



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
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ATLANTA, GEORGIA 30303-1257

August 14, 2015

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 - NRC OPERATIONAL READINESS
ASSESSMENT TEAM INSPECTION REPORT 05000391/2015611**

Dear Mr. Skaggs:

On July 27, 2015, the US Nuclear Regulatory Commission (NRC) completed an operational readiness assessment team (ORAT) inspection at your Watts Bar Unit 2 reactor facility. The enclosed inspection report documents the inspection results, which were discussed on June 26, 2015, with you and other members of your staff and on July 27, 2015, during a public meeting.

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

The inspection focused on the adequacy of resources needed to support Unit 2 operation, the readiness of systems to support plant operations, and changes to site programs required by the addition of a second operating unit at Watts Bar. The inspection did not evaluate the adequacy of existing programs used by the operating unit, such as the corrective action program, licensed operator training program, emergency preparedness, and plant-specific probabilistic risk analysis, but reviewed changes to these programs that were required for operations of Unit 2. The NRC determined that the five inspection focus areas, which included management oversight, control of safety significant activities, operations training and experience, corrective action program implementation, and maintenance support activities, were adequate to support dual unit operations at Watts Bar. Based on the scope of the ORAT inspection, the team concluded that TVA adequately demonstrated the readiness of the facility and staff to safely startup and conduct power operations of the Unit 2 facility.

The results of this inspection were presented to the Watts Bar Reactivation Assessment Group on June 30, 2015. They will consider the results of the ORAT inspection, previously completed Unit 2 inspections, any remaining planned inspections, and any open items that are being tracked prior to providing a recommendation to the Regional Administrator, Region II, and the

Director, Nuclear Reactor Regulation for authorization of an operating license.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding," 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's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

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 05000391/2015611
w/Attachment

cc w/ encl: (See next page)

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Report to Michael Skaggs from Robert Haag dated August 14, 2015

SUBJECT: WATTS BAR NUCLEAR POWER PLANT, UNIT 2 - OPERATIONAL
READINESS ASSESSMENT TEAM INSPECTION REPORT 05000391/2015611

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PUBLIC

U.S. NUCLEAR REGULATORY COMMISSION
REGION II

Docket No.: 50-391

Construction Permit No.: CPPR-92

Report No.: 05000391/2015611

Applicant: Tennessee Valley Authority

Facility: Watts Bar Nuclear Plant, Unit 2

Location: Spring City, TN 37381

Dates: June 22 – June 26, 2015 (team onsite)

Inspectors: Gregory Werner, Team Leader, Branch Chief, Region IV
Robert Latta, Senior Reactor Inspector, Region IV
John Zeiler, Senior Resident Inspector, Region II
Andy Hutto, Senior Resident Inspector, Region II
Chris Newport, Resident Inspector, Region I
Jeff Kulp, Senior Reactor Inspector, Region I
Carey Bickett, Senior Project Engineer, Region I

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

Enclosure

SUMMARY WATTS BAR UNIT 2

The report covered a one week period of inspection by seven inspectors from three NRC regional offices, including a Region IV branch chief, a senior reactor inspector from Region IV, two senior resident inspectors from Region II, a resident inspector from Region I, a senior reactor inspector from Region I, and a senior project engineer from Region I. The inspection program for Unit 2 construction activities is described in Nuclear Regulatory Commission 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>. Additional inspection activities are described in NRC IMC 2514, "Light Water Reactor Inspection Program Startup Testing Phase."

UNIT 2 OPERATIONAL READINESS ASSESSMENT

In accordance with Inspection Procedure 93806, "Operational Readiness Assessment Team Inspections," the inspectors evaluated the readiness of the Tennessee Valley Authority (TVA) to operate Watts Bar Unit 2 and safely integrate Unit 2 into the current organization that is responsible for the safe operation of Unit 1. The inspectors conducted an independent review and assessment of various areas described below to determine the status of programs, personnel, and equipment to support startup and operation of the Unit 2 facility. Since Watts Bar Unit 1 has been operating for almost 20 years, the status of existing programs, such as training, maintenance, and operations are understood and have been determined to be appropriate and adequate. The focus of this inspection was to evaluate the ability of the Watts Bar site to successfully integrate and operate a second unit in a safe manner, including understanding and operating Unit 2 considering any differences that might exist with Unit 1. The inspectors also completed a detailed review of staffing, plant material condition, and procedural adequacy to support normal, abnormal, and emergency operations, as well as walkdowns of three safety significant systems that compared the as-built plant to the design and.

The inspectors observed safe operation and management oversight of Unit 2 construction and testing activities. At the time of the inspection, there were still a large number of systems that had not been turned over to operations; however, the team did review programs, procedures, processes, and personnel that were being utilized for completing construction, testing, and turning over of systems to operations. The team concluded that TVA had sufficient staffing, satisfactory training, low maintenance backlog, appropriate safety-conscious work environment, as well as appropriate procedures and processes to support the safe startup and operation of Unit 2 while integrating Unit 2 into the current organizational structure.

Documents reviewed during the inspection are listed in the Attachment.

REPORT DETAILS

4OA5 Other Activities

A. EFFECTIVENESS OF MANAGEMENT OVERSIGHT

A.1. Management Review Meetings and Oversight Committees

a. Inspection Scope

The inspectors assessed the effectiveness of management meetings and oversight committees to provide direction, priorities, standards, and resources for the safe construction and startup of Unit 2. The inspectors attended daily site management status and planning meetings, which included a plan of the day meeting, two daily startup meetings, a project review committee meeting, a construction completion management review committee meeting, and a startup mid-day status meeting. During these meetings, the inspectors observed management direction and participation to evaluate the extent to which management reinforced principles of safety culture and nuclear and industrial safety.

Additionally, the inspectors reviewed the meeting minutes from numerous Nuclear Safety Review Board meetings, Plant Operations Review Committee meetings, and Nuclear Construction Review Board meetings, focusing on their reviews of recent activities to support the completion of construction activities and integration of Unit 2 into two unit site operations.

b. Findings and Observations

No findings were identified.

c. Conclusion

The inspectors determined that site management and staff were focused on safely constructing and turning over Unit 2 plant systems to operations.

A.2. Senior Management Observations and Oversight During Unit 2 Activities

a. Inspection Scope

The inspectors reviewed management observation forms of selected activities related to Unit 2 construction activities. The inspectors interviewed a number of individuals to determine how the management observation program was administered and what criteria were used to select activities for observation.

The inspectors reviewed a number of quality assurance audits, departmental self-assessments, procedures, and other miscellaneous documents, used by the TVA to prepare Unit 2 for operations, including a number of documents related to their readiness to operate Unit 2, including:

- A letter from M. Skaggs titled, "Declaration of Readiness for Watts Bar Unit 2 Operational Readiness Assessment Team Inspection," dated June 5, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession Number (No.) ML15156A848)
- Tennessee Valley Authority Nuclear Construction Review Board and Special ORAT Report, Meeting No. 2014-02, dated December 2 – 12, 2014
- Tennessee Valley Authority Nuclear Power Group Focused Self-Assessment Report, WBN-U2-F-14-002 R0, "Watts Bar (WBN) Unit 2 Pre-NRC Operational Readiness Assessment Team (ORAT) Inspection"
- Watts Bar Nuclear Independent Readiness Review Visit - Private, dated June 2014

b. Findings and Observations

No findings were identified.

c. Conclusion

The inspectors determined that oversight activities appropriately focused on Unit 2 operational readiness.

B. CONTROL OF SAFETY-SIGNIFICANT ACTIVITIES

B.1. System Status Control

a. Inspection Scope

The inspectors evaluated the ability of the licensee to maintain an accurate status of safety significant plant systems, and the plant operators' awareness of changes in plant status. The inspectors focused their review on the Unit 2 component cooling (CCS), containment spray (CS), and auxiliary feedwater (AFW) systems.

The inspectors reviewed the system turnover processes associated with the completion of construction activities and turnover of Unit 2 CCS, CS, and AFW systems to operations to ensure the licensee was following the requirements of procedures NC-PP-37, "Systems Turnover to Operations," Revision 3, 0-TI-437, "System Turnover-Startup to Operations, Revision 2, and 0-TI-441, "Operational Readiness Process for Unit 2 Systems," Revision 2. 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 refurbishment program work orders and mechanical commodity evaluation reports to verify that overall system condition and capability supported system turnover. In addition, 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 related to these systems.

b. Findings and Observations

No findings were identified.

Based on interviews with selected licensed reactor operators, they were knowledgeable of the changes to the system configurations to support Unit 2 operations and did not express any major concerns with how the turnover process was conducted or the material condition of the systems being turned over to them.

