



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
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April 6, 2016

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

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 2 CONSTRUCTION - NRC INTEGRATED
INSPECTION REPORT 05000391/2016602

Dear Mr. Skaggs:

On February 29, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection of construction and testing activities at your Watts Bar Unit 2 reactor facility. The enclosed integrated inspection report documents the inspection results, which were discussed on March 11, 2016, with Gordon Arent and other members of your staff.

This inspection examined activities conducted under your Unit 2 operating license as they relate to safety and compliance with the Commission's rules and regulations, the conditions of your operating license, 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 website 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/

James Baptist, Chief
Reactor Projects Branch 8
Division of Reactor Projects

Docket No. 50-391
License No. NPF-96

Enclosure: Integrated Inspection Report 05000391/2016602
w/ Attachment

cc: w/encl: (See next page)

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Sincerely,

/RA/

James Baptist, Chief
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Letter to Michael D. Skaggs from James Baptist dated April 6, 2016.

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 2 CONSTRUCTION - NRC INTEGRATED
INSPECTION REPORT 05000391/2016602

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PUBLIC

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-391

License No.: NPF-46

Report No.: 05000391/2016602

Licensee: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Unit 2

Location: Spring City, TN 37381

Dates: February 1, 2016 – February 29, 2016

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Approved by: James Baptist, Chief
Reactor Projects Branch 8
Division of Reactor Projects

Enclosure

SUMMARY

Watts Bar Nuclear Plant, Unit 2

This integrated inspection included aspects of engineering and construction activities performed by Tennessee Valley Authority (TVA) associated with the Watts Bar Nuclear (WBN) Plant Unit 2 construction project. This report covered a one month period of inspections in the areas of quality assurance (QA), identification and resolution of construction problems, engineering and construction activities, preoperational and startup testing, and follow-up of other activities. The inspection program for Unit 2 construction activities is described in Nuclear Regulatory Commission (NRC) Inspection Manual Chapter (IMC) 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 issues pertaining to Three Mile Island Action Item II.D.1 and Temporary Instruction 2500/19 have been appropriately addressed for WBN Unit 2.
- Other areas inspected were adequate with no findings identified. These areas included QA; preoperational testing activities; startup testing activities; and various NRC inspection procedures.

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REPORT DETAILS

Summary of Plant Status

During the inspection period covered by this report, the Tennessee Valley Authority (TVA) performed construction completion as well as preoperational and startup 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.1.1 Identification and Resolution of Construction Problems (Inspection Procedure 35007)

a. Inspection Scope

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

The inspectors reviewed corrective actions for CR 1133094 for the safety injection K603B slave relay failure to latch as designed. The inspectors reviewed Work Order (WO) 115900185, 2-SI-99-603-A, Response Time Test of Safety Injection Slave Relay K603B, and WO 117571681, created to replace the failed relay, to verify that the failure of the relay to latch was corrected and the post maintenance test was properly performed.

The inspectors also reviewed and followed up on the corrective actions of several CRs discussed throughout various sections of this report.

b. Observations and Findings

No findings were identified.

c. Conclusions

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

II. MANAGEMENT OVERSIGHT AND CONTROLS

C.1 Construction Activities

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

a. Inspection Scope

The inspectors independently assessed licensee controls, associated with Unit 2 testing 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 planning meetings were

observed, at least once per week, to assess the adequacy of the licensee's efforts to identify those testing activities that could potentially impact the operating unit. This included the review of select testing activities, which the licensee had screened as not affecting Unit 1, to verify the adequacy of that screening effort. Additionally, the inspectors independently assessed select testing 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 testing work locations to verify that controls to protect the operating unit provided an adequate level of protection and had been properly implemented.

Specific work activities observed included work associated with:

- WO 112365526; "ERCW Pump H-B Strip Time For LOOP Retest of 2-PTI-262-02," Revision (Rev.) 1.
- WO 117048926; "O-SI-70-902-S Component Cooling System Pump C-S Quarterly Performance Test."
- 2-PTI-070-03; "Component Cooling Water Dual Unit Shutdown Flow Test."

Specific work activities that the licensee had screened out as not affecting Unit 1 included, but were not limited to, work activities as noted in this inspection report.

b. Observations and Findings

No findings were identified.

c. Conclusions

Overall, management oversight and controls were in place for the observed preoperational tests and surveillance activities that could potentially impact the operating unit.

P.1 Preoperational Activities

P.1.1 Preoperational Test Program Implementation Verification (Inspection Procedure 71302)

a. Inspection Scope

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

- System 268 – Hydrogen Mitigation
- System 070 – Component Cooling
- System 99 – Reactor Protection
- System 68 – Reactor Coolant System

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. The inspectors also reviewed the following, as available and on a sampling basis, during the tours:

- general plant/equipment conditions;
- plant areas for fire hazards - examined fire alarms, extinguishing equipment, actuating controls, firefighting equipment, and emergency equipment for operability and also verified that ignition sources and flammable material were being controlled in accordance with the licensee's procedures;
- activities in progress (e.g., maintenance, preoperational testing, etc.) were being conducted in accordance with the licensee's procedures;
- watched for abuse of installed instrumentation such as stepping or climbing on the instrumentation that could affect the calibration or ability to function;
- listened for the public address system announcements to determine that blind spots do not exist; (i.e., cannot be heard clearly enough to be understood);
- construction work force was authorized to perform activities on systems or equipment; and
- looked for uncontrolled openings in previously cleaned or flushed systems or components.

02.02 (Monthly Inspection Activities): During this inspection period, the inspectors reviewed the turnover package for the Unit 2 portion of the residual heat removal and chemical volume control systems as part of procedure PP-37, "System Turnover to Operations", Rev. 6, to verify jurisdiction controls were appropriate and licensee procedures were followed.

The inspectors reviewed maintenance activities on safety-related equipment (WO 117515250; "PMT on 2-PCV-68-334 RCS Pressurizer PORV installation") to verify that the activities were scheduled in accordance with developed procedures and that these procedures were adequate for the maintenance being performed.

