work activities, the inspectors will inspect those as necessary to satisfy the requirements in this procedure.

C.1.10 (Closed) Ultrasonic Testing Examination Procedure Review/Work Observation/Record Review (IP 57080)

a. Inspection Scope

A review of the historical inspection activities associated with IP 57080, as noted in IIR 050000391/2009602 (ADAMS Accession No. ML091210420), indicated that IP 57080 should be implemented if ultrasonic testing (UT) was performed as part of the preservice inspection (PSI). While requirements were outlined, no specific sample sizes were specified. Many of the original IP 57080 attributes were re-inspected for new work with the objective of satisfying the intent of the applicable section. These inspection efforts and the applicable IP sections can be found in the following IIRs:

- Section 02.01 – IIR 2010605 (ADAMS Accession No. ML110410680), 2011605 (ADAMS Accession No. ML112201418), 2011608 (ADAMS Accession No. ML11311A082), 2012605 (ADAMS Accession No. ML12220A536);
- Section 02.02 – IIR 2010603 (ADAMS Accession No. ML102170465), 2010605 (ADAMS Accession No. ML110410680), 2011608 (ADAMS Accession No. ML11311A082), 2012605 (ADAMS Accession No. ML12220A536); and
- Section 02.03 – IIR 2010605 (ADAMS Accession No. ML110410680), 2011605 (ADAMS Accession No. ML112201418), 2011608 (ADAMS Accession No. ML11311A082)

b. Observations and Findings

No findings were identified.

c. Conclusions

Based on the review of historical inspection activities, this IP is considered closed; however, if major changes to the applicant's instructions and procedures are identified through observation of future work activities, the inspectors will inspect those as necessary to satisfy the requirements in this procedure.

C.1.11 (Closed) Radiographic Examination Procedure Review/Work Observation/Record Review (IP 57090)

a. Inspection Scope

Background: A review of the historical inspection activities associated with IP 57090, as noted in IIR 050000391/2009602 (ADAMS Accession No. ML091210420), indicated that the requirements of IP 57090 had been met; however, the IP was published late in the original construction effort and many requirements were previously inspected in welding IPs. The intent of the inspection efforts had been to ensure that new construction activities (2008 – present) were performed in compliance with procedural and regulatory requirements. While no requirements were required, many of the original IP 57090

attributes were re-inspected for new work. These inspection efforts and the applicable IP sections can be found in the following IIRs:

- Section 02.01 – IIR 2010604 (ADAMS Accession No. ML103060240);
- Section 02.02 – IIR 2010605 (ADAMS Accession No. ML110410680), 2012609 (ADAMS Accession No. ML12356A073); and
- Section 02.03 – IIR 2009602 (ADAMS Accession No. ML091210420), 2009605 (ADAMS Accession No. ML100290703), 2010602 (ADAMS Accession No. ML101230144), 2010604 (ADAMS Accession No. ML103060240), 2010605 (ADAMS Accession No. ML110410680) (Section 02.03d –Digital radiographic images have not been used by the applicant or its contractors to date.)

Inspection Activities: For the current inspection period, the inspectors reviewed radiographic film to determine whether the radiographic quality was in accordance with applicable procedure and ASME B&PV Code 1971 edition through 1973 addenda requirements. Specifically, the inspectors reviewed three radiographic films of the welds mentioned below for the following:

- Penetrameter type, size, and placement;
- Penetrameter sensitivity;
- Film density;
- Film identification;
- Film quality; and
- Weld coverage.

The inspectors reviewed radiographic film for the following welds:

- Weld# 2-062A-D013-8E, WO# 09-952053-003, CVCS Flange to Pipe (one film)
- Weld# 2-062B-D139-35, WO# 09-951671-003, CVCS Pipe to Fitting (two films)

The inspectors inspected radiographic film interpretation equipment to verify the equipment was calibrated. The inspectors also reviewed four personnel qualification records (radiographic testing (RT) examination) to verify conformance with the requirements of the contractor's written practice. The inspectors reviewed qualification records of inspection personnel to verify that they properly reflected the employer's names, persons certified, activities qualified to perform, effective period of certifications, proper signatures, basis, and annual vision acuity and periodic recertifications. Documents reviewed are listed in the Attachment.

The following samples were inspected:

- IP 57090 02.03 – one sample (2.03.a – 3 samples, 2.03.b - 4 samples)

b. Observations and Findings

No findings were identified.

c. Conclusions

The observed radiographic examination records met the applicant's procedural and ASME Code requirements. The processing of the radiographic film was conducted in accordance with procedure requirements. The radiographic personnel were certified in accordance with procedure and SNT-TC-1A requirements.

Based on the review of historical inspection activities and subsequent inspection of new work activities, this IP is considered closed; however, if major changes to the applicant's instructions and procedures are identified through observation of future work activities (including the use of digitized RT film), the inspectors will inspect those as necessary to satisfy the requirements in this procedure.

C.1.12 In-Service Inspection (ISI) – Review of Program (IP 73051), and ISI Inspection – Review of Procedures (IP 73052)

a. Inspection Scope

The inspectors reviewed the most recent revision (Rev.7) of the "Preservice Inspection Program Plan, Watts Bar Nuclear Plant Unit 2," and conducted interviews with the PSI program manager and PSI coordinator to ensure compliance with the requirements of ASME Section XI (2001 edition through the 2003 addenda), 10 CFR 50.55a, and additional commitments made to the NRC. Portions of the PSI program continued to be developed; for example, ASME Section XI, subsection IWL examinations for the containment vessel, and subsection IWF for supports; and were, therefore, unavailable for inspection. These items were also mentioned in Safety Evaluation Report (SER) as open item number 70, reviewed by NRC's Office of Nuclear Reactor Regulation (NRR) on February 2011 (ADAMS Accession No. ML11206A499).

Additionally, the inspectors reviewed "Preservice Inspection Program Plan, Watts Bar Nuclear Plant Unit 2," Rev. 7, to ensure compliance with ASME Section XI 2001 Edition through 2003 addenda. The PSI program is currently being revised, with each revision defining the welds to be examined for additional ASME Section XI examination categories. Examination categories with undefined weld populations for examination included B-K, C-A, C-B, C-C, C-D, C-F-1, C-F-2, C-G, D-A, F-A, snubbers (IWF-5000), and containment (IWE-2000). The inspectors reviewed the results of the Authorized Nuclear Inspector (ANI) review of "Preservice Inspection Program Plan, Watts Bar Nuclear Plant Unit 2," Rev. 5, to understand the intent of the open items and completeness of the plan. The inspectors verified that "Preservice Inspection Program Plan, Watts Bar Nuclear Plant Unit 2," Rev. 7, was reviewed by appropriate applicant staff. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified. The inspectors determined that the applicant had established adequate procedures to implement the PSI requirements described in their PSI program plan; however, the inspectors noted that the PSI program plan had yet to implement all the PSI requirements required by ASME Section XI and 10 CFR 50.55a.