The inspectors did identify one weakness in the system turnover processes related to the update of system design basis documents. Specifically, it was noted that for the CCS system, the system description was not issued as part of the turnover to operations. While draft updates to the system description were in development, the inspectors found no formal requirement for issuance of up-to-date system descriptions as part of procedures NC-PP-37 or O-TI-441 turnover processes. For example, the current Unit 2 CCS system description was considerably outdated (Revision 4, dated April 2014). This shared unit system had already undergone considerable operational configuration changes since the last update of the system description due to being operated in dual-unit versus single unit configuration. The inspectors were concerned that the use of the outdated material could result in potential operator confusion and errors while Unit 2 was proceeding through hot functional testing. The licensee initiated Condition Report 1044257 to address this issue.

c. Conclusion

The inspectors determined that for the three systems selected for the in-depth reviews, the system turnover to operations process was comprehensive, effectively managed, and implemented in accordance with procedural requirements.

B.2. Configuration Management

a. Inspection Scope

The inspectors performed a comprehensive evaluation of the AFW, CCS, and CS systems. The inspectors reviewed the licensee's procedures, drawings, system design information, and construction documents to determine that each system was constructed per the applicable design and was aligned in accordance with existing plant configuration. The inspectors also reviewed outstanding work orders, open problem evaluation reports (condition reports), in-process design changes, temporary modifications, operability evaluations, and other open items tracked by the licensee's operations, maintenance, and engineering departments. The inspectors performed complete system walkdowns with operations and engineering personnel to determine actual system status, including valve and control switch positions, readings of various process indicators such as pressure, temperature, and flow, and accurate component labeling.

The inspectors reviewed the final safety analysis report, system descriptions, both Unit 1 and Unit 2 current system health reports, selected drawings, maintenance and test procedures, and problem evaluation reports (condition reports) associated with various components for the three selected systems. The inspectors also conducted interviews with system engineering and startup engineering personnel to ensure the capability of the systems and components to perform the desired design basis function. Specifically, the inspectors reviewed:

- maintenance history for similar components on Unit 1 and corrective action program reports for both units to verify the monitoring of potential degradation and/or conditions adverse to quality that could impact the operability of the equipment;
- various calculations including system flow rates and balances and equipment qualification; and
- incorporation of operating experience into the construction of the Unit 2 systems and components.

b. Findings and Observations

No findings were identified.

The inspectors observed that the overall system material condition for all three systems was good as evident from the system walkdowns. The inspectors did identify some conditions that needed to be corrected and the licensee initiated condition reports for each of the inspectors' observations. Examples of some of the observations are as follows:

- standing water in both trains of the containment sump suction valve enclosures;
- scaffolding, erected adjacent to the Unit 2 component cooling system thermal bearing cooling pumps, contained netting and platform partially blocking a fire suppression sprinkler head; and
- CCS system to residual heat removal heat exchanger 2A and CCS to residual heat removal heat exchanger 2B return temperature indications (i.e., 2-TI-70-157 and 2-TI-70-154) respectively, failed off-scale low and off-scale high.

c. Conclusion

The inspectors determined that licensee programs for configuration control of the AFW, CS, and CCS systems were being properly implemented. The as-built configuration and system component lineups were found to be in accordance with system design criteria, operating procedures, and other licensee configuration control processes. No significant outstanding equipment degradations, design change issues, or other outstanding pre-operational deficiencies, that would challenge the capability of the systems to perform their design functions, were identified.

B.3. Engineering Support for Operations

a. Inspection Scope

The inspectors evaluated the effectiveness of engineering programs in support of Unit 2 operational activities and preparation for dual unit operations at Watt Bar.

The inspectors interviewed system engineers, engineering supervisors, and start-up engineers to gain an understanding of their job functions, individual responsibilities, experience, and knowledge level. During interviews with engineering department personnel, the inspectors evaluated the knowledge of the technical staff concerning the current status of Unit 1 system/component problems and reviewed how those problems were being addressed on the Unit 2 system/component. The inspectors reviewed

engineering staffing levels as compared to staffing plans, organization charts, and reviewed system engineer training records. The inspectors compared the engineering staffing levels and experience to Sequoyah, the other operating site with two operating reactors.

The inspectors reviewed recent problem evaluation reports (condition reports), system health reports for the three selected systems (AFW, CCS, and CS systems), system/component metrics, surveillance tests, system engineer walkdown reports, and maintenance rule criteria.

b. Findings and Observations

No findings were identified.

The inspectors found engineering support to be appropriate. The startup engineers were very knowledgeable of the in-plant configuration of the system and readily provided information on testing results and resolution of issues. The system engineers were cognizant of applicable engineering programs and were on track to work with the maintenance rule expert panel to establish appropriate scoping and monitoring and were finalizing draft system health reports for the three selected systems.

c. Conclusion

The inspectors concluded that adequate engineering programs were implemented for the transition of the three systems selected for focused reviews from construction, through pre-operational testing, and where applicable, turnover of the systems to operations, such that they would support Watts Bar personnel operating the two units

B.4. Infrequently Performed Tests and/or Complex Evolutions

a. Inspection Scope

During the inspection week, there were no tests or activities being conducted that met the classification of complex and/or infrequent; therefore, the inspectors reviewed the documents associated with the following earlier completed infrequent and/or complex tests. The inspectors evaluated the conduct of the testing activities with respect to procedural compliance, testing adequacy, and documentation of results to support system turnover from construction authority to the site operations organization.

- Test 2-PTI-072-02, "Containment Spray System Air Flow Test," Revision 1
- Test 2-PTI-003B-05, "2-PMP-3-118, Auxiliary Feedwater PMP [Pump] 2A-A Hydraulic Performance Test, Pre-HFT [Pre-Hot Functional Test]," Revision 1
- Test 2-PTI-003B-01, "2-PMP-3-118, Auxiliary Feedwater PMP 2A-A, 48 Hour Endurance Test," Revision 1
- Test 2-PTI-003B-05, "2-PMP-3-128, Auxiliary Feedwater PMP 2B-B Hydraulic Performance Test, Pre-HFT," Revision 1
- Test 2-PTI-003B-01, "2-PMP-3-128, Auxiliary Feedwater PMP 2B-B, 48 Hour Endurance Test," Revision 1
- Test 2-PTI-070-2A, "Component Cooling Water System Unit 2 Train A Flow Balance," Revision 1

- Test 2-PTI-070-2B, "Component Cooling Water System Unit 2 Train B Flow Balance," Revision 1
- Test 2-PTI-070-01, "Component Cooling Water Pump/Valve Logic Test," Revision 1
- Test 2-PTI-072-01, Containment Spray Pump Valve Logic Test, Revision 1

The inspectors reviewed the associated procedures for each of the activities and compared the testing configurations to design basis documents and to Watts Bar Unit 2 Final Safety Analysis Report Chapter 15, "Accident Analysis."

b. Findings and Observations

No findings were identified.

The inspectors noted one issue related to the 2A CS pump not being able to produce the design minimum flow at the required total developed head specified in the Final Safety Analysis Report which were incorporated into the pre-operational testing acceptance criteria. The total developed head design requirements were conservative with respect to actual system demand and Unit 2 personnel were able to demonstrate that the pump could produce more than required 4000 gpm against the calculated system resistance and accepted the condition "as is". However, the pump still did not meet the total developed head specified in design documents. The licensee initiated Condition Report 1043437 to evaluate any changes necessary to achieve alignment between pump capability and the design basis.

c. Conclusion

The inspectors determined the reviewed testing was comprehensive and demonstrated adequate system capability. Testing deficiencies that were identified during the testing were appropriately addressed and retested as necessary.

C. OPERATOR READINESS, TRAINING, and EXPERIENCE

C.1. Control Room Readiness

a. Inspection Scope

The inspectors evaluated the general operational readiness of the Units 1 and 2 combined main control room, including the operating environment, equipment status, posted operator aids, general housekeeping, and operators' attitudes and operating philosophies. The inspectors observed Units 1 and 2 main control room activities to verify adherence to licensee management expectations and guidelines described in procedure OPDP-1, "Conduct of Operations," Revision 34. In addition to direct observation, seven senior managers, four senior reactor operators, four reactor operators, and three auxiliary unit operators were interviewed. A number of licensed and non-licensed operators were also informally interviewed during the inspectors' time on-site. The inspectors observed general control room conditions including area lighting, background noise, housekeeping, ventilation, and material condition. The inspectors observed control room annunciators, gauges, and other indicators used for control and monitoring of the plant. The inspectors observed licensed and non-licensed operators perform routine shift duties, including shift turnovers, clarity and formality of face-to-face

and telephonic communications, procedure usage and adherence, response to annunciators, control board monitoring and component manipulations, pre-job briefings, and documentation of shift activities in the control room log. The inspectors discussed operating philosophy and expectations with the control room operators and observed conduct of other personnel entering the control room for various daily work activities.

b. Findings and Observations

No findings were identified.