02.03 (Quarterly Inspection Activities): The inspectors reviewed jurisdictional controls to verify that maintenance activities were performed by the proper group and sampled preventative maintenance activities to ensure satisfactory completion. The inspectors also witnessed testing, and interviewed personnel to verify that the method for testing was current, that methods existed to assure personnel involved were knowledgeable of the test, that approved change methodologies were followed, that criteria for test interruptions were discussed, and that test deficiencies were properly documented. Additionally, the inspectors selected a sample of pieces of measurement and test equipment (M&TE) to verify that calibration was current and administrative controls were implemented.

b. Observations and Findings

No findings were identified.

c. Conclusion

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

P.1.2 Preoperational Test Witnessing and Results Review (Inspection Procedures 70312 and 70400)

a. Inspection Scope

Background: The purpose of the inspections of preoperational test activities 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; and
- management controls and procedures, including QA programs, necessary for operation of the facility have been documented and implemented.

The following inspection was performed in relation to satisfying the required preoperational test witnessing required by IMC 2513.

Inspection Activities: The inspectors witnessed the performance of preoperational test procedure 2-PTI-268-01, "Permanent Hydrogen Mitigation System," Rev. 0 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 performed;
- test equipment was within calibration;
- plant systems were in service to support the test;
- test 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;
- test was executed and coordinated properly;
- data was properly collected;
- reviewed preliminary test result to ensure licensee test evaluation was consistent with inspector observations;
- ensure appropriate documentation of data;
- administrative test controls were properly followed; and
- test personnel were using approved drawings and vendor manuals.

The inspectors performed a detailed review of the results for the preoperational test to verify that the licensee'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 licensee'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 all documented test deficiencies to verify they had been properly resolved, reviewed, and accepted.
- 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 and calculations.
- 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 observed the test and 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 preliminary test evaluation was consistent with the inspectors’ observations. During the test, inspectors observed important data gathering activities to ensure the data was properly gathered and recorded. A post-test cursory review of the test data was performed to verify legibility, traceability, and permanence of the data sheet entries.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the licensee’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. 9. The inspectors determined that the licensee’s test procedure results were reviewed, evaluated, and accepted in a manner consistent with the guidance of procedure SMP-10.0, “Watts Bar Nuclear Plant Unit 2 Packaging and Processing Test Results,” Rev. 6. This completes the test witnessing and test results review of preoperational test procedure 2-PTI-268-01.

P.1.3 Preoperational Test Witnessing (Inspection Procedures 70312 and 70317)

a. Inspection Scope

Background: The background for this preoperational test witnessing is the same as that in the background of Section P.1.2 above.

Inspection Activities: The inspectors witnessed activities associated with the performance of preoperational test procedure 2-PTI-099-01, “Reactor Protection System (RPS) & Engineered Safety Features Actuation System (ESFAS) Response Times,” Rev. 0 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 following surveillance instructions were selected for inspection of this item:

- 2-SI-99-603-A, "Response Time Test –Safety Injection Salve Relay K603 – Train A," Rev. 1
- 2-SI-99-643-A, "Response Time Test – Containment Spray Slave Relay K643 – Train A," Rev. 2

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;
- minimum crew requirements were met;
- testing was performed in accordance with the approved procedure;
- test interruptions and continuations were handled in accordance with approved procedures and documented in the chronological test log;
- testing events and discrepancies were properly evaluated and documented in the test deficiency log;
- testing was executed and coordinated properly;
- data was properly collected;
- temporary equipment was installed and tracked appropriately;
- administrative test controls were properly followed; and
- test personnel were using approved drawings and vendor manuals.

The inspectors observed the tests to verify that the overall test acceptance criteria were 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 tests, the inspectors observed important data gathering activities to ensure the data was properly gathered and recorded. A post-test cursory review of the test data was performed to verify legibility, traceability, and permanence of the data sheet entries.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the licensee'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. 9. The preoperational test witnessing of the RPS and ESFAS components are still in progress.

P.1.4 Preoperational Test Procedure Review and Preoperational Test Witnessing (Inspection Procedures 70300 and 70312)

a. Inspection Scope

Background: The background for this preoperational test procedure review and test witnessing is the same as that in the background of Section P.1.2 above.

Inspection Activities: The inspectors reviewed test procedure 2-PTI-070-03, "Component Cooling System Dual Unit Shutdown Flow Test," Rev. 0, to verify that the test procedure adequately addressed NRC requirements and licensing commitments outlined in the Final Safety Analysis Report (FSAR), docketed correspondence, safety evaluation report (SER), Technical Specifications (TS), and Regulatory Guide 1.68. In addition, the inspectors witnessed the performance of preoperational test procedure 2-PTI-070-03 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 performed the following activities associated with this test review and observation:

- 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;
- 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;
- tables, data sheets, and work sheets are clearly usable;
- calculation sheets 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;
- system boundaries were adequate between tests to ensure the entire system will be tested;
- all test personnel were on station and had the latest revision of the procedure;
- test prerequisites performed;
- test equipment was within calibration;
- plant systems were in service to support the test;
- test 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;
- test was executed and coordinated properly;
- data was properly collected;
- ensure overall test acceptance was met;
- reviewed preliminary test result to ensure licensee test evaluation was consistent with inspector observations;
- ensure appropriate documentation of data;
- administrative test controls were properly followed; and

- test personnel were using approved drawings and vendor manuals.

The inspectors conducted a review with the responsible test engineer to assure that the preliminary test evaluation was consistent with the inspectors observations. During the test, inspectors observed important data gathering activities to ensure the data was properly gathered and recorded. A post-test cursory review of the test data was performed to verify legibility, traceability, and permanence of the data sheet entries.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the licensee'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. 14. This completes the procedure review of preoperational test procedure 2-PTI-070-03. In addition, the inspectors determined that the licensee'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. 9. This completes the test witnessing of preoperational test procedure 2-PTI-070-03.

P.1.5 Testing Piping Support and Restraint Systems (Inspection Procedure 70370)

a. Inspection Scope

Background: These items were previously inspected in Integrated Inspection Report (IIR) 05000391/2015605 (Agencywide Documents Access and Management System [ADAMS] Accession Number [No]. ML15226A395), IIR 05000391/2015607 (ADAMS Accession No. ML15273A452), and IIR 05000391/2015608 (ADAMS Accession No. ML15287A166). These inspections identified the need to review finalized records of completed testing and correction of any identified deficiencies. The previous inspection efforts satisfied the applicable preoperational testing samples outlined in Inspection Procedure (IP) 70370 Section 02.01 a-e, IP 70370 Section 02.02, IP 70370 Section 02.03, and IP 70370 Section 02.06.