The inspectors confirmed that the applicant had not performed any work activities associated with the following programs:

- System leakage tests;
- IWF-5000 snubber inspections; and
- IWE and IWL inspections and tests.

c. Conclusions

The applicant's PSI program plan complied with ASME Section XI Code 2001 edition through 2003 Addenda.

C.1.13 Pre-Service Inspection (PSI) – Observation of Work Activities (IP 73053)

a. Inspection Scope

The inspectors reviewed WOs 09-952053-003, 11-3292001, 09-951671-003, 09-954298-000, 11-1752821 for the repair of defects discovered as a result of preservice examination on weld numbers 2-062-D013-8E, 2-061A-D050-15, 2-062B-D139-35, 2-063B-D199-16, 2-067J-T276-01E C0R0/ 2-067J-T275-40 C0R0 respectively. The reviews were performed to verify activities were performed in accordance with Bechtel's QA program for welding, and the applicant's nuclear QA program for NDE. Welder certification records and welding procedures were reviewed to verify welder qualification to perform the welding was in accordance with the welding procedure specification. The certified material reports were reviewed for the weld filler metal. Visual examinations, as well as qualified NDE personnel, were verified related to welding packages. Preservice inspections have been performed and results were verified related to welding packages. Post-weld pressure tests were verified or are scheduled. Documents reviewed are listed in the Attachment.

The inspectors performed the following samples:

- IP 73053 Section 02.04 – five samples

b. Observations and Findings

No findings were identified.

c. Conclusions

Repairs were completed in accordance with the requirements of the QA manuals and the requirements of the ASME B&PV Code.

T.1 Training and Qualification of Plant Personnel

T.1.1 Craft Training (IP 50090)

a. Inspection Scope

The inspectors observed activities associated with general employee requalification training. In addition, the inspectors observed anchor bolt re-training associated with corrective actions for PER 664931, "Hardware Non-Conformance WO 113818508 Hanger 2-03A484." The inspectors monitored craft classroom and Dynamic Learning Center training sessions associated with general employee training. The inspectors also observed a hanger (pipe supports) program workshop on February 8, 2013, which presented methods on improving hanger quality.

b. Observations and Findings

No findings were identified.

c. Conclusions

The applicant's program for requalification training of personnel, anchor bolt re-training, and hanger training workshops were adequate for the current level of construction activities being performed.

IV. OTHER ACTIVITIES

OA.1.1 (Discussed) Construction Deficiency Report (CDR) 391/91-31: Use of Non-Dedicated Commercial Grade Electrical Devices in Safety-Related Applications (IP 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 CDR dealt with 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) corrective action program (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 Inspection Report (IR) 50-390/94-66 (ADAMS Accession No. ML072980640) and 50-390/94-201 (ADAMS Accession No. ML072750699).

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 was identified as not meeting the requirements of IEEE-344. The relay is planned to be replaced with Westinghouse relay 2384A28H01 by WO 113314474. After a review of the Unit 2 RIP CAP, the inspectors determined the CAP was adequately implemented for Unit 2 as documented in NRC IIR 05000391/2010605 (ADAMS Accession No. ML110410680).

Remaining Unit 2 applicant actions:

- Install the K201 relay, WO 113314474; and
- Close CDR 391/91-31 and provide a final closure package to the NRC

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 engineering closure documentation for CDR 391/91-31, dated March 29, 2012, to verify that the applicant's closure methodology adequately addressed the concern of the CDR;
- Reviewed certificate of conformance for Westinghouse SSPS Start-Up Kit, Train B, April 6, 2010, to verify the relay was purchased by a qualified vendor; and
- Reviewed Westinghouse Technical Bulletin TB-04-2 for SSPS Relays, January 6, 2004 and reviewed TVA WO 09-954267-001, Train B Master Relay Data Sheets, June 21, 2010, to verify that the components noted in the technical bulletin were identified by the applicant.

b. Observations and Findings

No findings were identified.

c. Conclusions

The corrective actions in place were adequate. Additional inspection activities are still planned prior to closure of CDR 50-391/91-31. Specifically, the inspectors plan to review the implementation of WO 113314474.

OA.1.2 (Discussed) CDR 391/82-80: Lack of Qualification of EDS Nuclear Incorporated (EDS) Embedment Plates (IP 35007)

a. Inspection Scope

Background: The deficiency was initially reported to the NRC on December 2, 1982, as non-conforming report (NCR) WBN CEB 8217 in accordance with 10 CFR 50.55(e). The issue was documented as CDR 390/82-84 for Unit 1 and CDR 391/82-80 for Unit 2.

The CDR concerned the lack of qualification for embedment plates. In 1978, EDS notified TVA by letter of the completion of their verification effort for TVA support embedment plates having EDS-designed pipe support loads. Several supports were identified in 1981, for the reactor coolant system (RCS) and the CCS piping at Watts Bar Nuclear Plant, which exceeded the allowable loads provided to EDS by TVA. TVA had already approved the EDS drawings and had issued them to its construction forces before the receipt of the vendor analysis was completed. Revised EDS support designs had been incorporated into the plant design under engineering change notice (ECN)-2958.

The deficiency involved a failure by TVA design personnel to either understand or comply with the directions of TVA's Division of Engineering design engineering procedure 1.26, "Nonconformance Reporting and Handling by EN DES," which was in effect at that time.

The applicant analyzed the embedded plates that EDS had indicated as being overloaded and provided engineering justification for the design or modification of the embedment plates to reduce the plate stresses and anchor loads. Revised EDS support designs had been incorporated into the plant design under ECNs 2958 and 4241. After interviews with responsible applicant representatives and a review of the completed corrective actions for Unit 1, the inspectors determined that CDR 390/82-84 was adequately resolved for Unit 1 as documented in NRC IR 50-390/84-39 (ADAMS Accession No. ML082390462).