The unit control rooms at Watts Bar are a shared/common control room without a physical separation between the units. The layout of the main control room is such that equipment associated with Unit 1 is at one end and equipment for Unit 2 is at the other end, with common equipment located between the two units. The inspectors were able to compare control room behavior in both units and this allowed them to determine if there were differences in the conduct of operations between the Unit 1 and Unit 2 control room operators. At the time of the inspection, almost all of the licensed operators on-site had received dual unit licenses from the NRC for the operation of Units 1 and 2. Most of these operators have been assigned to both units.

c. Conclusion

The inspectors determined that TVA had adequately demonstrated operational readiness of the Units 1 and 2 control room to support dual unit operations.

C.2. Operator Training

a. Inspection Scope

The inspectors evaluated the adequacy of incorporating Unit 2 specific training needs into various site training programs.

The inspectors sampled the training programs for licensed operator requalification, non-licensed operator continuing, mechanical maintenance, emergency response, and shift technical advisor training programs to evaluate incorporation of Unit 1 and Unit 2 differences into these programs. The inspectors interviewed licensee management and operations training personnel to discover the methodology used to determine and revise training program content.

The inspectors reviewed the implementation of completed training and the content of planned training, associated with the startup of Unit 2, including just-in-time training. The inspectors reviewed selected records and interviewed personnel to evaluate the effectiveness of unit differences training resulting from recent design changes.

The inspectors evaluated the adequacy of the revisions to the licensee operator training programs against the standards in NUREG-1021, "Operator Licensing Examiner Standards," Revision 9, and the requirements in 10 CFR 55, "Operator Licensing." In addition, the inspectors evaluated the training programs and their implementation against the standards in the licensee's training program procedure NPG-SPP-17.0, "Training," Revision 6, and the requirements of 10 CFR 50.120, "Training and Qualification of Nuclear Plant Personnel."

b. Findings and Observations

No findings were identified.

The inspectors noted that TVA had not established formal guidance or direction for operator conduct and response during events that simultaneously impacted both units. Condition Report 1043999 was generated to disposition the inspectors' observation.

c. Conclusion

The inspectors determined the training developed and conducted for Unit 1 and Unit 2 dual unit operations was comprehensive.

C.3. Unit 2 Specific Differences

a. Inspection Scope

The inspectors reviewed sections of five design change notices for Unit 2 risk significant systems; walked down a number of systems both in the plant and the control room; and, interviewed various plant personnel to verify that differences from Unit 1 were accurately incorporated into initial, continuing, and requalification training programs for operations and maintenance department personnel.

The inspectors reviewed procedures associated with unit differences, including system operating instructions, alarm response procedures, abnormal operating procedures, calibration and surveillance instructions, and emergency operating instructions, to verify appropriate procedural changes were implemented. The inspectors also assessed the simulator for fidelity concerns associated with unit differences.

b. Findings and Observations

During a plant walkdown of selected portions of standard operating procedures applicable to both Units 1 and 2, the NRC inspectors identified a performance deficiency associated with procedure 0-SOI-70.01, "Component Cooling Water System," Revision 10. Specifically, two deficiencies were identified within Section 8.21, "Install Spool Pieces to CCS Surge Tank." Section 8.21 instructed operations personnel to line up essential raw cooling water to the CCS system surge tank in the event of a loss of the normal, non-seismic and non-safety related demineralized water supply. The CCS system surge tank ensures that adequate net positive suction head is supplied to the CCS system pumps. The noted deficiencies complicate operator response to complete the section of the procedure. The deficiencies were applicable to both the Unit 1 and Unit 2 CCS systems.

The deficiencies were as follows:

- The location listed for valve 1-ISV-67-543A, one of two essential raw cooling water to CCS system surge tank supply header isolation valves, was incorrect. The valve is actually located on a different floor of the auxiliary building and was difficult to locate. This valve is in the flowpath of essential raw cooling water to the CCS system surge tank and must be opened before flow can be initiated.

- The procedure did not contain a step to open or check open valve 1-LCV-60-73, the air operated surge tank level control valve, that is in the flowpath of essential raw cooling water to the CCS system surge tank.

TVA personnel generated Condition Report 1044468 to address this performance deficiency. The issue will be dispositioned by the Unit 1 NRC resident inspectors due to its applicability to Unit 1.

c. Conclusion

The inspectors determined that differences between Units 1 and 2 were properly incorporated into operator training and supporting operational programs.

C.4. Shift Staffing Qualification and Experience

a. Inspection Scope

The inspectors evaluated the adequacy of current and planned shift staffing for operation of a two unit facility. The inspectors reviewed training records for a sampling of currently licensed senior reactor operators, reactor operators and shift technical advisors. The inspectors reviewed years of experience and educational background of licensed operators, shift technical advisors, and training instructors to assess overall site staff experience as compared to the minimum experience level required by Technical Specification 5.3.1 in accordance with Tennessee Valley Authority Nuclear Quality Assurance Plan (TVA-NQA-PLN89-A).

The inspectors reviewed current and projected numbers of licensed and non-licensed operators available for shift duties, operators in support and emergency response positions, and maintenance personnel.

The inspectors interviewed operations department management personnel to discuss two unit staffing requirements, work hour limitations, and personnel availability.

The inspectors evaluated the adequacy of plant staffing to support startup of Unit 2 and two unit power operation against the requirements in the Technical Specifications, the Site Emergency Plan, and 10 CFR 50.47, "Emergency Plans."

b. Findings and Observations

No findings were identified.

c. Conclusion

Based on current and projected numbers of licensed and non-licensed operators the inspectors determined that operations staffing will be acceptable to support dual unit operations.

D. CORRECTIVE ACTION PROGRAM IMPLEMENTATION

D.1. Effectiveness of Operational Readiness Reviews

a. Inspection Scope

The inspectors reviewed a sample of operational readiness assessments to verify that Unit 2 was being properly integrated into two unit operations and to verify that any deficiencies were properly captured in the corrective action program.

The inspectors reviewed nine assessments associated with Unit 2 operational readiness. The inspectors evaluated the identified issues and reviewed the associated problem evaluation reports (condition reports), root cause analyses, and trending reports, paying particular attention to issues associated with the startup of Unit 2 and the operation of two units. The inspectors reviewed licensee identified deficiencies and other identified learning opportunities from the nine assessments and verified they were appropriately entered into the site corrective action program.

b. Findings and Observations

No findings were identified.

c. Conclusion

The operational readiness assessments examined by the inspectors adequately reviewed preparations for Unit 2 operations and issues identified were properly dispositioned.

D.2. Integration of Unit 2 Into the Corrective Action Program

a. Inspection Scope

The inspectors reviewed problem evaluation reports (condition reports) for selected Unit 2 systems/components, targeting the three selected systems, to verify that problems arising before and after system turnovers were properly incorporated into the site corrective action program, maintenance work order system, procedure change notice process, or other formal tracking system. The inspectors attended two problem evaluation report (condition report) screening committee meetings to ensure that Unit 2 problems received appropriate attention. The inspectors attended one construction completion maintenance review committee meeting to ensure that problem evaluation reports (condition reports) were trended and identified trends received appropriate management review.

The inspectors reviewed 11 problem evaluation reports (condition reports) for which TVA performed causal evaluations and also reviewed the associated root cause analyses and apparent cause evaluations. The inspectors reviewed associated problem evaluation reports (condition reports) generated from the apparent cause evaluations and associated corrective actions. In performing the review, the inspectors evaluated whether the licensee had properly identified, characterized, and entered issues into the corrective action program, and whether the licensee had appropriately evaluated and resolved the issues in accordance with established programs, processes, and procedures. The inspectors reviewed these problem evaluation reports (condition

reports) to determine if any issues existed that may impact the operability of Unit 2 systems.

The inspectors reviewed a sample of performance metrics, system health reports, operability determinations, self-assessments, trending reports and metrics, and various other documents related to the licensee's corrective action program. The inspectors evaluated the licensee's efforts in determining the scope of problems by reviewing selected logs, work orders, self-assessment results, audits, system health reports, action plans, and results from surveillance tests and preventive maintenance tasks. The inspectors assessed the timeliness and effectiveness of corrective actions, completed or planned.

The inspectors evaluated the plans to incorporate Unit 2 into the site corrective action program using the guidance in NRC Inspection Procedure 71152, "Problem Identification and Resolution," and the requirements 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."

b. Findings and Observations

No findings were identified.

During the review of the apparent cause evaluations, the inspectors noted that the documentation of at least two of the completed causal evaluations (Apparent Cause Evaluations MPR-4152 and OCEI 14-1289-J) were not in accordance with the operating plant procedure NPG-SPP-03.1.5, "Apparent Cause Evaluations," which is referenced in construction plant procedure NC-PP-3, "Watts Bar Unit 2 Corrective Action Program." Since Unit 2 was still in the construction phase, disposition of items identified were governed by the construction completion correction action program procedure NC-PP-3. The inspectors interviewed the authors of the two apparent cause evaluations and reviewed the corrective actions generated from several apparent cause evaluations. Based upon document reviews and the interviews with the authors, the inspectors concluded that the issue of concern was with documentation of TVA efforts and not with either the quality of the conduct of the evaluation or the corrective actions that were generated.