Inspection Activities: The inspectors reviewed records of the pipe support testing and as-installed configurations to verify that the licensee had evaluated all piping support testing, that the results of the testing were within the established acceptance criteria, and that any deficiencies had been placed in the corrective action program and/or already corrected. This satisfied the following:

- IP 70370, Section 02.01 f & g
- IP 70370, Section 02.05

Specifically, the inspectors verified the methods and requirements for preservice and in-service examinations for supports and snubbers were consistent with American Society of Mechanical Engineers (ASME) Section XI Code and Technical Requirement 3.7.3. For preoperational testing, the licensee was provided certificate of compliance documentation for snubber data from qualified vendors.

For the reviewed test pipe supports the inspectors verified that:

- inspection procedures were followed;
- proper acceptance criteria were utilized;
- deficiencies, if found, were recorded, reviewed, and reported, if necessary;
- corrective action was implemented, as required; and
- frequency of visual inspection was determined.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusion

The inspectors determined that the licensee adequately installed and utilized pipe and component support and restraint systems. This completes the inspections for IP 70370 Sections 02.01 and 02.05. The remaining inspections for the inservice testing of snubbers will remain open until the snubber inservice test program is implemented.

SU.1 Startup Testing Activities

SU.1.1 Startup Test Procedure Review (Moderator Temperature Coefficient and Control Rod Worth and Boron Worth) Test Procedure Review (Inspection Procedures 72300 and 72572)

a. Inspection Scope

Background: The purpose of IMC 2514, Light Water Reactor Inspection Program – Startup Testing Phase, issue date August 21, 1989, is to verify that the licensee is meeting the requirements and conditions of the facility license for precritical tests, initial fuel loading, initial criticality, low-power testing, and power ascension tests. This verification is to be achieved through reviewing procedures and records, direct observation, witnessing tests, reviewing test data, and evaluating test results.

Inspection Activities: The inspectors reviewed test procedure 2-PET-201, “Initial Criticality and Low Power Physics Testing,” Rev. 0, to verify that the test procedure adequately addressed NRC requirements and licensing commitments outlined in the FSAR, docketed correspondence, SER, TS, and Regulatory Guide 1.68. Additionally, the inspectors reviewed power escalation test procedure 2-PET-201 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;
- procedure format is consistent with Regulatory Guide 1.68, Appendix C;
- a clear statement of procedure purpose/objectives;
- prerequisites, precautions, reference documents, and coordination requirements;
- acceptance criteria, including boron reactivity worth were clearly identified, evaluated against the source, and compared with results;

- adequate initial test conditions were specified;
- signoff requirements including concurrent and independent verification steps established where appropriate;
- actions to be taken within the steps were specifically identified;
- provisions were made for recording details of the conduct of the test;
- procedure required that temporary connections, disconnections or jumpers be restored to normal, or references their control by another procedure;
- procedure provided for identification of personnel conducting the testing and evaluating the test data;
- the procedure as issued was consistent with the test description provided in the FSAR; and
- provisions were made for the data taker to indicate the acceptability of the data.

In addition, the inspectors reviewed power escalation test procedure 2-PET-201 to verify that the procedure contained the following moderator temperature coefficient, and control rod worth attributes:

- the FSAR and SER commitments from the licensee were included into the testing documents;
- the procedure contained acceptance criteria for the following:
 - moderator temperature coefficient
 - control rod worths
- the test precautions included the following:
 - startup rate limits
 - boron dilution rate limits
 - boron sampling rates
 - limits on power level and startup rates prior to attaining measurable thermal power
 - controls for reactor operation in event of significant delay or interruption during testing
 - temperature limits for criticality
- the test conditions included the following:
 - various rod positions, boron concentrations, and temperatures
 - data to be taken

The inspectors reviewed power escalation test procedure 2-PET-201 to verify that the procedure contained the following boron worth attributes:

- the FSAR and SER commitments from the licensee were included into the testing documents;
- the procedure contained acceptance criteria for boron reactivity worth;
- the precautions included the following:
 - startup rate limits
 - boron dilution rate limits
 - boron sampling frequency
 - nuclear instrumentation trip limits
 - power level limits and startup rates prior to attaining measurable thermal power

- controls for reactor operation in event of significant delay or interruption during testing
- temperature limits for criticality
- The test conditions specified the following:
 - various rod positions, boron concentrations, and temperatures.
 - data to be taken

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the licensee's test procedure was written in a manner consistent with the guidance of procedure 2-TI-438, "Watts Bar Nuclear Plant Unit 2 Power Ascension Test Program," Rev. 5. This completes the procedure review of power escalation test procedure 2-PET-201, Rev 0.

SU.1.2 Startup Test Procedure Review (Inspection Procedure 72300)

a. Inspection Scope

Background: The background for this startup test procedure review is the same as that in the background of Section SU.1.1 above.

Inspection Activities: The inspectors reviewed procedure 2-PAT-1.10, "Integrated Computer System (ICS)," Rev. 1, to verify that the test procedure adequately addressed NRC requirements and licensing commitments outlined in the FSAR, docketed correspondence, SER, TS, and Regulatory Guide 1.68. Additionally, the inspectors reviewed power ascension test procedure 2-PAT-1.10 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;
- procedure format was consistent with Regulatory Guide 1.68, Appendix C;
- a clear statement of procedure purpose/objectives;
- planning information such as prerequisites, precautions, required tools, reference documents, and coordination requirements;
- acceptance criteria were clearly identified and evaluated against the source of the comparison of results with acceptance criteria;
- adequate initial test conditions were specified;
- the procedure included a section listing references to appropriate FSAR sections, TS, drawings, specification, codes, and other requirements;
- signoff requirements including concurrent and independent verification steps established where appropriate;
- actions to be taken within the steps were specifically identified;
- provisions were made for recording details of the conduct of the test, including observed deficiencies, their resolution, and retest;
- procedure provided for identification of personnel conducting the testing and evaluating the test data;

- the procedure as issued was consistent with the test description provided in the FSAR;
- special precautions for personnel and equipment safety were specified;
- detailed instructions specify testing over the full operating range and under the maximum anticipated load change of the system/component; and
- provisions were made for the data taker to indicate the acceptability of the data.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the power ascension test procedure was written in a manner consistent with the guidance of procedure 2-TI-438, "Watts Bar Nuclear Plant Unit 2 Power Ascension Test Program," Rev. 5. This completes the procedure review of 2-PAT-1.10, Rev. 1.