The review for Unit 2 associated with NCR WBN CEB 8217 required instrument support 2-094-A600-105-18 (47A600-105-18) to be installed in accordance with ECN 2958. Unit 2 addressed the corrective actions in PER 144186. TVA design engineering determined that support 2-094-A600-105-18 is no longer required as per calculation 290106, Rev. 2. Remaining Unit 2 applicant actions:

- Remove support 2-094-A600-105-18, WO 113775314; and
- Close CDR 391/82-80 and provide a final closure package to the NRC

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

- Reviewed PER 144186 to verify the corrective actions were implemented for Unit 2;
- Reviewed engineering closure documentation for CDR 391/82-80, dated November 28, 2011, to verify that the applicant's closure methodology adequately addressed the concern of the CDR;

- Interviewed design engineers and reviewed design calculation 290106, Rev. 2, to verify the adequacy of the engineering analysis; and
- Reviewed engineering document construction release (EDCR) 54251, which included DRAs 54251-205 and 206, to verify the design change included the removal of support structure 2-094-A600-105-18 (47A600-105-18)

b. Observations and Findings

No findings were identified.

c. Conclusions

The corrective actions in place are adequate. Additional inspection activities are planned prior to closure of CDR 50-391/82-80. Specifically, the inspectors plan to review the implementation of WO 113775314.

OA.1.3 (Discussed) CDR 391/89-06: Inadequate Qualifications for Cable Tray Supports and Fittings (IP 35007)

a. Inspection Scope

Background: The deficiency was initially reported to the NRC on June 22, 1989, as WBP 880040 and 880041 in accordance with 10 CFR 50.55(e). The issue was documented as CDR 390/89-06 for Unit 1 and CDR 391/89-06 for Unit 2.

The CDR concerned cable tray and supports that were not properly qualified for the as-built plant and the as-installed configuration of cable trays that did not match the design drawings.

The deficiency involved problems associated with three programmatic deficiencies as noted in the CAP plan for the cable tray and cable tray supports. The deficiencies included a lack of documented design qualification for cable tray hardware, installed configurations not complying with design output documents, and a lack of documentation to verify previous re-inspections.

The applicant implemented the cable trays and cable tray supports CAP to correct the deficiencies for both Unit 1 and Unit 2. Unit 1 completed the following actions: 1) performed a design basis review and upgrade of the cable tray support documentation; 2) completed an evaluation of cable trays for structural integrity; 3) revised WB-DC-20-21.1, the design basis document for cable trays and tray supports; 4) verified the adequate thread engagement for bolting of tray fittings and hardware; 5) revised appropriate procedures to include installation, QA, and maintenance requirements; and 6) revised procedures to assure that design documents qualify cable tray hardware, the installed configuration complies with the design output, and re-inspections were properly documented. After a review of the adequacy and effectiveness of the corrective actions, a review of the cable trays and cable tray supports CAP for Unit 1, and inspections of the QA records associated with cable supports and cable tray supports, the inspectors determined that CDR 390/89-06 was adequately resolved for Unit 1 as documented in NRC IRs 50-390/94-64 (ADAMS Accession No. ML072980741), 50-390/95-69 (ADAMS Accession No. ML072610762), and 50-390/93-78 (ADAMS Accession No. ML072851292).

The corrective actions for Unit 2 were documented in PER 143986. As part of the inspections for the Unit 2 cable supports and cable tray supports CAP, the inspectors reviewed the applicant's final closure package for the CAP. The inspectors concluded that reasonable assurance exists that the programmatic aspects of the CAP, related to cable tray supports, had been adequately implemented and the inspectors were able to verify that appropriate actions had bounded and grouped cable trays and had properly identified deficiencies. The inspectors determined that further inspection would be needed to verify that work has been adequately performed to physically resolve the cable tray deficiencies identified by the CAP as documented in NRC IIR 05000391/2012602 (ADAMS Accession No. ML12087A324).

Remaining Unit 2 applicant actions:

- Implement design change packages EDCR 52934, 55045, and 55231; and
- Close CDR 391/89-06 and provide a final closure package to the NRC

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

- Reviewed PER 143986 to verify the corrective actions were implemented for Unit 2;
- Reviewed engineering closure documentation for CDR 391/89-06, dated January 19, 2012, to verify that the applicant's closure methodology adequately addressed the concern of the CDR; and
- Reviewed WB-D-20-21.1, "Design Criteria Document, Category I Cable Tray Supports", Rev. 10, to verify the design criteria included clearly defined structural requirements for cable trays.

b. Observations and Findings

No findings were identified.

c. Conclusion

The corrective actions in place are adequate. Additional inspection activities are planned prior to closure of CDR 391/89-06. Specifically, the inspectors plan to review the WO implementation of EDCRs 52934, 55045, and 55231.

OA.1.4 (Closed) Supplemental Safety Evaluation Report (SSER) Appendix HH, Open Item 50, Refurbishment Inspection Commitment, Anchor Bolt Documentation and Pull Test (IP 46071)

a. Inspection Scope

Background: A letter from the NRC to the applicant dated July 2, 2010, stated that inspectors would follow up on pull tests for anchor bolts where historical records could not be retrieved. In addition, the applicant had previously stated that approximately five percent of the anchor bolts did not have QC documentation; however, at the time of the NRR review, none of the pull tests had been performed nor had all the QC documentation been retrieved. To resolve the NRC staff's comments, the applicant stated that if the pull test did not show that the anchor had adequate capacity, the anchor would be replaced.

Subsequent to the letter, the applicant had retrieved most of the QC documentation for anchor bolts which resulted in a population significantly less than the five percent as noted above.

In the fall of 2012, NRC inspectors documented their review and inspection of this item in Section OA.1.4 of NRC IIR 05000391/2012605 (ADAMS Accession No. ML12319A368) and concluded TVA planned issuance of a revised letter reflecting actions taken to date. The inspection report also stated that the item would remain open pending a review of TVA's response.

On January 24, 2013, TVA issued a letter to the NRC documenting the revised method to verify proper installation of existing concrete anchor bolts for safety-related pipe supports in those instances where pull test documentation could not be located. The letter stated that, for the hanger analysis and updated program (HAAUP) CAP, if QC pull test records are available, the documentation would be referenced in the support calculation. If the pull test documentation was not available, the support would be modified to replace existing anchors with wedge bolt or undercut anchors, including appropriate inspection and documentation. Furthermore, the letter stated a similar approach for instrumentation and components and sense line supports, with the exception that if the pull test record could not be located, a pull test would be performed for at least the design load times a safety factor of five. And, if the test failed, the anchor bolts would be replaced.

Inspection Activities: The inspectors reviewed the letter dated January 14, 2013, submitted by TVA revising their method for verifying proper installation of existing concrete anchor bolts for safety-related pipe supports. The inspectors had previously verified implementation of these actions as noted in NRC IIRs 05000391/2012605 (ADAMS Accession No. ML12319A368), 05000391/2011605 (ADAMS Accession No. ML112201418), 05000391/2011607 (ADAMS Accession No. ML112730197), 05000391/2011608 (ADAMS Accession No. ML11311A082), and 05000391/2011609 (ADAMS Accession No. ML11350A229) which documented the replacement of self-drilling expansion shell (SSD) anchor bolt with wedge bolts. In addition, the inspectors conducted the review to verify that actions taken to date were consistent with those outlined in the January 2013 submittal. Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that actions inspected were performed by the applicant in accordance with their procedures and regulatory requirements. As a result, SSER Appendix HH Item 50 is closed.