The inspectors were not able to make a complete assessment as to the quality of apparent cause evaluation, because not all of the actions taken to evaluate the failures were included in the completed causal evaluation package. When interviewed, the responsible engineers produced additional documentation as to what was done to address the original issue, including extent of condition reviews that ensured the identified condition was evaluated and determined to not exist elsewhere in either Unit 1 or Unit 2 plant equipment.

The inspectors noted that documentation of the apparent cause evaluations, using the format and guidance provided in procedure NPG-SPP-03.1.5, could provide a comprehensive record of the efforts of the TVA staff in determining the apparent cause and generating corrective actions.

c. Conclusion

The inspectors determined that the corrective action program adequately covered

activities that support the transition of Unit 2 to operations. Also, plans and actions taken to date to incorporate Unit 2 into the current site corrective action program that covers Unit 1 were appropriate.

D.3. Resolution of Startup Testing Deficiencies and Operability Issues Identified During/Following System Turnovers

a. Inspection Scope

The inspectors reviewed the current list of exceptions, deferrals, design changes, and startup punchlist items remaining on Unit 2 systems and selected the exceptions identified for three systems to review in detail to verify they were properly dispositioned or incorporated into the corrective action program.

The inspectors evaluated the turnover of the CCS and CS systems as compared to the requirements in procedures NC-PP-37, "System Turnover to Operations," and 0-TI-441, "Operational Readiness Process for Unit 2 Systems." The inspectors also reviewed the applicable portions of those procedures that had been completed for the AFW system, which at the time of the onsite inspection had not been turned over to operations.

b. Findings and Observations

No findings were identified.

c. Conclusion

The inspectors determined that testing deficiencies and operability issues identified during or following system turnover were adequately dispositioned.

E. MAINTENANCE AND QUALITY ASSURANCE SUPPORT ACTIVITIES

E.1. Maintenance and Quality Assurance Organizations

a. Inspection Scope

The inspectors assessed the adequacy of the organization, staffing, and training of the maintenance and quality assurance departments to support startup of Unit 2 and dual unit operations.

The inspectors interviewed six maintenance and quality assurance department managers and supervisors to assess their understanding and application of programs, procedures and processes for integration of Unit 2 into current site programs. The inspectors reviewed maintenance and quality assurance audits and self-assessment reports, and verified that identified problems and areas for improvement were appropriately characterized and entered in the site corrective action program.

The inspectors compared current staffing in the maintenance and quality assurance organizations to the approved staffing plans. The inspectors also compared these staffing plans to Sequoyah Nuclear Plant, the other two unit site in the TVA fleet, as well as requirements described in the most recent revision of Technical Specifications, the Tennessee Valley Authority Organization Topical Report (TVA-NOPD-89-A), the

Tennessee Valley Authority Nuclear Quality Assurance Plan (TVA-NQA-PLN-89A), and ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel." The inspectors also interviewed various individuals in the maintenance and quality assurance departments concerning qualifications, management expectations and supervisory oversight, as well as responsibilities of the craft and quality assurance assessors.

The inspectors reviewed the implementation of the maintenance training program, reviewed maintenance training records and work histories, and interviewed five craft and staff personnel to validate maintenance personnel qualifications, and gain insights on current maintenance staffing levels and readiness for two unit operation. The inspectors' questions during the interviews focused on Unit 2 equipment differences from the other operating unit, and weaknesses identified during recent self-assessments and audits.

b. Findings and Observations

No findings were identified.

c. Conclusion

The inspectors determined the maintenance and quality assurance organizations can support startup of Unit 2 and subsequent dual unit operations at Watts Bar.

E.2. Maintenance Effectiveness

a. Inspection Scope

The inspectors assessed the effectiveness of site maintenance during integration of Unit 2 activities.

The inspectors reviewed maintenance program metrics, including corrective and deficient maintenance backlogs, and maintenance procedure readiness. The inspectors reviewed various problem evaluation reports (condition reports), maintenance trend reports, expectations and standards for the conduct of maintenance, and three performance improvement excellence plans for human performance, maintenance standards, and dual unit readiness. The inspectors also conducted interviews to discuss the status of the maintenance and procedure backlogs, as well as processes used to ensure staff were meeting the standards for conduct of maintenance.

The inspectors reviewed maintenance department self-assessments and quality assurance audits and evaluated the disposition of identified corrective actions associated with maintenance effectiveness. The inspectors interviewed various maintenance department personnel, as well as attended plan-of-the-day, daily startup, excellence plan, and dual unit operational readiness management review committee meetings, to observe discussions of work prioritization and classification and to assess the effectiveness of integrating Unit 2 work activities into the site maintenance organization

b. Findings and Observations

No findings were identified.

c. Conclusion

The inspectors concluded that site maintenance has been effective during transition of Unit 2 to operations.

E.3. Work Management and Prioritization

a. Inspection Scope

The inspectors assessed TVA's ability to prioritize and complete work for a two unit site.

The inspectors reviewed procedures associated with work prioritization and scheduling, on-line work management, emergent work, and risk management to assess the programmatic ability to prioritize and schedule work for a two unit site. The inspectors also reviewed weekly work schedules, agendas for work planning meetings, and the Equipment Out-of-Service risk model to verify that the model had been updated to accommodate Unit 2.

The inspectors conducted interviews with various maintenance staff, including craft personnel and the mechanical maintenance on-line coordinator, to gain insight into the implementation and effectiveness of the work management process. The inspectors also interviewed personnel in work management to discuss corrective actions taken in response to deficiencies and learning opportunities identified in a self-assessment on the department's readiness for two unit operation. Items discussed included development of the preventive maintenance program for Unit 2, supplemental staffing in work management, work control training, and completion of the Equipment Out-of-Service risk model for Unit 2.

The inspectors attended plan-of-the-day, daily startup, and dual unit operational readiness management review committee meetings to observe discussions of work prioritization and classification and to assess the effectiveness of integrating Unit 2 work activities into the work management organization. The inspectors also reviewed various quality assurance audits related to work management and evaluated the disposition of any deficiencies identified during these audits.

b. Findings and Observations

No findings were identified.

c. Conclusion

The inspectors determined that TVA has adequately demonstrated their ability to prioritize and complete work for a two unit site

4OA6 Management Meetings

.1 Exit Meeting Summary

On June 26, 2015, the inspectors presented the preliminary inspection results to Mr. M. Skaggs, Senior Vice President, Watts Bar Operations and Construction, and other members of his staff.

On July 27, 2015, following completion of inspection activities, the team leader and other Region II personnel conducted a public exit meeting and presented the final inspection results to Mr. M. Skaggs, Senior Vice President, Watts Bar Operations and Construction.

The inspectors confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Contacts

G. Arent, General Manager, Watts Bar Licensing
T. Baird, First-Line Supervisor, Mechanical Maintenance
L. Belvin, Manager, Quality Assurance
R. Bevil, Manager, Quality Assurance and WBN ISFSI Project
J. Boshears, Specialist, Maintenance
M. Bottorff, Superintendent, Operations
C. Boudreaux, Engineer, Start-up
J. Calle, Manager, WBN Interface and Transition
K. Campbell, Bechtel Contractor
D. Case, First-Line Supervisor, Instrument Maintenance
M. Casner, Director, Site Engineering
R. Cavalieri, Startup Support
T. Cheek, Manager, Corrective Action Program
D. Cooper, Engineer, Start-up Test
G. Evans, Unit 1 and Unit 2 Integration Manager for Maintenance
R. Freeman, Program Manager, Quality Assurance
K. Greaves, System Engineer
C. Hampton, Performance Improvement Coordinator, Maintenance
Y. Hink, Specialist, Employee Concerns (Bechtel)
J. James, Director, Maintenance
A. Jenkins, Manager, On-Line Work Management
M. Llewellyn, Coordinator, Outage
N. Manley, Technician, Mechanical
V. Mathis, Senior Mechanic, Instrumentation and Control
N. McCarroll, Technician, Electrical
J. O'Dell, Supervisor, Site Licensing
C. Ottenfied, Supervisor, Nuclear Unit/Shift Technical Advisor
R. Phillips, Engineer, Materials
J. Proffitt, Licensing
L. Reaves, Specialist, Employee Concern
C. Rice, Superintendent, Electrical Maintenance
J. Rhodes, Superintendent, Maintenance Support
B. Sprinkle, Manager, Shift Operations
R. Staggs, Program Manager, Human Performance
M. Taggart, Director, Work Management
C. Ware, Director, Training