SU 1.3 Startup Test Procedure Review (Inspection Procedure 72300)

a. Inspection Scope

Background: The background for this startup test procedure review is the same as that in the background of Section SU.1.1 above.

Inspection Activities: The inspectors reviewed test procedure 2-PAT-3.4, "Rod Control an Rod Position Indication (CERPI)," Rev. 1, to verify that the test procedure adequately addressed NRC requirements and licensing commitments outlined in the FSAR, docketed correspondence, SER, TS, and Regulatory Guide 1.68. Additionally, the inspectors reviewed power ascension test procedure 2-PAT-3.4 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;
- procedure format was consistent with Regulatory Guide 1.68, Appendix C;
- a clear statement of procedure purpose/objectives;
- planning information such as prerequisites, precautions, required tools, reference documents, and coordination requirements;
- acceptance criteria were clearly identified, evaluated against the source, and compared with results;
- adequate initial test conditions were specified;
- the procedure included a section listing references to appropriate FSAR sections, technical specifications, drawings, specification, codes, and other requirements;
- clearly identified and appropriate quality control verification;
- signoff requirements including concurrent and independent verification steps established where appropriate;
- actions to be taken within the steps were specifically identified;
- provisions were made for recording details of the conduct of the test, including observed deficiencies, their resolution, and retest;

- procedure required that temporary connections, disconnections or jumpers be restored to normal, or references their control by another procedure;
- procedure provided for identification of personnel conducting the testing and evaluating the test data;
- the procedure as issued was consistent with the test description provided in the FSAR;
- special precautions for personnel and equipment safety were specified;
- detailed instructions specify testing over the full operating range and under the maximum anticipated load change of the system/component; and
- provisions were made for the data taker to indicate the acceptability of the data.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

The inspectors determined that the licensee's power ascension test procedure was written in a manner consistent with the guidance of procedure 2-TI-438, "Watts Bar Nuclear Plant Unit 2 Power Ascension Test Program," Rev. 5. This completes the procedure review of power ascension test procedure 2-PAT-3.4, Rev. 1.

SU.1.4 System Operational Readiness Assessment Inspection (Inspection Procedure 93806)

a. Inspection Scope

Inspection Activities: The inspectors reviewed the system turnover processes associated with the completion of construction activities and turnover of Unit 2 systems to operations to ensure the licensee was following the requirements of procedures 0-TI-37, "Systems Turnover to Operations," Rev. 0, 0-TI-435, "Engineering Programs and Components Turnover", Rev. 3, and 0-TI-441, "Operational Readiness Process for Unit 2 Systems," Rev. 6. The inspectors reviewed system 74, residual heat removal, and system 62, chemical and volume and control. As part of the review, the inspectors verified that equipment turnover deferral items were adequately justified and equipment punch-list items were appropriately dispositioned. The inspectors reviewed selected WOs, design changes, and program and component evaluation reports to verify that overall system condition and capability supported system turnover. The inspectors interviewed selected control room operators and work management control operators to ensure they were knowledgeable of the procedures governing the system turnover process and changes in plant status configuration controls. The inspectors reviewed a sample of outstanding WOs for each system to verify that there were no significant open WOs that could impact the current mode of operation. The inspectors verified that a sample of design changes had been translated to system operating procedures. Additionally, the inspectors performed partial system walkdowns of each system in accordance with IP 71111.04, "Equipment Alignment."

The inspectors performed an independent review of completed 0-TI-37 and 0-TI-441 packages for to determine whether the activities were accomplished in accordance with NRC requirements and licensee procedures.

During the review of the 0-TI-37 packages the inspectors performed the following:

- The inspectors reviewed Attachment 2, "Functional Support Requirements Completion Checklist and Required Drawings," to verify that Controlled Critical drawings were transferred to the main control room and the online Business Support Library (BSL). The inspectors verified two material equipment list items switched to "operating" control.
- The inspectors reviewed Attachment 3, "Startup Testing Complete Form," to verify that deferrals were assessed for impact on operability and qualification.
- The inspectors reviewed Attachment 4, "Turnover Boundary Walkdown Form," to verify that any incomplete deficiencies were assessed for impact on operability or qualification.
- The inspectors reviewed Attachment 5, "Design Engineering Complete Form," and sampled two design documents to verify they were completed.
- The inspectors reviewed Attachment 6, "Functional System Turnover Agreement Form."
- The inspectors reviewed Attachment 7, "Supporting Documentation," to verify that a list of deferrals or special operating conditions, if any, had been assessed for impact on operability or qualification.
- The inspectors reviewed Attachment 11, "Turnover Open Issue Summary Form," to verify all issues identified on the preceding attachments were captured on this summary form.
- The inspectors reviewed Appendix A, "Turnover Action Deferral Form," to verify that a list of deferrals or special operating conditions, if any, had been assessed for impact on operability or qualification. The inspectors verified that any deferrals were dispositioned appropriately in the associated 0-TI-441 review for the system.
- The inspectors reviewed Appendix B, "Special Operating Conditions Form," to verify that the licensee had listed and assessed special operating conditions that could impact operability or qualification and that they were resolved in the associated 0-TI-441 package.

During the review of the 0-TI-441 packages the inspectors performed the following:

- The inspectors reviewed Appendix A, "Boundary Health Indicator Worksheet," to verify all non-Green system attributes do not adversely impact operability requirements for the system.
- The inspectors reviewed Appendix C, "Rescission Process Form," to note any system or components returned by Operations to Nuclear Construction and verify that deficiencies were resolved and the system or component was returned to Operations.
- The inspectors reviewed Attachment 1, "Functional Support Requirements," and sampled to verify that system operating instructions and alarm response instructions were complete, auxiliary unit operator rounds reflected ownership of the system, and any outstanding clearances did not affect operability of the system.
- The inspectors reviewed Attachment 2, "Operational Alignment Form," to verify that all applicable attributes of the system (Appendix R, etc.) in 0-TI-435,

“Engineering Programs and Components Turnover, “support system operability. The inspectors verified that all open design changes were complete or had been evaluated not to adversely impact system operability. The inspectors verified by sample that surveillance, maintenance, chemistry, radiological, and engineering procedures for the system were available in document control (BSL). The inspectors verified that outstanding items potentially affecting operability from the 0-TI-37 process were reflected in the limiting condition for operation tracking system.