OA.1.5 (Closed) CDR 50-391/93-05, Inappropriate Selection of Valve for Use as a Throttle Valve in the Safety Injection System (IP 35007)

a. Inspection Scope

Background: This issue involved the installation of 12 globe valves for throttling in the safety injection system in lieu of the needle valves required by the drawings on Unit 1. This issue was previously inspected and documented in NRC IIR 05000391/2012604 (ADAMS Accession No. ML12167A212), Section OA.1.1. During the inspection, the inspectors determined that the applicant's actions to replace the valves on Unit 2 were acceptable. This item was left open pending observation of field work.

Inspection Activities: During this inspection the inspectors observed four newly installed valves in the plant and reviewed WOs associated with the replacements to ensure field work was planned and was being tracked.

b. Observations and Findings

No findings were identified.

c. Conclusions

The applicant's actions were considered acceptable; therefore, CDR 50-391/93-05 is closed.

OA.1.6 (Closed) CDR 50-391/87-03, Potential for Valve Failure due to Key Loss (IP 35007)

a. Inspection Scope

Background: This item involved the potential for the valve stem and actuator yoke to become disengaged on quarter-turn valves. The potential scope included air-actuated butterfly valves where the valve actuator was installed below horizontal. This issue was described in NRC Information Notice 85-67, "Valve-Shaft-To-Actuator Key may Fall Out of Place when Mounted Below Horizontal Axis." This item was closed for Unit 1 in NRC IR 05000390, 391/90-27(ADAMS Accession No. ML072610322), Section 8.f.

Inspection Activities: The inspectors reviewed the documentation contained in the applicant's engineering complete package, which included the historic NRC documentation, the Unit 2 evaluation, the applicable Unit 2 EDCR, the list of affected valves, and the proposed corrective actions, to determine the applicant's corrective actions associated with this issue. In addition, the inspectors reviewed WOs associated with field work. Specifically, WOs 08-952680-000, 08-952677-000, 08-952648-000, 08-952646-000, and 11245505B, associated with 8 of the 11 affected valves, to verify the work being performed was consistent with the guidance documents. The inspectors also observed two of the installed valves, 2-FCV-030-0015B and 2-FCV-030-0037, to verify actuator physical orientation.

b. Observations and Findings

No findings were identified. The applicant determined that certain valves supplied by Posi-Seal International, Inc., were potentially affected by the problem and decided to

install retention rings for those with actuators mounted at or below the horizontal plane. This was similar to the Unit 1 actions. The records showed that retention rings were appropriately installed for those valves mounted at or below horizontal. The applicant had completed most of the field work and remaining field work was being tracked.

c. Conclusions

The applicant's actions were considered acceptable; therefore, CDR 50-391/87-03 is closed.

OA.1.7 (Closed) Bulletin 88-08 and 88-08, Supplement 1, Thermal Stresses in Piping Connected to Reactor Coolant System (IP 92717)

a. Inspection Scope

Background: This item required applicant's to evaluate the potential for reactor coolant system leakage from stagnant lines due to thermal stresses. This item was previously inspected and documented in NRC IIR 05000391/2012607 (ADAMS Accession No. ML12276A028). During that inspection the inspectors determined the applicant had credited the original bulletin (BL) response for intended actions which was not correct. In addition, the applicant's analysis appeared to imply use of an updated industry guide which had not been endorsed by the NRC.

Inspection Activities: During this inspection, the inspectors reviewed the applicant's revised intended actions contained in the applicant's update to the Regulatory Framework letter dated January 17, 2013, and reviewed applicant's procedure 2-TI-305, "Acoustic Monitoring to Detect Leakage Through 2-FCV-63-25 and 26," Rev. 0. In addition, the inspectors reviewed additional documentation contained in calculation 25402-011-V1B-WA42-00001-002, "MRP-146 Assessment of Normally Stagnant Non-Isolable Branch Lines," Rev. 1.

b. Observations and Findings

No findings were identified. The applicant had established actions to monitor leakage similar to Unit 1, that were in accordance with the latest approved guidance.

c. Conclusions

The applicant's actions were considered acceptable; therefore, BL 88-08 and 88-08 Supplement 1 are closed.

OA.1.8 (Closed) Reactor Coolant System Dissimilar Metal Butt Welds (Temporary Instruction 2515/172, Rev. 1)

a. Inspection Scope

Background: Temporary Instruction (TI)-2515/172 Rev. 1 expired on June 30, 2011, and the associated commitments of Materials Reliability Program (MRP) -139, "Primary System Piping Butt Weld Inspection and Evaluation Guidelines," July 2005, were captured in 10 CFR 50.55a(g)(6)(ii)(F) along with the associated ASME Section XI code case N-770-1. All inspection activities for Watts Bar 2 associated with the TI have been

completed with the exception of Section 03.06, "Inservice Inspection Program." The program requirements of Section 03.06 refer to MRP-139 which has been superseded by N-770-1. The new program requirements of N-770-1 will be incorporated into the applicant's ISI program following operations. Previous inspection activities associated with TI-2515/172 Rev. 1 can be found in IIR 2010604 (ADAMS Accession No. ML103060240), 2010605 (ADAMS Accession No. ML110410680), and 2011608 (ADAMS Accession No. ML11311A082).

Inspection Activities: The inspectors discussed the future requirements of ASME Section XI code case N-770-1 with responsible applicant staff to verify the applicant's understanding of the code case.

b. Observation and Findings

No findings were identified.

c. Conclusions

Based on the review of previous inspection activities, consideration of the fact that NRR has closed TI-2515/172 Rev 1 and the requirements have transitioned to 10 CFR 50.55a(g)(6)(ii)(F), and that those requirements will be inspected under IMC 2515 IP 71111.08, "Inservice Inspection Activities," TI-2515/172 Rev.1 is considered closed.