LIST OF DOCUMENTS REVIEWED

Section A: Effectiveness of Management Oversight

Self Assessments

<u>Number</u>	<u>Title</u>	<u>Date</u>
WBN-ENG-I-14-BM12	Benchmarking at Sequoyah Nuclear to Identify Additional Impacts Due to Dual Unit Operation at Watts Bar Nuclear	December 23, 2013 – January 15, 2014
WBN-WC-F-14-001	Evaluate the Readiness of the WBN Work Control Department for the Start-up of Unit 2 and the Operations of Two Units	January 13 – January 31, 2014
WBN-TRN-F-14-001	Evaluate The Readiness of the Training Organization for the Start-Up of Unit 2 and the Operation of Two Units	December 15, 2013 – January 13, 2014
WBN-OPS-F-14-001	Evaluate The Readiness of the Operations Organization for the Start-Up of Unit 2 and the Operation of Two Units	December 1, 2013 – January 13, 2014
WBN-ENG-F-14-001	Evaluate The Readiness of the Engineering Organization for the Start-Up of Unit 2 and the Operation of Two Units	January 13 - January 31, 2014
WBN-U2-F-14-002	Watts Bar (WBN) Unit 2 Pre-NRC Operational Readiness Assessment Team (ORAT) Inspection	October 27 - October 31, 2014
	TVA Nuclear Construction Review Board and Special ORAT Report Meeting No. 2014-02, December 2 -12, 2014	January 6, 2015
	Watts Bar Nuclear Independent Readiness Review Visit - Private	June 2014

Quality Assurance Reports

<u>Number</u>	<u>Title</u>	<u>Revision</u>
QA-WB-14-020	Quality Assurance (QA) – Work Management Fleet Assessment	December 29, 2014
QA-WB-15-007	NRC ORAT and Quality Assurance Transition Readiness	May 26, 2015

Audit SSA1502	Corrective Action Program Watts Bar Nuclear Plant	January 26 - 30, 2015
Audit SSA1409	Engineering Programs	July 27 – August 8, 2014
Audit SSA1406	Design Engineering	May 27 – June 6, 2014
Audit SSA1403	Nuclear Training Watts Bar Nuclear Plant	April 21 – May 2, 2014
Audit NC1401	QA Program Verification – Organization and QA Program	February 11, 2014
Audit NC1407	Corrective Action Program	August 14, 2014
Audit NC1409	Document Control and Records Management (DCRM)	September 29, 2014
Audit NC1411	Startup Test Group Activities	November 24, 2014

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NPG-SPP-10.5	Plant Operations Review Committee	6
NPG-SPP-03.2	Nuclear Safety Oversight	4
NC-PP-37	System Turnover to Operations	1 and 3
NPG-SPP-01.2.1	Interim Administration of Site Technical Procedures for Watts Bar 1 and 2	0
NPG-SPP-22.201	Oversight of the Human Performance Program	2
NC-PP-32	Watts Bar Nuclear Plant Unit 2 Development and Issue of Operation and Technical Instructions	6
0-TI-12.08	Control of Unit Interfaces	1
0-TI-441	Operational Readiness Process for Unit 2 Systems	2
ECP-1	NPG Staff Instruction Conduct of Employee Concerns Program Implementation	6
ECP-1	NPG Staff Instruction Conduct of Employee Concerns Program Implementation (DRAFT)	7
ECP-0	NPG Staff Instruction Conduct of Employee Concerns Standards and Expectations	3

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
ECP-1	Bechtel Employee Concerns Staff Desktop Instruction 1 ECP Administration	0
ECP-2	NPG Staff Instruction Conduct of Employee Concerns Trending, Reporting, Follow-Up and Corrective Action Monitoring	5
ECP-3	NPG Staff Instruction Conduct of Employee Concerns Training and Qualification	3
ECP-4	NPG Staff Instruction Conduct of Employee Concerns Chilling Effect Letter	1

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
2013-02	TVA Nuclear Construction Review Board Report Meeting No. 2013-02, September 9 – 13, 2013	September 13, 2013
2014-01	TVA Nuclear Construction Review Board Report Meeting No. 2014-01, April 14 – 18, 2014	April 25, 2014
2013-01	TVA Nuclear Construction Review Board Report Meeting No. 2013-01, April 15 – 19, 2013	April 24, 2013
T01 150603 001	PORC Meeting No. 4462 – DCN 62151, ERCW Flowrates through CCS Heat Exchanger to Support Two Units	June 3, 2015
T01 150507 001	PORC Meeting No. 4457 – DCN 64013, 50.59 Evaluation to Evaluate Impact of Starting Second CCS Pump on Train A while One unit is shutdown and other unit has a LOCA.	May 7, 2015
	Letter from Tennessee Valley Authority to NRC, Subject: Declaration of Readiness for Watts Bar Unit 2 Operational Readiness Assessment Team Inspection	June 5, 2015
	Letter from Tennessee Valley Authority to NRC, Subject: Watts Bar Nuclear Plant Unit 2 – Nuclear Safety Culture Assessment	October 31, 2015
	Letter from Tennessee Valley Authority to NRC, Subject: Watts Bar Nuclear Plant, Units 1 and 2, Multi-Unit Operator Training and Certification Program and Request for Review	September 19, 2013
	NRC Integrated Inspection Report 05000259/2014005, 05000260/2014005, and 05000296/2014005	February 11, 2015
	Plan of the Day Meeting – Team Alignment Package	June 24, 2015

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Date</u>
	Interim Report - WANO Peer Review Of Watts Bar Nuclear Plant	October 16, 2014
	Timeline of Safety Culture Activities	
	Tennessee Valley Authority White Paper, "NRC Public Meeting – Watts Bar 2 Safety Culture Assessment"	
	2013 Assessment of Watts Bar Unit 2 Safety Conscious Work Environment and Safety Culture	
	Watts Bar 2 Project Assurance – System Completion Review	July 31, 2013
	Watts Bar 2 Project Assurance-Progress Review	March 2014
	Watts Bar 2 Employee Concerns Program Survey Project Sitewide,	July 26- August 15, 2014
	Email titled, "Safety Conscious Work Environment Survey Message"	July 16, 2014
	Appendix 2, "Watts Bar Unit 2 Employee Concerns Program Third Quarter 2014 SCWE Review and Analysis"	
	Safety Conscious Work Environment (SCWE), "The Practical Guide for Leaders"	
	Operations Department Benchmark FY14	
	Performance Improvement Excellence Plan WBN U2-Watts Bar Unit 2 Work Environment	
	Watts Bar Unit 2 Project Control Center Update	June 23, 2015
	Watts Bar Unit 2 Project Control Center Update	June 26, 2015
	ePOP Observation Entry Form - IER 11-3 Operator Fundamentals	
	Unit 1 System Health Reports for Auxiliary Feedwater, Component Cooling, Containment Spray, and Essential Raw Cooling Water	June 1 – September 30, 2014

Problem Evaluation Reports (Condition Reports)

975018	959587	959633	768180	959607
959655	959579	959612	959661	915562
317824	983988	985423	1041110	1041603
230725				

Tennessee Valley Authority Unit 2 Employee Concerns Cases

2013-WC-155-CC	2013-WC-203-RE	2013-WC-346-RR	2013-WC-364-RR
2014-WC-734-RE	2014-WC-796-RR	2015-WC-009-RR	2015-WC-230-RE
2014-WC-730-RR			

Bechtel Unit 2 Employee Concerns Cases

ECP.13.044.01	ECP.13.054.01	ECP.13.010.01	ECP.13.021.01	ECP.14.026.01
ECP.14.032.01	ECI.2015.025.01			

Meetings Attended

June 23 and June 26, 2015 -> Unit 2 Startup Meeting
 June 23, 2015 -> Unit 2 Mid-Day Alignment Meeting
 June 24, 2015 -> Unit 1 Plan-of-the Day Meeting

Section B: Control of Safety-Significant Activities**Auxiliary Feedwater System****Drawings**

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1-47W803-3	Flow Diagram Main and Auxiliary Feedwater	25
1-47W803-2	Flow Diagram Auxiliary Feedwater	32
1-47W803-1A	Unit 2 Flow Diagram Feedwater	6
1-1-47803-1	Flow Diagram Feedwater	62
0-47W803-4	Flow Diagram Auxiliary Feedwater	1
2-47W610-3-8	Electrical Control Diagram Auxiliary Feedwater System	0
2-47W610-3-7	Electrical Control Diagram Auxiliary Feedwater System	17
2-47W610-3-6	Electrical Control Diagram Main and Auxiliary Feedwater System	3