- The inspectors reviewed Attachment 3, “Licensing Actions Complete,” to verify that no outstanding licensing actions remained for the system.
- The inspectors verified that Attachment 4, “Declaration of System Boundary Ready to Operate,” was complete.

The inspectors evaluated the licensee corrective actions on problems identified and entered into the corrective action program. The inspectors reviewed the following CRs to verify that equipment alignment discrepancies had been appropriately characterized and corrected:

- CR 1044257, “0-TI-441 Process for Dual Unit System Descriptions.”
- CR 1129514, “2-FCV-63-130 failed to operate, 2-THV-63-130 found closed.”
- CR 1129486, “Solid State Protection System troubleshooting with jumpers installed, revised without using appropriate work order revision.”
- CR 1124785, “2-AOI-24 entered due to ERCW valve closed to RCP motor cooling.”
- CR 1125217, “2-ISV-67-557B and 2-ISV-67-523B containment ERCW valves closed, valves required to be locked open.”

b. Observations and Findings

No findings were identified. The inspector’s review of all outstanding WOs indicated that there were no safety significant issues related to their functionality for Mode 4 operation. The inspectors observed that the system turnover procedures (0-TI-37 and 0-TI-441) did not require a formal system component alignment to ensure that the systems could meet all of their functional requirements. As noted above, CRs were initiated to address examples of incorrect equipment alignment that were revealed during routine plant operations.

c. Conclusions

The licensee met the procedural requirements of 0-TI-37, 0-TI-435, and 0-TI-441 for system 62 and system 74. Additional systems will be inspected to evaluate system turnover to operations.

III. OPERATIONAL READINESS ACTIVITIES

R.1 Radiation Safety

R.1.1 (Closed) Gaseous Waste System (Preoperational and Supplemental) (Inspection Procedure 84524)

a. Inspection Scope

The inspectors reviewed preoperational testing records for the following components associated with gaseous waste:

- Flow Element for the Containment Purge Exhaust Vent A, 2-FE-90-400A
- Flow Element for the Containment Purge Exhaust Vent B, 2-FE-90-400B
- Flow Element for the Emergency Gas Treatment System Exhaust, 2-FE-90-400D
- Shield Building Vent Flow Monitor Loop, 2-LPF-90-400

The review included follow-up on the outstanding items identified in IIR 05000391/2015610 (ADAMS Accession No. ML16041A520). Specifically, a review of testing records of new flow monitoring instrumentation installed in the shield building vent release pathway.

b. Observations and Findings

No findings were identified. The inspectors observed that all the components listed above had been installed and tested. The inspectors noted that the high-efficiency particulate air (HEPA) and charcoal adsorbers for the containment purge ventilation system were not installed. The inspectors also noted that the startup schedule contained a placeholder to install and test the HEPA/charcoal units prior to initial criticality.

c. Conclusions

Based on the aforementioned inspection activities, no further inspection is required. IP 84524 is closed.

IV. OTHER ACTIVITIES

OA.1.1 (Discussed) Generic Letter 89-04: Guidance on Developing Acceptable In-Service Testing Programs; Temporary Instruction 2515/114: Inspection Requirements for Generic Letter 89-04, Acceptable In-Service Testing Programs

a. Inspection Scope

Background: Previous inspection activities and background information regarding Generic Letter (GL) 89-04, Temporary Instruction (TI) 2515/110, and TI 2515/114 were documented in IIR 05000391/2015608 (ADAMS Accession No. ML15287A166).

Inspection Activities: The inspectors reviewed the test procedures and observed the testing of the pressurizer power-operated relief valve (PORV) 2-PCV-68-334 from the Watts Bar Unit 2 inservice testing (IST) program to verify the test was completed in

accordance with test procedure 2-SI-68-904-B, "Reactor Coolant System Valve Position Indication Verification, Train B," Rev. 2. The inspectors reviewed 2-SI-62-701, "Containment Isolation Valve Local Leak Rate Test Chemical and Volume Control System," Rev. 1, and selected eight primary containment isolation valves to verify that the containment isolation valves were incorporated into the IST program and that the valves met their local leak rate acceptance criteria.

The following attributes were inspected:

- TI 2515/114 Sections 03.02.b, d, g, h, i, & j – nine samples
 - IST valve tests were planned and completed in accordance with the approved IST program and in accordance with the ASME OM Code 2004 Edition through 2006 Addenda. Post maintenance tests were performed on 2-PCV-68-334 in accordance with the approved procedures before returning the valve to service.
- TI 2515/114 Sections 03.03.a & b – nine samples
 - IST valve tests were observed to verify approved procedures and M&TE was used in compliance with the ASME Operation and Maintenance (OM) Code 2004 Edition through 2006 Addenda
- TI 2515/114 Sections 03.05.a, b, & d – nine samples
 - Test methods, acceptance criteria, and corrective actions, were completed in accordance with the approved procedures for the stroke times of the PORVs with an acceptance criteria of two seconds. Containment isolation valves were identified in the IST program and tested for leakage in accordance with the approved procedures.

The inspectors also reviewed the pre-service test procedures for the 2A-A and 2B-B motor driven auxiliary feedwater pump preservice tests, 2-SI-3-925-A and B, "Auxiliary Feedwater Pump 2A-A and 2B-B Preservice Pump Test," Rev. 1. In addition, the inspectors observed the 2B-B pump pre-service test, and reviewed the preliminary test data for the 2A-A auxiliary feedwater pump to verify that the tests were completed in accordance with the approved test procedure, and acceptance criteria was established and met. In addition, the inspection was completed to verify the test instrumentation and requirements of ASME OM Code 2004 Edition through 2006 Addenda were met.