V. MANAGEMENT MEETINGS

V.1 Exit Meeting Summary

An exit meeting was conducted on March 7, 2013, to present inspection results to you and other members of your staff. The inspectors identified that no proprietary information had been received during the inspection and none would be used in the inspection report. The applicant acknowledged the observations and provided no dissenting comments.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Applicant personnel

J. Adair, TVA Engineering
A. Bangalore, Bechtel Engineering
R. Baron, TVA – Sr. QA Manager
D. Beckley, Bechtel Engineering
M. Bonomo, Bechtel Engineering
D. Crowder, Bechtel Field Engineering
M. Drulard, Bechtel Construction
R. Evans, Bechtel Engineering Procurement
R. Hruby, TVA – General Manager
R. James, Bechtel Engineering
W. Jones, Bechtel QC Receipt
T. Krach, Bechtel Warehouse Supervisor
J. Martin, Bechtel Quality Manager
M. McGrath, TVA Construction Oversight
J. McLemore, Bechtel Field Engineering
T. Metzler, TVA – Regulatory Compliance
J. Mitchell, Bechtel – Project Field Procurement Manager
D. Myers, TVA Program Manager
J. O'Dell, TVA Regulatory Compliance
R. Partridge, Bechtel Engineering Procurement
G. Scott, TVA Regulatory Compliance
T. Shipley, Bechtel Construction
R. Yager, Bechtel Engineering Procurement Manager

INSPECTION PROCEDURES USED

IP 35007	Quality Assurance Program Implementation During Construction
IP 37002	Construction Refurbishment Process – Watts Bar Unit 2
IP 46053	Structural Concrete – Work Observation
IP 46071	Concrete Expansion Anchors
IP 49063	Piping - Work Observation
IP 50053	Reactor Vessel and Internals Work Observation
IP 50073	Mechanical Components - Work Observation
IP 50090	Pipe Support and Restrain Systems
IP 50100	Heating, Ventilating, and Air Conditioning Systems
IP 57050	Nondestructive Examination Procedure Visual Examination Procedure Review/Work Observation/Record Review
IP 57060	Nondestructive Examination Procedure Liquid Penetrant Examination Procedure Review/Work Observation/Record Review
IP 57070	Nondestructive Examination Procedure Magnetic Particle Examination Procedure Review/Work Observation/Record Review
IP 57080	Nondestructive Examination Procedure Ultrasonic Examination Procedure Review/Work Observation/Record Review

IP 57090	Nondestructive Examination Procedure Radiographic Examination Procedure Review/Work Observation/Record Review
IP 73051	Inservice Inspection Review of Program
IP 73052	Inservice Inspection Review of Procedures
IP 73053	Preservice Inspection - Observation of Work and Work Activities
IP 92717	IE Bulletins for Information and IE Information Notice Followup
TI 2515/172	Reactor Coolant System Dissimilar Metal Butt Welds

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

57050	IP	NDE Visual Examination Procedure Review/Work Observation/Record Review (Section C.1.7)
57060	IP	NDE Liquid Penetrant Examination Procedure Review/Work Observation/Record Review (Section C.1.8)
57070	IP	NDE Magnetic Particle Examination Procedure Review/Work Observation/Record Review (Section C.1.9)
57080	IP	Ultrasonic Testing Examination Procedure Review/Work Observation/Record Review (Section C.1.10)
57090	IP	NDE Radiographic Examination Procedure Review/Work Observation/Record Review (Section C.1.11)
Open Item 50	SSER App HH	Refurbishment Inspection Commitment, Anchor Bolt Documentation and Pull Test (Section OA.1.4)
391/93-05	CDR	Inappropriate Selection of Valve for Use as a Throttle Valve in the Safety Injection System (Section OA.1.5)
391/87-03	CDR	Potential for Valve Failure due to Key Loss (Section OA.1.6)
88-08	BL	Thermal Stresses in Piping Connected to Reactor Coolant System (Section OA.1.7)

88-08 Supplement 1	BL	Thermal Stresses in Piping Connected to Reactor Coolant System (Section OA.1.7)
2515/172 Rev. 1	TI	Reactor Coolant System Dissimilar Metal Butt Welds (Section OA.1.8)
<u>Discussed</u> 391/91-31	CDR	Use of Non-Dedicated Commercial Grade Electrical Devices in Safety-Related Applications (Section OA.1.1)
391/82-80	CDR	Unqualified EDS Nuclear Embedment Plates (Section OA.1.2)
391/89-06	CDR	Inadequate Qualifications for Cable Tray Supports and Fittings (Section OA.1.3)

LIST OF DOCUMENTS REVIEWED

I. QUALITY ASSURANCE (QA) OVERSIGHT ACTIVITIES

Q.1.1 Identification and Resolution of Construction Problems

PERs

PER 680253, RWST Flow Fill Exceeded Strength Requirement, 2/8/2013
 PER 602197, Flowable Fill, OSGSF vestibule floor exceeded strength test, 8/29/2012
 PER 585969, Flowable Fill 20EFF/OLS Foundation exceeded strength test, 7/26/2012
 PER 558308, Flowable Fill at OLS Exceeded 200 psi strength test, 5/29/2012
 PER 556017, Flowable Fill Mix ID 20EFF/24" Pipe exceeded 28 day strength test, 5/23/2012
 PER 553470, Flowable Fill at OLS exceeded compressive strength tests, 5/17/2012
 PER 531355, SGT NCR 1014 – Flowable Fill mix ID #SGTEFF/OLS foundation exceeded strength test, 4/4/2012
 PER 242542, Flowable Fill material exceeded the 200 psi strength test, 8/3/2010
 PER 73738, Strength Testing for Flowable Fill, 12/16/2004
 PER 90329, Civil QC sampling of Flowable Fill not completed, 9/3/2005
 PER 650984, PER Actions Fail to Address All Potential Conditions, Flowable Fill Commercial Grade Material, 12/6/2012
 PER 656122, WO issued Without Adequate Step Test Included, 12/15/2012
 PER 656123, PO for Unit 2 Work issued Through TVA Process for Backfill and FlowFill QC, 1/7/2013
 PER 666978, Flowable Fill not Batched per Approved Mix Design, 1/24/2013
 PER 668990, Calibration Meters at Time of Batching Flowable Fill, 1/22/2013

Miscellaneous

TVA Final Closure Package for BL 75-06
 TVA Final Closure Package for BL 79-21
 TVA Final Closure Package for BL 80-20
 TVA Final Closure Package for BL 83-06
 TVA Final Closure Package for CDR 79-18-01
 TVA Final Closure Package for CDR 80-21-06
 TVA Final Closure Package for URI 87-13-02
 TVA Final Closure Package for CDR 82-11
 TVA Final Closure Package for CDR 82-55
 TVA Final Closure Package for CDR 83-47
 TVA Final Closure Package for CDR 85-07
 TVA Final Closure Package for CDR 85-12
 TVA Final Closure Package for CDR 85-39
 TVA Final Closure Package for CDR 85-24
 TVA Final Closure Package for GL 83-28
 TVA Final Closure Package for TMI Action Item II.K.3.25