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1-47W803-3	Flow Diagram Main and Auxiliary Feedwater	25
1-47W803-2	Flow Diagram Auxiliary Feedwater	32
1-47W803-1A	Unit 2 Flow Diagram Feedwater	6
1-1-47803-1	Flow Diagram Feedwater	62
0-47W803-4	Flow Diagram Auxiliary Feedwater	1
2-47W610-3-8	Electrical Control Diagram Auxiliary Feedwater System	0
2-47W610-3-7	Electrical Control Diagram Auxiliary Feedwater System	17
2-47W610-3-6	Electrical Control Diagram Main and Auxiliary Feedwater System	3
2-47W610-3-5A	Electrical Control Diagram Main and Auxiliary Feedwater System	13
2-47W610-3-5	Electrical Control Diagram Main and Auxiliary Feedwater System	13
2-47W610-3-4	Electrical Control Diagram Main and Auxiliary Feedwater System	7
2-47W610-3-3	Electrical Control Diagram Main and Auxiliary Feedwater System	11
2-47W610-3-2C	Electrical Control Diagram Main and Auxiliary Feedwater System	16
2-47W610-3-2B	Electrical Control Diagram Main and Auxiliary Feedwater System	18
2-47W610-3-2A	Electrical Control Diagram Main and Auxiliary Feedwater System	13
2-47W610-3-2	Electrical Control Diagram Main and Auxiliary Feedwater System	9
2-47W610-3-1D	Electrical Control Diagram Main and Auxiliary Feedwater System	13
2-47W610-3-1C	Electrical Control Diagram Main and Auxiliary Feedwater System	8
2-47W610-3-1B	Electrical Control Diagram Main and Auxiliary Feedwater System	15
2-47W610-3-1A	Electrical Control Diagram Main and Auxiliary Feedwater System	8
1-47W610-3-1	Electrical Control Diagram Main and Auxiliary Feedwater System	13

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1-47W610-3-8	Electrical Control Diagram Auxiliary Feedwater System	0
1-47W610-3-7	Electrical Control Diagram Auxiliary Feedwater System	11
1-47W610-3-5A	Electrical Control Diagram Main and Auxiliary Feedwater System	11
1-47W610-3-5	Electrical Control Diagram Main and Auxiliary Feedwater System	20
1-47W610-3-4	Electrical Control Diagram Main and Auxiliary Feedwater System	19
1-47W610-3-3A	Electrical Control Diagram Auxiliary Feedwater System	0
1-47W610-3-3	Electrical Control Diagram Auxiliary Feedwater System	31
1-47W610-3-2C	Electrical Control Diagram Main and Auxiliary Feedwater System	10
1-47W610-3-2B	Electrical Control Diagram Main and Auxiliary Feedwater System	4
1-47W610-3-2A	Electrical Control Diagram Main and Auxiliary Feedwater System	20
1-47W610-3-2	Electrical Control Diagram Main and Auxiliary Feedwater System	20
1-47W610-3-1D	Electrical Control Diagram Main and Auxiliary Feedwater System	9
1-47W610-3-1C	Electrical Control Diagram Main and Auxiliary Feedwater System	5
1-47W610-3-1B	Electrical Control Diagram Main and Auxiliary Feedwater System	13
1-47W610-3-1A	Electrical Control Diagram Main and Auxiliary Feedwater System	7
1-47W610-3-6	Electrical Control Diagram Main and Auxiliary Feedwater System	7
1-47W803-3	Flow Diagram Main and Auxiliary Feedwater	25
1-47W803-2	Flow Diagram Auxiliary Feedwater	32
1-47W803-1A	Unit 2 Flow Diagram Feedwater	6
1-1-47803-1	Flow Diagram Feedwater	62
0-47W803-4	Flow Diagram Auxiliary Feedwater	1
2-47W610-3-8	Electrical Control Diagram Auxiliary Feedwater System	0

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
2-47W610-3-7	Electrical Control Diagram Auxiliary Feedwater System	17
2-47W610-3-6	Electrical Control Diagram Main and Auxiliary Feedwater System	3
2-47W610-3-5A	Electrical Control Diagram Main and Auxiliary Feedwater System	13
2-47W610-3-5	Electrical Control Diagram Main and Auxiliary Feedwater System	13
2-47W610-3-4	Electrical Control Diagram Main and Auxiliary Feedwater System	7
2-47W610-3-3	Electrical Control Diagram Main and Auxiliary Feedwater System	11
2-47W610-3-2C	Electrical Control Diagram Main and Auxiliary Feedwater System	16
2-47W610-3-2B	Electrical Control Diagram Main and Auxiliary Feedwater System	18
2-47W610-3-2A	Electrical Control Diagram Main and Auxiliary Feedwater System	13
2-47W610-3-2	Electrical Control Diagram Main and Auxiliary Feedwater System	9
2-47W610-3-1D	Electrical Control Diagram Main and Auxiliary Feedwater System	13
2-47W610-3-1C	Electrical Control Diagram Main and Auxiliary Feedwater System	8
2-47W610-3-1B	Electrical Control Diagram Main and Auxiliary Feedwater System	15
2-47W610-3-1A	Electrical Control Diagram Main and Auxiliary Feedwater System	8
1-47W610-3-1	Electrical Control Diagram Main and Auxiliary Feedwater System	13
1-47W610-3-1B	Electrical Control Diagram Main and Auxiliary Feedwater System	13
1-47W610-3-1A	Electrical Control Diagram Main and Auxiliary Feedwater System	7
1-47W610-3-6	Electrical Control Diagram Main and Auxiliary Feedwater System	7

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NC-PP-37	System Turnover to Operations	1
0-TI-441	Operational Readiness Process for Unit 2 Systems	2

Design Basis Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
SDD-N3-3B-4002	Auxiliary Feedwater System	21

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>Date</u>
	Auxiliary Feed Water – System Health Report (Unit 1)	Oct. 2014 – Jan. 2015
3002001670	Terry Turbine Maintenance Guide, Auxiliary Feedwater (AW) Application	September 2013

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>Date</u>
EDQ00299920090011	WBN Unit 2 – List of 10 CFR 50.49 Components and Cables	3

Problem Evaluation Reports (Condition Reports)

528852	854660	1038287	979323	968899
874276	919172	1038621	984843	854660
931000	977226	1039687	906994	5751269
872410	899677	1040971	868698	1010600
968877	961009	1041266	1003314	1021866
948843	883553	1039165		

Work Orders

115874269	115874452	113098500	112800226	115874498
115874305	115874465	113401326	112857587	115874498
115874334	115874487	115660275	112857606	115874498

115874361	051353304	115751269	112857597	112857594
115874386	081657300	112857597		

Self Assessments

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>Date</u>
WBN-ENG-5-12-004	Auxiliary Feedwater Monitoring	0
WBN-ENG-S-12-004	Auxiliary Feedwater System Self-Assessment	July 5, 2012

Engineering Document Construction Release

52337	52740	54252	52430	53276
52343	52893	59001	52436	53876
52408	52894	54253	52736	53276
53275	60749	53293		

Section B: Control of Safety-Significant Activities

Component Cooling System

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NC-PP-37	Systems Turnover to Operations	3
NPG-SPP-09.0.1	Conduct of Systems Engineering and Equipment Reliability	3
0-TI-437	System Turnover-Startup to Operations	2
0-TI-441	Operational Readiness Process for Unit 2 Systems	2
0-TI-119	Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting – 10CFR50.65	1
0-TI-12.19	Control of Time Critical Operator Actions	1
0-TI-31.08	Flow Balancing Valves Setpoint Positions	52
2-AOI-14	Loss of RHR Shutdown Cooling	0U2
2-AOI-15	Loss of Component Cooling Water	1U2
0-ARI-241-253	Unit 0 Alarm Response Instruction, CCS System	1
0-ARI-254-264	Unit 0 Alarm Response Instruction, CCS System	1
0-SOI-70.01	Unit 0 System Operating Instruction, CCS System	7 - 11

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
2-SOI-70.01	Unit 2 System Operating Instruction, CCS System Unit 2-A Train	Draft
0-SOI-70.01, ATT 7V	Unit 2 CCS Normal Valve Checklist	8 - 10
0-SOI-70.01, ATT 8V	Unit 2 Equipment from CCS Heat Exchanger B Valve Checklist	7
2-SI-70-1	Unit 2 Surveillance Instruction, CCS Safety-Related Valves: Alignment Verification	1
2-SI-70-901-A	Unit 2 Surveillance Instruction, CCS Pump 2A-A Quarterly Performance Test	2
2-SI-70-908-A	Unit 2 Surveillance Instruction, CCS Valve Position Indication Verification (Train A)	2
2-SI-70-914-A	Unit 2 Surveillance Instruction, CCS Pump 2A-A Comprehensive Pump Test	Draft
2-SI-70-915-A	Unit 2 Surveillance Instruction, CCS Pump 2A-A Preservice Pump Test	2
2-TSD-70-1	Test Scoping Document (Component Cooling System)	7

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1-47W859-1	Mechanical Flow Diagram, Component Cooling System	63
1-47W859-2	Mechanical Flow Diagram, Component Cooling System	38
1-47W859-3	Mechanical Flow Diagram, Component Cooling System	28 - 29
1-47W859-4	Mechanical Flow Diagram, Component Cooling System	31 - 32
2-47W859-1	Mechanical Flow Diagram, Component Cooling System	17 - 18
2-47W859-3	Mechanical Flow Diagram, Component Cooling System	28 - 30
2-47W859-4	Mechanical Flow Diagram, Component Cooling System	20 - 21