The following samples were inspected:

- TI 2515/114 Sections 03.02 b, d, g h – two samples
- TI 2515/114 Sections 03.03 a, b – two samples
- TI 2515/114 Sections 03.06, a, b, c, d, e – two samples

b. Observations and Findings

No findings were identified.

c. Conclusions

The tests for the PORV 2-PCV-68-334 and containment isolation valves selected from 2-SI-62-701, were completed accordance with the approved procedures and met the requirements of ASME OM Code 2004 Edition through 2006 Addenda. The pre-service

pump tests were completed in accordance with the ASME OM Code 2004 Edition through 2006 Addenda. The IST program, IST pre-service pump test inspections, and IST valve stroke time inspections, are complete for TI 2514/114. However, the items will remain open for the inspection of a sample of the safety related pressure isolation check valves at normal operating pressure and temperature.

OA.1.2 (Closed) Three Mile Island Action Item II.D.1, Relief and Safety Valve Test Requirements (Inspection Procedures 50073 and 50075)

a. Inspection Scope

Background: Following the 1979 event at Three Mile Island (TMI) Unit 2, the NRC formed a Lessons Learned Task Force to provide recommendations from the accident, which were released in NUREG-0578 (ADAMS Accession No. ML090060030). TMI Action Items were developed as a result of those recommendations and published in NUREG-0660 Volumes 1 and 2 (ADAMS Accession Nos. ML072470526 and ML0727470524). Specifically, TMI Action Item II.D.1 established the requirements for licensees and applicants to conduct testing in order to qualify reactor coolant system (RCS) relief and safety valves under expected operating conditions for design basis transients and accidents, including under Anticipated Transient without SCRAM (ATWS) conditions. NUREG-0737 (ADAMS Accession No. ML051400209) clarified this statement, adding the qualification of pressurized water reactor (PWR) block valves as a new requirement.

To complete TMI Action Item II.D.1, Sections A.2, A.3, B, and C, respectively, the inspectors previously concluded that:

- The licensee completed analyses to demonstrate the functionality of the as-installed primary relief and safety valves, including the effect of as-built discharge piping on valve operability;
- The licensee's criteria for success and failure of valves tested was adequate;
- The licensee completed tests to demonstrate the block valves between the pressurizer and each PORV could be operated, closed, and opened for all fluid conditions expected under operating and accident conditions; and
- The relief and safety valves are not required during an ATWS condition.

These inspection activities were documented in the following inspection reports:

- 05000391/2015610, Section OA.1.2, (ADAMS Accession No. ML16041A520)
- 05000391/2015609, Section OA.1.4, (ADAMS Accession No. ML15287A199)
- 05000391/2014604, Section OA.1.7, (ADAMS Accession No. ML14177A214)

Also documented in those inspection reports, for TMI Action Item II.D.1, Section A.1, the inspectors previously concluded that the licensee completed tests to demonstrate that the pressurizer code safety valves operated successfully and were set to the pressure required by the Watts Bar Unit 2 FSAR and ASME Boiler and Pressure Vessel Code (BPVC) Section III. The inspectors also concluded that the licensee demonstrated that the PORVs could open and reclose under the expected flow conditions through pressurizer and pressurizer relief tank data gathered during hot functional testing. However, at the time, the licensee was unable to verify functionality of the valve reed

switches and corresponding light indications in the control room to verify the PORVs stroked within the required two second interval.

Inspection Activities: The inspectors reviewed licensee actions to satisfy the requirements of TMI Action Item II.D.1, Section A.1. Specifically, during Mode 5, with a steam bubble in the pressurizer, the inspectors witnessed the licensee's performance of surveillance instructions 2-SI-68-904-A, "Reactor Coolant System Valve Position Indication Verifications (Train A)," and 2-SI-68-904-B, "Reactor Coolant System Valve Position Indication Verifications (Train B)," for PORVs 2-PCV-68-340A and 2-PCV-68-334 respectively, to verify:

- The PORVs fully opened and closed within the required stroke time of two seconds;
- The reed switches on the valves and corresponding light indications in the control room functioned properly; and
- The temperature element downstream of the PORVs identified the increase in temperature when the PORVs stroked open and alarmed the associated annunciator in the control room.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusion

The inspectors concluded that the work performed by the licensee was adequate to complete TMI Action Item II.D.1, Section A.1, and as a result, that section is now considered closed. The inspectors previously considered TMI Action Item II.D.1, Sections A.2, A.3, B, and C closed in the inspection reports listed above. Therefore, in its entirety, Three Mile Island Action Item II.D.1, Relief and Safety Valve Test Requirements is considered closed.

OA.1.3 (Closed) Temporary Instruction 2500/19, Inspection of Licensee's Actions Taken to Implement Unresolved Safety Issue A-26: Reactor Vessel Pressure Transient Protection for Pressurized Water Reactors (PWRs)

a. Inspection Scope

Background: TI 2500/19 was previously inspected and discussed in IIR 05000391/2013607, Section OA.1.4 (ADAMS Accession No. ML13273A512), and IIR 05000391/2015605 (ADAMS Accession No. ML15226A345). Background details are discussed in those inspection reports.

Inspection Activities: Sections 05.01 (Design) and 05.02 (Administrative Controls and Procedures) of TI 2500/19 were inspected and documented in IIR 05000391/2013607. Sections 05.03 (Training and Equipment Modifications) and 05.04 (Surveillance) of TI 2500/19 were inspected and documented in IIR 05000391/2015605. The remaining portion of Section 05.04 was the review of pressurizer PORV testing.

During this inspection, the inspectors observed the most recent measurement of PORV stroke times and compared it with the value in the design basis. As noted in section OA.1.2 of this inspection report, the inspectors witnessed the licensee's performance of surveillance instructions 2-SI-68-904-A, "Reactor Coolant System Valve Position Indication Verifications (Train A)," and 2-SI-68-904-B, "Reactor Coolant System Valve Position Indication Verifications (Train B)," for PORVs 2-PCV-68-340A and 2-PCV-68-334 respectively. The inspectors performed a cursory review of the test data results to verify that the PORVs fully opened and closed within the required stroke time of two seconds. The acceptance criteria values were compared with the system description and test scoping document to verify that the acceptance criteria met the value in the design basis.