II. MANAGEMENT OVERSIGHT AND CONTROLS

C.1.2 Structural Concrete – Work Observation

Work Order

WO 112474177 Backfill with Flowable Fill, and install Concrete Pedestal, and Pour concrete Encasement for RWST wall excavation

Miscellaneous

432769 Concrete Level II Certification, 11/27/12
 439991 Concrete Level II Certification, 6/15/12
 CRL519B, Procurement Data sheet, Flowable Fill, Rev. 2
 FMR-D000-00001M1, Procurement Engineering Technical Evaluation, Rev. 4
 BPC-SME-12-002 Technical Services Subcontract, QC Services, Amendment, 12/13/2012
 FCR 58280-A and Associated Advanced Authorizations AA-01 through AA-05, 5/4/12
 FCR 60421-A and Associated Advanced Authorizations AA-01 through AA-08, 11/6/12
 Batch Plant Batch Ticket 159801, 1/9/13
 PO 490809, Flowable Fill Mix Design, revision 14
 PO 490809, Flowable Fill Mix Design, revision 26
 PO 490809, Flowable Fill Mix Design, revision 28
 National Ready Mixed Concrete Association Certification for Kingston Plant No. 005046,
 6/23/12
 RWST Flowable Fill Temperature Verification Log, 1/13/2013

M&TE

E48608 Surface Thermometer, 1/23/2013
 E48782 Dial Thermometer, 4/18/2013
 E1169 Temperature Recorder, 6/18/2013
 5834 AGG, Aggregate Batching Scale, 3/6/2013
 5834 CEM, Cement Batching Scale, 3/6/2013

PERs

651774, First Time Performance Evolution Guidelines Not Used for Critical Work, 11/10/2012
 650984, PER Actions Fail to Address All Potential Conditions with Commercial grade items,
 11/30/2012
 656122, WO Issued Without Adequate Step Text Included, 12/12/2012
 656123, PO for Unit 2 did not include QC services for backfill work, 12/12/2012
 666978, Flowable Fill not Batched per Approved Mix Design, 1/11/2013
 668990, Amixture Meters Past Calibration, at Time of Batching Flowable Fill, 1/17/2013
 680253, RWST Flow Fill Exceeded Strength Requirements, 2/8/2013

Procedures

Modification/Addition Instruction (MAI) 5.12, Backfill, Rev. 5

C.1.3 Piping – Work ObservationWork Order

WO 114169906, SYS 70 Sensing Line Hydrostatic Test

Drawing

2-47W600-131, Test Boundary Map, Rev. 1

Test Data Sheets

2-070-HYDRO-B002 (L-24-001), 1/29/2013
 2-070-HYDRO-B002 (L-24-002), 1/29/2013

M&TE

E48165 Pressure gauge, 6/21/2013
 E48167 Pressure gauge, 7/17/2013
 E50370 Thermometer, 12/17/2013

C.1.4 Mechanical Components – Work Observation and Construction Refurbishment ProcessFOSAR Inspection Reports

Vistas FOSAR inspection report dated June 1 – June 30, 2010
 Vistas FOSAR inspection report dated October 12 – November 6, 2010
 Vistas FOSAR inspection report dated August 1 – September 7, 2011
 Vistas FOSAR inspection report dated January 12 – February 23, 2012
 Vistas FOSAR inspection report dated January 14 – January 24, 2013

Work Orders

WO 114212407, SG1 Hot leg Side Cladding Repair
 WO 11415676726, Tube Pull/Plug #2 SG
 WO 114156717, Tube Pull/Plug #1 SG
 WO 114208012, System 70 2B RHR HX 18 inch Flange Reface Repair

WO 114367944, Machine Upper 18" Flange Face on RHR HX WBN-2-HTX-074-0031-B
 WO 112345412, Support to Vistas for Performance and Retrieval in Steam Generators

Miscellaneous

PCI Quality surveillance activity Report 5-902741-118, 1/10/2013
 PCI PI-901295-01, Tube Plugging Procedure Specification for Expanded Ribbed Mechanical,
 revision 0
 04855-035 Heat Strip Chart 1/11/2013
 04855-034 Heat Strip Chart 1/10/2013

NDE Reports

PT-902741-036 1/15/13

Travelers

PCI Traveler 902741-SG1-CL-WC1, revision 0
 PCI Weld Traveler WPS 1-A8-OV-(309L/308L)-MN-GTAW, revision 2
 PCI SG#2 Tube Pull/Plug Traveler 901364-SG2-02, 11/26/2012
 PCI SG#1 Tube Pull/Plug Traveler 901364-SG1-02, 1/24/2013

Drawings

WBR-3201, SG#1 Tube Plug Locations, revision 2
 WBR-3200, SG#2 Tube Plug Locations, revision 2

Data Sheets

SG#1 Plug Process Data Sheet Hot Legs, 1/28/13
 SG#1 Plug Process Data Sheet Cold Legs, 1/28/13
 SG#2 Plug Process Data Sheet Hot Legs, 1/28/13
 SG#2 Plug Process Data Sheet Cold Legs, 1/29/13

M&TE

Pressure Gauge 223900, 7/18/2013
 Pressure Gauge 219726, 7/18/2013
 Spacer 223899, 7/9/2013
 Caliper E45292, 12/18/12
 Micrometer Depth Gage E00015, 12/05/13
 Dial Indicator E46367, 12/05/13

C.1.5 Reactor Vessel and Internals Work Observation

Miscellaneous

600808-1, Watts Bar Nuclear Unit 2 Reactor Building Crane Report, revision 2

Procedure

0-MI-57.028, Shift Inspection of Polar, Auxiliary, Turbine Building 200 Ton and Turbine Building
 15 Ton Cranes, revision 4

M&TE

Load Cell, Calibration Date, 8/17/2012

C.1.6 Heating, Venting, and Air Conditioning (HVAC) Systems and Cooling Coil Installation Observations

Work Orders

WO 111171244, SYS (30) LCC A-A Duct and Support Modification
 WO 114121037, Lower Containment Cooling Coil Hydrostatic Test
 WO 112772781, Install LCC cooling coils

Drawings

DRA 54289-037, HVAC Support Rev 7

Data Sheets

2-067-47W845-3-LCC-3-28, Pressure Test Data Sheet, 1/15/13
 2-067-47W845-3-LCC-3-32, Pressure Test Data Sheet, 1/15/13

Miscellaneous

Material Withdraw Record (MWR) 28074, 12/19/12
 Material Withdraw Record (MWR) 28624, 1/30/13