Design Basis Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
WBN2-70-4002	System Description for Component Cooling System (Unit 2)	April 25, 2014
WBN-SDD-N3-70-4002	System Description for Component Cooling System (Unit 1)	October 29, 2014

Design Basis Documents

<u>Number</u>	<u>Title</u>	<u>Date</u>
SDD-N3-70-4002	System Description Document (CCS Unit 1/Unit 2)	Draft

Design Changes

<u>Number</u>	<u>Title</u>	<u>Revision</u>
65421	Replacement of CCS Check Valve Hard to Soft Seats	A
64013	Increase Flow Limitation of the CCS Pumps 1A-A, 1B-B, C-S, and 2B-B	A
61035	Installation of CCS Filter Skid to Address Sediment Accumulation	A
53413	Realignment of CCS Pump 2B-B to Support Dual Unit Operation	A
53111	Relocation of Unit 2 CCS Loops following Foxboro DCS Turnover	A
52376	Replacement of Safety Related CCS Instrumentation	A

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>Date</u>
2-PTI-070-01	Component Cooling Water Pump/Valve Logic Test (performed 4/15/15-5/25/15)	1
2-PTI-070-2A	Component Cooling Water System Unit 2 Train A Flow Balance (performed 10/24-30/14)	1
2-PTI-070-2B	Component Cooling Water System Unit 2 Train B Flow Balance (performed 11/10-22/14)	1
NC-PP-37-070	System Turnover to Operations (System Turnover Package for Component Cooling Water System 070)	June 1, 2015
0-TI-441	Operational Readiness Process for Unit 2 Systems (as completed for system 70 during date of onsite inspection)	Status as of June 24, 2015
FSAR Section 9.2.2	Component Cooling System (CCS)	WBNP-113
TS 3.7.7 and Bases	Watts Bar Unit 1 and Unit 2 (developmental) Technical Specifications for CCS	
3-OT-SYS070A	Component Cooling Water System (operator training lesson plan)	January 20, 2015
2-TO-2015-0047	Operations Tagout for CCS Pump 2A-A Motor Replacement	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
0-TO-2015-0045	Operations Tagout for CCS pump C-S Pump Bearing Maintenance	
EDMS L18-110614802	Eddy Current Examination Report for the Component Cooler A	April 2011
EDMS L18-131203800	Eddy Current Examination Report for the Component Cooler B	February 2011
EDMS L18-130225802	Eddy Current Examination Report for the Component Cooler C	September 2012
System Health Reports	Engineering CCS system health reports for 3 rd quarter 2014, 4 th quarter 2014, and 1 st quarter 2015	

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EPMSGP022892	Failure Mode and Effects Analysis of the CCS	15
EPMGDU031093	Component Cooling System Pump Brake Horsepower	8
EPMJN010890	Performance of CCS Heat Exchanger	19
EPMJN071789	CCS Pump Net Positive Suction Head Available Calculation	7
EPMSME040790	CCS Load List	23
MDQ00007020090200	Component Cooling System Pressure Drop Calculation	9

Problem Evaluation Reports (Condition Reports)

937184	987663	871078	918940	1025968
921957	795283	983988	985423	973514
937184	858640	968899	949003	982186
988409	962843	933573	953159	921538

Work Orders

110774707	115928776	116025968	116257549	116280480
116664682	116703167	116789742	116087897	116858495
116736004	114947419	116907320	116907149	116907319
116147898				

Section B: Control of Safety-Significant Activities

Containment Spray System

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
0-T1-119	Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting – 10CFR50.65	1
NPG-SPP-09.0.1	Conduct of Systems Engineering and Equipment Reliability	3
0-TI-441	Operational Readiness Process For Unit 2 Systems	2
2-51-72-901A	Containment Spray Pump 2A-A Quarterly Performance Test	1

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
2-47W812-1	Flow Diagram Containment Spray System	27
2-47W610-72-1	Electrical Control Diagram Containment Spray System	11

Design Basis Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
WBN-SDD-N3-72-4001	Containment Heat Removal Spray System	23
NPG-SDD-WBN2-72-4001	Containment Heat Removal Spray System	3
2-TSD-72-1	Test Scoping Document	7

Design Changes

<u>Number</u>	<u>Title</u>	<u>Date</u>
52376-14	Relocated 13 Safety-Related Balance of Plant Instrument Loops	May 26, 2015

Engineering Document Construction Release

<u>Number</u>	<u>Title</u>	<u>Date</u>
53619-A	Install and Inspect Instrument Lines and Instrument Installation for Local Panels 2-L-15 and L-L-16	February 12, 2010
54070-A	Replace RTDs for 2-TE-72-6 and 2-TE-72-31	February 18, 2010

Engineering Document Construction Release

<u>Number</u>	<u>Title</u>	<u>Date</u>
53292-A	Replace Safety Related Class 1E Motor Control Center (MCC) Starter Buckets, Feeder Breakers, Relays, Internal Wiring and Other Components in 2-MCC-213-B1-B	March 4, 2010
53287-A	Replace Safety Related Class 1E Motor Control Center (MCC) Starter Buckets, Feeder Breakers, Relays, Internal Wiring and Other Components in 2-MCC-213-A1-A	February 26, 2011

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>Date</u>
	Evaluation of a Failed 2-PMP-072-010B Bearing and a Functioning Bearing for the Watts Bar Unit 2 Containment Spray Pump O'Donnell Consulting Engineers, Inc.	Revision J May 28, 2014
	Containment Spray System Health Report	October 1, 2014 – January 31, 2015
	Mechanical Commodity Evaluation Report Containment Spray System 072	September 11, 2013
	Eddy Current Examination Report for the Containment Spray 2A Watts Bar Unit 2 Tennessee Valley Authority Inspection Services Organization	November 2010
	Eddy Current Examination Report for the Containment Spray 2B Watts Bar Unit 2 Tennessee Valley Authority Inspection Services Organization	August 2010
LTR-SEE-I-15-19	Westinghouse Letter, Watts Bar CSS Pump Acceptance Evaluation	April 7, 2015
2-PTI-072-01	Containment Spray Pump Valve Logic Test	1
2-PTI-072-02	Containment Spray System Air Flow Test	1
2-HTX-72-2B	Cooling Coil and Heat Exchanger Examination Report	July 23, 2013
PP-37-072	NC PP-37, System Turnover to Operations System Turnover Package Containment Spray System 072	

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
EPMLJC062889	Containment Spray Pump Pressure Requirements	4

Problem Evaluation Reports (Condition Reports)

823432	844769	850494	869259	879276
965029	1001657	1007042	1008212	1016459
1027171	1027154	1035854	1035539	1035530
1035526	1035519	1035503	1029581	1029584
1025977	1043437			

Work Orders

112243849	112807398	112807339	112244124	112244109
112244056	112244048	112243926	111154697	110953657
110880147	116257329	115648222	115648222	116257329
08-953058-000	08-951182-000	08-953852-000	08-953855-000	

Field Change Requests

64810	65369
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Section C. Operator Readiness, Training, and Experience**Procedures**

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NETP-114	AOV Program	4
NP-REP Appendix C	Radiological Emergency Plan	105
NPG-SPP-03.21	Fatigue Management and Work Hour Limits	15
NPG-SPP-14.1	Fitness-For-Duty	8
NPG-SPP-14.10	Fitness-for-Duty – Alcohol and Drug Testing Requirements	1
NPG-SPP-17.0	Training	6
NPG-SPP-17.1	Systematic Approach to Training (SAT) Overview	10
NPG-WBN2-3B- 4002	Auxiliary Feedwater System	2

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OPDP-1	Conduct of Operations	34
	Operations Department Transition and Change Management Plan for Two Unit Operation	3

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
2-47W803-2	Flow Diagram Auxiliary Feedwater	31
2-47W803-3	Flow Diagram Auxiliary Feedwater	24

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>Date</u>
3-OT- MSC146S/G	Unit 2 S/G and FW Differences	0
	Audit SSA1403, Nuclear Training	
	Watts Bar 2 UFSAR	113
	Watts Bar Nuclear Plant Units 1 and 2, Multi-Unit Operator Training and Certification Program and Request for Review	September 19, 2013

Problem Evaluation Reports (Condition Reports)

841597	854062	876362	876284	876847
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Section D. Corrective Action Program Implementation**Self Assessments**

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>Date</u>
WBN-DSL-F-13-001	TVA Nuclear Power Group Focused Self-Assessment Report: Readiness of Safety and Licensing Organization for 2 Unit Operations	1
QA-WB-15-007	NRC ORAT and Quality Assurance Transition Readiness Assessment	May 26, 2015
WBN-DSL-F-14-001	TVA Nuclear Power Group Focused Self-Assessment Report: Readiness of Safety and Licensing Organization for 2 Unit Operations	0