Documents reviewed are listed in the Attachment.

b. Observations and Findings

No findings were identified.

c. Conclusions

Based on the results of this inspection and previous inspections, the inspectors' review concluded that the licensee has implemented an effective mitigation system for low-temperature overpressure transient conditions at WBN Unit 2. No further inspection is required for TI 2500/19. TI 2500/19 is closed.

IV. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

An exit meeting was conducted on March 11, 2016, to present inspection results to Gordon Arent. The inspectors identified that no proprietary information had been received during the inspection and none would be used in the inspection report. The licensee acknowledged the observations and provided no dissenting comments.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

G. Arent, TVA – Licensing Manager
J. O'Dell, TVA - Regulatory Compliance
R. Proffitt, TVA – Licensing
P. Simmons, TVA – Unit 2 Vice President
M. Skaggs, TVA – Senior Vice President

INSPECTION PROCEDURES USED

IP 35007	Quality Assurance Program Implementation During Construction and Pre-Construction Activities
IP 70300	Preoperational Test Procedure Test Review
IP 70312	Preoperational Test Witness
IP 70317	Reactor Protection System Test
IP 70370	Testing Piping Support and Restraint Systems
IP 70400	Preoperational Test Results Evaluation
IP 71302	Preoperational Test Program Implementation Verification
IP 72300	Startup Test Procedure Review
IP 72572	Low Power Test Procedures Review Moderator Temperature Coefficient and Boron Worth or Control Rod Worth and Pseudo Rod Ejection Worth
IP 84524	Gaseous Waste System (Preoperational and Supplemental)
IP 50073	Safety-related Components Work Observation
IP 50075	Safety-related Components Record Review
IP 93806	Operational Readiness Assessment
TI 2500/19	Inspection of Licensee's Actions Taken to Implement Unresolved Safety Issue A-26: Reactor Vessel Pressure Transient Protection for Pressurized Water Reactors (PWRs)
TI 2515/114	Inspection Requirements for Generic Letter 89-04, Acceptable In-service Testing Programs

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Discussed

1989-04	GL	Guidance on Developing Acceptable In-Service Testing Programs (Section OA.1.1)
2515/114	TI	Inspection Requirements for Generic Letter 89-04, Acceptable In-Service Testing Programs (Section OA.1.1)

Closed

84524	IP	Gaseous Waste System (Preoperational and Supplemental) (Section R.1.1)
II.D.1	TMI	Three Mile Island Action Item II.D.1, Relief and Safety Valve Test Requirements (Section OA.1.2)
2500/19	TI	Temporary Instruction 2500/19, Inspection of Licensee's Actions Taken to Implement Unresolved Safety Issue A-26: Reactor Vessel Pressure Transient Protection for Pressurized Water Reactors (PWRs) (Section OA.1.3)

LIST OF DOCUMENTS REVIEWED

II. MANAGEMENT OVERSIGHT AND CONTROLS

P.1 Preoperational Activities

P.1.5 Testing Piping Support and Restraint Systems (Inspection Procedure 70370)

Procedures:

Procedure N-VT-1, Visual Examination Procedure for ASME Section XI Preservice and Inservice, Rev 0046.
Procedure 0-TI-100.006, Inservice Testing Program, Rev. 0002
Procedure NETP-111, Snubber Program (TVA), Rev. 0005
Procedure 0-TI-203, Snubber Program (WBN), Rev. 0001
Procedure 2-SI-0-912, Snubber Visual Examination (Hydraulic and Mechanical), Rev. 0002
Procedure 2-SI-0-913, Snubber Functional Testing (Mechanical Snubbers), Rev. 0002
Procedure 2-SI-0-914, Snubber Functional Testing (Paul Monroe Snubbers), Rev. 0002

Drawings:

Watts Bar Nuclear Plant Unit 2 Drawing ISI-2001-H-01
Watts Bar Nuclear Plant Unit 2 Drawing ISI-2003A-H-03
Watts Bar Nuclear Plant Unit 2 Drawing ISI-2074-H-03
Watts Bar Nuclear Plant Unit 2 Drawing ISI-2063-H-08
Watts Bar Nuclear Plant Unit 2 Drawing ISI-2063-H-07
Watts Bar Nuclear Plant Unit 2 Drawing ISI-2074-H-01

Miscellaneous:

Tennessee Valley Authority Record of Visual Examination Report Number R-P3704
Tennessee Valley Authority Record of Visual Examination Report Number R-P3648
Tennessee Valley Authority Record of Visual Examination Report Number R-P3069
Tennessee Valley Authority Record of Visual Examination Report Number R-P3071
Tennessee Valley Authority Record of Visual Examination Report Number R-P3755
Tennessee Valley Authority Record of Visual Examination Report Number R-P3555
Tennessee Valley Authority Record of Visual Examination Report Number R-P4027
Tennessee Valley Authority Record of Visual Examination Report Number R-P3709
Basic-PSA Certificate of Conformance for SN 43696, dated September 29, 2010
Basic-PSA Certificate of Conformance for SN 4898, dated March 20, 2013
Basic-PSA Certificate of Conformance for SN 711, dated March 20, 2013
Basic-PSA Certificate of Conformance for SN 44628, dated September 03, 2010
Basic-PSA DR 1319 Rev 4 certification of ASME Boiler and Pressure Vessel Code, dated April 21, 2011
Technical Specification 5.7.2.11, Inservice Testing Program
Technical Requirements 3.7.3 Snubbers, Rev 1.
Watts Bar Unit 2 FSAR, Section 3.9.2
NRC Generic Letter 90-09

SU.1 Startup Testing Activities

SU.1.2 Startup Test Procedure Review (Inspection Procedure 72300)

LTR-PCSA-14-31, "Acceptance Criteria for Watts Bar Unit 2 Power Ascension Testing," Rev. 0

SU 1.3 Startup Test Procedure Review (Inspection Procedures 72300)

LTR-PCSA-14-31, "Acceptance Criteria for Watts Bar Unit 2 Power Ascension Testing," Rev. 0
 NPG-SPP-22.206, "Verification Program," Rev.4
 WNA-CT-00196-WBT, "CERPI Technical Description," Rev. 0
 WNA-TP-02576-WBT, "CERPI System Calibration Procedure," Rev. 0