C.1.7 NDE Visual Examination Procedure Review/Work Observation/Record Review

VT Records

Work Order (WO)#11-0696313, Ventilation pipe/fitting, Section III Bechtel
 WO#09-953656-047, Feedwater pipe to fitting, Section III, Bechtel
 WO#11-0707181, CVCS pipe to fitting, Section III, Bechtel
 WO#11-0776371, SIS pipe to fitting, Section III, Bechtel
 WO#09-952506-003, MS pipe to fitting, Section III, Bechtel
 WO#09-954298-000, SI pipe to fitting, Section III, Bechtel
 WO#110935775, CVCS Support, Section III, Bechtel
 WO#09-952053-003, CVCS flange to pipe, weld # 2-062A-D013-8E, Section III, Bechtel
 WO#09-0954298-000, Weld # 2-063B-D198-B, SI pipe to fitting, Section III, Bechtel
 WO#11-0936198, Weld # 2-074A-D028-23, RHR Pipe to Pipe, Section III, Bechtel
 WO#11-0936198, Weld # 2-062A-D008-01A, RHR Pipe to Pipe, Section III, Bechtel
 WO#110936198, Weld # 2-074A-D028-24, RHR Pipe to Pipe, Section III, Bechtel
 WO#112645133, Weld# 2-062B-D136-01B, CVCS Pipe to fitting, Section III, Bechtel
 WO#09-952053-003, Report # 597, CVCS flange to pipe, weld # 2-062A-D013-8E, Section III, Bechtel
 WO#09-952053-003, Report # 544, CVCS flange to pipe, weld # 2-062B-D013-35, Section III, Bechtel
 WO#11-1475127, Weld # 2-072-T017-45, Containment Spray, HTX Shell to Reinforcing Plate, Section III, Bechtel
 WO#11-1475127, Weld # 2-072-T017-44, Containment Spray, HTX Shell to Reinforcing Plate, Section III, Bechtel
 TVA Report # R-P1618, Component ID # 47A-450-25-310, ERCW Pipe Support, Section XI PSI

TVA Report # R-P1526, Component ID # 47A-450-25-180, ERCW Pipe Support, Section XI PSI
 TVA Report # R-P1722, Component ID # AFWS-003, AFW System Pipe, Section XI PSI
 TVA Report # R-P1606, Component ID # 47A-060-67-019, ERCW Pipe Support, Section XI PSI
 TVA Report # R-P1644, Component ID # 67-2ERCW-R091, Variable Support ERCW, Section XI PSI
 TVA Report # R-P1662, Component ID # 74-008-BC, Bolting, RHR, Section XI PSI
 TVA Report # R-P1664, Component ID # 47A-060-67-062-IA, ERCW Integral attachment, Section XI PSI
 TVA Report # R-P1858, Component ID # RVBUSH-14, Bushing, RV, Section XI PSI

Independent Inspected (VT)

Component ID # 47A450-25-180, ERCW Pipe Support (TVA Section XI PSI)
 Component ID # 47A450-25-310, ERCW Pipe Support (TVA Section XI PSI)
 WO#111702688, Hanger/Support # 2-47-A435-12-95, Safety Injection System (Section III Bechtel)
 WO#112000886, Hanger/Support # 2-47A-A435-3-14, Safety Injection System (Section III Bechtel)
 WO#110935775, Hanger/Support # 2-47-A-406-12-96 CVCS (Section III Bechtel)
 WO#110935775, Hanger/Support # 2-70-844 CVCS (Section III Bechtel)

VT Certifications

Records of three individuals from Ivey Cooper Associates
 Records of two individuals from TVA
 Records of two individuals from NIC
 Records of one individuals from NIS
 Records of four individuals from URS
 Records of one individuals from Bechtel

VT Procedures

VT-AWS-D1.1, Bechtel Visual Examination, Rev. 2
 VT-ASME III, Bechtel Visual Examination, Rev. 5
 N-VT-1, TVA Visual Examination Procedure for ASME Section XI Preservice and Inservice, Rev. 44
 NDE-PQP-402, Bechtel Nondestructive Examination Qualification Visible Lighting Intensity, Rev. 0
 IEP-301, TVA NDE/QC Personal Eye Examination Procedure, Rev. 2

C.1.8 NDE Liquid Penetrant Examination Procedure Review/Work Observation/Record Review

PT Records

TVA Report # R-P1237, Component ID # CSHX-NZ-IN-REINF-2B, Containment Spray, Section XI PSI
 TVA Report # R-P1238, Component ID # CSHX-NZ-IN-REINF-2B, Containment Spray, Section XI PSI
 TVA Report # R-P1335, Component ID # CSHX-NZ-IN-REINF-2B, Containment Spray, Section XI PSI
 TVA Report # R-P1336, Component ID # CSHX-NZ-IN-REINF-2B, Containment Spray, Section XI PSI

TVA Report # R-P1811, Component ID # SIS-140, Safety Injection, Section XI PSI
 TVA Report # R-P1817, Component ID # SIF-D198-11, Safety Injection, Section XI PSI
 TVA Report # R-P1856, Component ID # CVCF-B-T322-012, CVCS, Section XI PSI
 TVA Report # R-P1839, Component ID # 2-085-W001-LIS-1-0, RV, Section XI PSI
 TVA Report # R-P1839, Component ID # 2-087B-W001-03, RCS, Section XI PSI
 TVA Report # R-P1833, Component ID # AFWF-D111-22, AFW System, Section XI PSI
 Work Order (WO)#11-0936198, RHR Pipe to pipe, Section III, Bechtel
 WO#11-0696313, Ventilation pipe/fitting, Section III Bechtel
 WO#09-953656-047, Feedwater pipe to fitting, Section III, Bechtel
 WO#11-0707181, CVCS pipe to fitting, Section III, Bechtel
 WO#11-0776371, SIS pipe to fitting, Section III, Bechtel
 WO#09-952506-003, MS pipe to fitting, Section III, Bechtel
 WO#09-954298-000, SI pipe to fitting, Section III, Bechtel
 WO#11-0936198, Weld # 2-074A-D028-23, RHR Pipe to Pipe
 WO#11-0936198, Weld # 2-062A-D008-01A, RHR Pipe to Pipe
 WO#11-1475127, Weld # 2-072-T017-45, Containment Spray, HTX Shell to Reinforcing Plate, Section III, Bechtel
 WO#11-1475127, Weld # 2-072-T017-44, Containment Spray, HTX Shell to Reinforcing Plate, Section III, Bechtel

PT Certifications

Records of two individuals from TVA
 Records of two individuals from URS

PT Procedures

N-PT-9, TVA Liquid Penetrant Examination for ASME and ANSI Code Components, Rev. 35
 PT(SR), Bechtel Liquid Penetrant Examination – ASME, Rev. 9