Self Assessments

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
WBN-U2-F-14-002	Watts Bar (WBN) Unit 2 Pre-NRC-Operational Readiness Assessment Team (ORAT) Inspection	0
2014-02	TVA Nuclear Construction Review Board and Special ORAT Report	6
	QA Oversight of Unit 2 System 007 (Turbine Extraction Traps and Drains) Turnover Package	March 4, 2015
	QA Oversight of Unit 2 System 058 (Generator Bus Duct Cooling) Turnover Package	March 4, 2015
	QA Oversight of Unit 2 System 036 (Feedwater Secondary Treatment) Turnover Package	
WBN-ENG-F-14-001	Evaluate the readiness of the Engineering organization for the Start-up of Unit 2 and the operation of two units	January 31, 2014

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
NPG-SPP-03.1.5	Apparent Cause Evaluations	8
NPG-SPP-03.1.6	Root Cause Analysis	7
NPG-SPP-22.300	Corrective Action Program	2
NC-PP-3	Watts Bar Unit 2 Corrective Action Program	17
NPG-SPP-22.302	Corrective Action Program Screening	4
NC-PP-37	System Turnover to Operations	2
NPG-SPP-22.306	Level 1 Evaluation	4
NPG-SPP-22.305	Level 2 Evaluation	4
0-TI-437	System Turnover-Startup to Operations	2

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
720012	Apparent Cause Evaluation: Dispositioning of Diesel Generator Non-Conservative Technical Specification	1

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
CNL-14-218	Application to Modify Watts Bar Nuclear Plant, Unit 1 Technical Specification 3.8.1 Regarding Diesel Generator Steady State Frequency (WBN-TS-13-08)	April 6, 2015
MPR-4152	Root Cause Evaluation of Watts Bar Unit 2 Safety Injection Pump Bearing Damage	0
838631	Level A PER: Drilling through Reinforcing Steel	
965029	Apparent Cause Analysis Report – RHR Water Hammer	January 23, 2015
884790	Common Cause Assessment: Start Up Organization Performance Related Events	September 16, 2014
	Start Up Organization 3-month Self-Assessment for PER 884790	January 10, 2015
	Start Up Organization 6-month Self-Assessment for PER 884790	March 26, 2015
	Construction Completion Maintenance Review Committee Agenda	February 10, 2015
	Construction Completion Maintenance Review Committee Agenda	June 23, 2015
OCEI 14-1289-J	Evaluation of a Failed 2-PMP-072-010B Bearing and a Functioning Bearing for the Watts Bar Unit 2 Containment Spray Pump	J
WBT-D-5086	Westinghouse Letter: SI/CC Refurb Bearing Issue	October 21, 2014
	Watts Bar Nuclear Plant Unit 2 Construction Completion Project Nuclear Assurance Plan	October 29, 2007
TVA-NQA- PLN89-A	Nuclear Quality Assurance Plan	30
	Flowserve Root Cause Analysis and Corrective Action Summary Report: Quality Issues with 2.5" RLIJ CCPS, 3&5 HMTA Pumps and 3.0" JHF SIPs for Tennessee Valley Authority (TVA), Watts Bar II Nuclear Plant	1
857667	Evaluation Report: Assembly Quality Issues with OEM Flowserve	May 29, 2014
	Watts Bar Nuclear Plant Unit 1/Unit 2 Corrective Action Program (CAP) Transition Strategy Document	June 2015
	Quality Assurance Department Transition and Change Management Plan for Two-Unit Operations	10

Problem Evaluation Reports (Condition Reports)

954094	982730	720012	838681	984998
965029	671374	793461	884790	728032
728024	729571	728032	728036	747998
728037	728047	1019311	1020503	1013943
1018195	893698	806996	939339	869259
982730	984998	954094	857667	1044396
959630	959686	959661	959759	959587
938866	994884	823372	994892	844195
854105	839557			

Work Orders

116904879	116202634	116904938
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Section E: Maintenance Support Activities**Self Assessments**

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
QA-WB-14-010	Watts Bar Nuclear Plant Quality Assurance Maintenance Worker Practices for the Period of June 15, 2014 – June 21, 2014	July 18, 2014
QA-WB-14-020	Watts Bar Nuclear Plant Quality Assurance – Work Management Fleet Assessment for the Period of November 17, 2014 through December 1, 2014	December 29, 2014
QA-WB-15-010	Watts Bar Nuclear Station – Quality Assurance – Oversight Report for the Period of January 1, 2015 through April 30, 2015	May 28, 2015
WBN-MNT-F-14-001	Focused Area Self-Assessment: Readiness of the Maintenance Organization for the Start-up of Unit 2 and the Operation of Two Units	1
WBN-WC-F-14-001	Focused Area Self-Assessment: Readiness of the WBN Work Control Department for the Start-up of Unit 2 and Operation of Both Units	0

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
0-TI-441	Operational Readiness Process for Unit 2 Systems	2
MMDP-15	Conduct of Maintenance – Expectations and Standards	9
NC-PI-5	Watts Bar Nuclear Plant Unit 2 Instruction Validation	5
NC-PP-37	System Turnover to Operations	3
NPG-SPP-01.2	Administration of Site Technical Procedures	11
NPG-SPP-01.2.1	Interim Administration of Site Technical Procedures for Watts Bar 1 and 2	0
NPG-SPP-07.1	On-Line Work Management	15
NPG-SPP-07.3	Work Activity Risk Management Process	16
NPG-SPP-09.11.1	Equipment Out of Service (EOOS) Management	10
NPG-SPP-22.300	Corrective Action Program	2
TVA-NOPD-89A	Tennessee Valley Authority Organization Topical Report	21
TVA-NQA-PLN89-A	Nuclear Quality Assurance Plan (NQAP)	30

Training Program Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
GEN310.2011	Maintenance Training Specialized Unit 2 Instrumentation Differences and Changes PSUR (Pre-Start-Up Review)	0
TPD-ELE	Electrical Maintenance Training Program	4
TPD-ICT	Instrument and Control Technician	2
TPD-MEC	Mechanical Maintenance Training Program, Training Program Description	4
TPD-PLN	Nuclear Planner Training Program	1
TPD-PWG	NPG Procedure Writer/Reviewer Training Program Description	2

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>Date</u>
	Decision-Making Requirements for Maintenance Leaders	

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision Date</u>
	ePOP Observation Entry Form – Performance Evaluation – Maintenance Fundamentals	
	Expectations for Maintenance Superintendents/Managers	July 2014
	Maintenance Department Overview	May 15, 2015
	Maintenance Department Transition and Change Management Plan for Two Unit Operations	4
	Maintenance Department Trend Overview	March 2015
	Maintenance Unit Differences 2011 Training LMS Report	
	Maintenance Unit Differences 2014 Training LMS Report	
	Memorandum from the WBN Maintenance Manager to the WBN Maintenance Superintendents re: Actions to be Taken to Support Sustainment of Operational Maintenance Practices and Standards for Worker Returning from the Construction Environment	August 15, 2014
	Memorandum from WBN Maintenance Director to the Watts Bar Maintenance Superintendents re: Adherence to Standards, Policies, Procedures, and Administrative Controls (SPAC)	August 15, 2014
	Operational Readiness Meeting Agenda	June 23, 2015
	Performance Assessment Template	
	Performance Improvement Excellence Plan: Human Performance	July 2014
	Performance Improvement Excellence Plan: Maintenance Standards	
	Performance Improvement Excellence Plan: Maintenance Standards for Dual Unit Readiness	
	Quality Assurance Department Transition and Change Management Plan for Two-Unit Operations	10
	TVA Quality Assurance Master Audit Schedule 2014-2015	3
	TVA Quality Assurance Master Audit Schedule 2015-2016	0
	Unit 2 Maintenance Observation Trending	February 1, 2015 – June 11, 2015
	Watts Bar Maintenance Excellence Metrics	August 2014

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u> <u>Date</u>
	Watts Bar Unit 2 Project Control Center Update Agenda	June 25, 2015
	Watts Bar Unit 2 Start-Up Shift Turnover	June 25, 2015
	Watts Bar Unit Differences and Training Plan Report	September 2013
	WBN Dual Unit Operational Readiness Team Weekly Metrics Review	March 27, 2014
ANSI N18.1 – 1971	Selection and Training of Nuclear Power Plant Personnel	
ANSI/ANS-3.1- 1981	Selection, Qualification, and Training of Personnel for Nuclear Power Plants	
NRC Regulatory Guide 1.8	Qualification and Training of Personnel for Nuclear Power Plants	2

Calculations

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MDN-000-999- 2010-0174	Watts Bar Nuclear Equipment Out of Service (EOOS) Model	7

Problem Evaluation Reports (Condition Reports)

674127	680792	727485	727545	729069
729079	729082	767646	789267	812226
841532	841554	841556	841572	841575
841577	841602	841613	841616	842937
844210	847638	848192	848197	848201
848804	867201	930136	930147	933967
951897	952357	959607	959633	960484
961221	961271	962852	962862	970315
1014329				