SU 1.4 Operational Readiness Review, Supplemental

0-TI-37 Attachment 1, Drawings
 2-45W600-63-1, Revision 11, Wiring Diagrams Safety Injection System
 2-45W724-4, Revision 17, Wiring Diagram 6900V Shutdown Board 2B-B Single Line

0-TI-37 Attachment 2, MEL Status
 System 63-WBN-2-CKV-063-0868, N2 HP Accumulator Check Valve
 System 63-WBN-2-FCV-063-0072-A, Containment Sump to RHR Pump A-A

0-TI-37 Attachment 3, Deferrals
 System 62-2-PTI-62-03, Hot Functional Test-Charging and Letdown

0-TI-37 Attachment 4, Boundary Walkdown

0-TI-37 Attachment 5, Design Engineering Completion
 System 62-WO 114225402 & WO 110963598 for completion of DCN 53111 Stage 13

0-TI-37 Attachment 7, Supporting Documentation for Functional System Turnover
 System 74-EDCR 55121
 System 74-EDCR 53321
 System 74-CR 1090568
 System 74-WO 117126571
 System 74-WO 116573532
 System 74-WO 116943588

System 62-EDCR 54252
 System 62-EDCR 55848

0-TI-37 Attachment 11, Turnover Open Issues Summary Form
 System 74-DRA 64440-022 & 53654-125, Cyber Security
 System 74-PER1090568 related to 2-CP-074-01
 System 62-WO 117038022 Primary Water to Blender Flow Control Loop

0-TI-37 Appendix A, Turnover Action Deferral Form
 System 74-CR1054084 Cyber Security Items
 System 62-CR 881733 Cyber Security Items

0-TI-37 Appendix B, Special Operating Conditions
 System 74-WO 115448128-Changed from Mode 4 to Mode 9
 System 62-WO 115448128-Changed from Mode 4 to Mode 9

0-TI-441- Boundary Health Indicator Worksheet, Appendix A
 0-TI-441- Rescission Process Form, Appendix C
 0-TI-441- Functional Support Requirements, Attachment 1
 0-TI-441- Operational Alignment Form, Attachment 2
 0-TI-441- Licensing Actions Complete, Attachment 3

0-TI-441- Declaration of System Boundary Ready to Operate, Attachment 4
 System 62-DCN 58831 into 0-SOI-62.06, Boron Disposal System
 System 74-DCN 64237 into 2-SOI-74.01, Residual Heat Removal System

III. OPERATIONAL READINESS ACTIVITIES

R.1.1 Gaseous Waste System (Preoperational and Supplemental)

DCN 54207-A, [Installation of Additional Flow Elements in Ductwork Feeding the Shield Building Exhaust Vent (SBEV)], 6/30/10
 Work Order 115858017, 2-ODI-90-79, 18 Month Channel Cal of Shield Building Vent Purge Air A Exhaust Flow [2-FE-90-0400A, Containment Purge A Train], 11/30/2015
 Work Order 115858024, 2-ODI-90-80, 18 Month Channel Cal of Shield Building Vent Purge Air B Exhaust Flow [2-FE-90-0400B, Containment Purge B Train], 11/30/2015
 Work Order 115858031, 2-ODI-90-82, 18 Month Channel Calibration of Shield Building Vent EGTS Flow [2-FE-90-0400D, EGTS B Train], 11/18/2015
 Work Order 117261154, 2-ODI-90-83, 18 Month Channel Calibration of Shield Building Vent Flow Monitor Loop [2-LPF-90-0400], 11/30/2015

IV. OTHER ACTIVITIES

OA.1.2 Three Mile Island Action Item II.D.1, Relief and Safety Valve Test Requirements

2-SI-68-904-A, Reactor Coolant System Valve Position Indication Verification (Train A), Rev. 2
 2-SI-68-904-B, Reactor Coolant System Valve Position Indication Verification (Train B), Rev. 2
 WBNP-DS-18305402, Attachment E-PORV Design Requirements, Rev. 5
 WBT-TVA-2720-PORV Design Input Request, September 16, 2014
 Westinghouse Letter-LRT-PCSA-14-66, WBN Unit 2 PORV Replacement-Cold Overpressure Mitigation System (COMS) Setpoint Analysis, December 9, 2014
 Curtis-Wright Certificate of Conformance Package-purchase order 815851 for PORV S/N 26, June 1, 2015
 Curtis-Wright Report No: 9390, PORV Flow Data Analysis Model 82UU-001-12BB, Rev. A
 Wyle National Technical Systems (NTS) Certificate of Conformance for Target Rock Power Operated Relief Valve S/N 26, July 18, 2014
 NTS Hot Water Testing Test Report-TRPR029507, testing of S/N 30A bounding S/N 26, Rev. 0
 Curtis-Wright Flow Control Valve Drawing 82UU-001-12BB, Rev. H

OA.1.3 Temporary Instruction 2500/19, Inspection of Licensee's Actions Taken To Implement Unresolved Safety Issue A-26: Reactor Vessel Pressure Transient Protection for Pressurized Water Reactors (PWRs)

2-TSD-68-15; Pressurizer Pressure and Level Control; Rev. 6
 NPG-SDD-WBN2-68-4001; Reactor Coolant System Description; Rev. 4

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transient without SCRAM
BPVC	Boiler and Pressure Vessel Code
BSL	Business Support Library
CERPI	Rod Control and Rod Position Indication
CR	Condition Report
ESFAS	Engineered Safety Features Actuation System
FSAR	Final Safety Analysis Report
GL	Generic Letter
HEPA	High-efficiency Particulate Air
ICS	Integrated Computer System
IIR	Integrated Inspection Report
IMC	Inspection Manual Chapter (NRC)
IP	Inspection Procedure
IST	Inservice Testing
M&TE	Measuring and Test Equipment
No.	Number
NRC	Nuclear Regulatory Commission
OM	Operation and Maintenance
PCV	Pressure Control Valve
PORV	Power Operated Relief Valve
PWR	Pressurized Water Reactor
RCS	Reactor Coolant System
RPS	Reactor Protection System
QA	Quality Assurance
Rev.	Revision
SER	Safety Evaluation Report
SI	Surveillance Instruction
TI	Temporary Instruction
TMI	Three Mile Island
TS	Technical Specification
TVA	Tennessee Valley Authority
WBN	Watts Bar Nuclear Plant
WO	Work Order