C.1.9 NDE Magnetic Particle Examination Procedure Review/Work Observation/Record Review

MT Records

TVA Report # 1717, Component ID # AFWF-D111-22, AFW system, Section XI PSI
 TVA Report # R-P1722, Component ID # AFWS-003, AFW System Pipe, Section XI PSI

MT Certifications

Records of one individual from TVA
 Records of three individuals from URS

MT Procedures

N-MT-6, TVA Magnetic Particle Examination for ASME and ANSI Code Components and Welds, Rev. 32

C.1.11 Radiographic Examination Procedure Review/Work Observation/Record Review

RT Records

WO#09-952053-003, Report # 597, CVCS flange to pipe, weld # 2-062A-D013-8E, Section III, Bechtel

WO#09-952053-003, Report # 544, CVCS flange to pipe, weld # 2-062B-D013-35, Section III, Bechtel

WO#09-952053-003, Report # 544, CVCS flange to pipe, weld # 2-062B-D013-35, Section III, Bechtel

RT Certifications

Records of three individuals from Ivey Cooper Associates

Records of one individuals from Bechtel

RT Procedures

RT-ASME/ANSI, Bechtel Radiographic Examination, Rev. 5

C.1.12 In-service Inspection (ISI) – Review of Program, and ISI Inspection – Review of Procedures

Pre-service Inspection Program Plan, WB2, Program # WBN-2PSI, Rev 5

Communication by ANII on Pre-service Inspection Program Plan, Rev. 5 , HSB Consultants, Report # 111025 001

Pre-service Inspection Program Plan, WB2, Program # WBN-2PSI, Rev 7

Safety Evaluation Report, Docket # 50-391, NUREG-0847, Supplement 23, Appendix Z, ML#11206A499.

C.1.13 Pre-Service Inspection (PSI) – Observation of Work Activities

Pressure Boundary Repair packages

WO#09-952053-003, weld # 2-062-D013-8E, CVCS Flange to Pipe Pressure Boundary Weld

WO#11-3292001, weld # 2-061A-D050-15 Ice Condenser Fitting to Pipe Pressure Boundary Weld

WO#09-951671-003, weld # 2-062B-D139-35, CVCS Fitting to Pipe Pressure Boundary Weld

WO#09-954298-000, weld # 2-063B-D199-16, SI Pipe to Fitting Pressure Boundary Weld

WO#11-1752821 (Post-pressure tested WO#111607510), weld # 2-067J-T276-01E C0R0/ 2-WO#067J-T275-40 C0R0, Pressure Test for ERCW Pipe to Flange Pressure Boundary Weld

Welding Certifications

Records of ten individuals from Bechtel

Welding Procedures

GWS-1, Bechtel General Welding Standard, Rev. 11

SPS-1, Bechtel Special Processes Standard, Rev. 5

WPS P-8-AT-Ag, Rev. 0 (Bechtel)

WPS P1-T, Rev.2 (Bechtel)

WPS P8-T-Ag, Rev. 0 (Bechtel)

Corrective Action Documents

PER 249921, Indications of Inlet and Outlet Nozzle Reinforcement Pad Welds Inside of 2B Containment Spray Heat Exchanger

PER 173512, Linear Indication of U2 weld SIS146

PER 258356, Indications in 2B Containment Spray Heat Exchanger Skirt Support Weld

Miscellaneous (IP57050, 57060, 57070,57090,73051,73052,73053)

Q&A Tracking Report for NRC Observations 2013602-023

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

Drawing#FSK-M-4246, Install Pipe Flange for abandon in place supply piping for RCP Cooler 2C, System 67, Rev. 2

Drawing#FSK-M-4965, Install Valves and Associated Piping System 62, Rev. 3

Drawing#ISI-2072B-E-01, Containment Spray Heat Exchanger Welded Details, Rev. 0

Drawing#FSK-M-5274, Install 2-FCV-062-0085-B, 45' Elbow and Pipe, Rev. 1

Drawing#2-47A435-12-95, Bechtel Mechanical Pipe Support for SIS, Rev.0

OA.1.4 Supplemental Safety Evaluation Report (SSER) Appendix HH, Open Item 50, Refurbishment Inspection Commitment, Anchor Bolt Documentation and Pull TestMiscellaneous

NUREG-0847, Supplement 8, "Safety Evaluation Report related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2", January 1992

25402-000-GPP-0000-N3212, Drilled-In Anchors and Core Drilling Operations, Revision 4, 6/1/2011

CEB 84-08, NRC-OIE Bulletin No. 79-02 Pipe Support Base Plate Designs Using Concrete Expansion Anchors – Final Report – Revision 2, 12/10/84 (As supplemented in a letter dated 7/26/1991)

General Engineering Specification, G-32, Bolt Anchors Set in Hardened Concrete, Revision 24, 12/14/05

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
AFW	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
B&PV	Boiler & Pressure Vessel
CAP	Corrective Action Program
CDR	Construction Deficiency Report
CFR	<i>Code of Federal Regulations</i>
CCS	component cooling water
ECN	Engineering Change Notice
EDS	EDS Nuclear Incorporated
ECP	Employee Concerns Program
EDCR	Engineering Document Construction Release
FOSAR	Foreign Object Search and Retrieval
HAAUP	Hanger Analysis and Updated Program
HVAC	heating, ventilation, and air conditioning
IEEE	Institute of Electrical and Electronics Engineers
IIR	Integrated Inspection Report
IP	Inspection Procedure (NRC)
IR	Inspection Report
ISI	in-service inspection
MAI	Modification/Addition Instruction
MRP	Materials Reliability Program
M&TE	measuring and test equipment
MT	magnetic particle examination
NCR	Non-Conformance Report
NDE	non-destructive examination
No.	number
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation, Office of (NRC)
NRMCA	National Ready Mixed Concrete Association
PER	Problem Evaluation Report
PSI	Pre-Service Inspection
PT	liquid penetrant testing
QA	Quality Assurance
QC	Quality Control
RCS	reactor coolant system
Rev.	Revision
RHR	residual heat removal
RIP	Replacement Items Program
RPV	reactor pressure vessel
RT	radiographic testing
SCAR	Significant Corrective Action Report
SSD	self-drilling expansion shell
SSEA	seismic sensitive electrically active
SSER	Supplemental Safety Evaluation Report
SSPS	Solid State Protection System
TI	Temporary Instruction
TVA	Tennessee Valley Authority
UT	ultrasonic testing

VT	visual examination
WBN	Watts Bar Nuclear Plant
WO	Work Order