



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

February 7, 2014

Mr. Joseph W. Shea
Vice President, Nuclear Licensing
Tennessee Valley Authority
1101 Market Street, LP 3D-C
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT
05000390/2013005

Dear Mr. Shea:

On December 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Watts Bar Nuclear Plant, Unit 1. On January 16, 2014, the NRC inspectors discussed the results of this inspection with Mr. Cleary and other members of the Watts Bar staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented one NRC-identified finding of very low safety significance (Green) in this report. The finding involved a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violation or significance of this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Watts Bar Nuclear Plant.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at the Watts Bar Nuclear Plant.

As a result of the Safety Culture Common Language Initiative, the terminology and coding of cross-cutting aspects were revised beginning in calendar year (CY) 2014. New cross-cutting aspects identified in CY 2014 will be coded under the latest revision to Inspection Manual Chapter (IMC) 0310. Cross-cutting aspects identified in the last six months of 2013 using the previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the CY 2014 mid-cycle assessment review.

J. Shea

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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 Public Document Room or from the Publicly Available Records System (PARS) component of 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/

Jonathan H. Bartley, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket No.: 50-390
License No.: NPF-90

Enclosure: NRC Inspection Report 05000390/2013005
w/Attachment: Supplemental Information

cc Distribution via ListServ

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Letter to Joseph Shea from Jonathan H. Bartley dated February 7, 2014

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05000390/2013005

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-390

License No.: NPF-90

Report No.: 05000390/2013005

Licensee: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Unit 1

Location: Spring City, TN 37381

Dates: October 1 through December 31, 2013

Inspectors: R. Monk, Senior Resident Inspector
K. Miller, Resident Inspector

Approved by: Jonathan H. Bartley, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Enclosure

SUMMARY

IR 05000390/2013-005; 10/01/2013 – 12/31/2013; Watts Bar, Unit 1; Problem Identification and Resolution.

The report covered a three-month period of inspection by the resident inspectors. One Green non-cited violation was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," (SDP) dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within the Cross-Cutting Areas," dated October 28, 2011. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Green. An NRC identified non-cited violation (NCV) of 10 *Code of Federal Regulations* (CFR) 50, Appendix B, Criterion XV, Nonconforming Materials, Parts, or Components, was documented for the licensee's failure to ensure that three failed QA/1 pressure switches (BTN027C) returned to power stores were adequately labeled or segregated to prevent their inadvertent use or installation. The licensee entered this issue into the corrective action program as problem evaluation report (PER) 794117 and segregated the defective pressure switches.

The inspectors determined that the finding was more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern; specifically, the subject safety-related defective pressure switches could have been installed in another safety-related component. The inspectors determined that the finding was of very low safety significance (Green) because the pressure switches were not installed into a subsequent component and did not cause a loss of function of a system. The cause of the finding was directly related to the cross-cutting aspect that the licensee define and effectively communicate expectations regarding procedural compliance and personnel follow procedures in the Work Practices component of the Human Performance area, in that the licensee failed to provide adequate and timely direction to prevent the pressure switches from being returned to the Maintenance personnel. [H.4(b)] (Section 4OA2.1)

B. Licensee-Identified Violations

None.

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REPORT DETAILS

Summary of Plant Status

Unit 1 operated at essentially 100 percent power the entire reporting period with the exception of a planned down power to 62 percent power on December 7, 2013, for repairs to #3 feed water heater drain tank level control valve. The unit was returned to 100 percent power the following day.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

.1 External Flooding

a. Inspection Scope

Inspectors observed a detailed plant exercise of licensee procedure AOI-7.01, Maximum Probable Flood. This included staffing of the Central Emergency Control Center in Chattanooga, the Technical Support Center, a mock control room, and the Operations Support Center. Using appropriate time compression, the licensee demonstrated to a plausible degree that changes incorporated into AOI-7.01 were adequate to accomplish the complex activities to place the plant into the flood mode configuration to protect the reactor core during a design basis Probable Maximum Flood within the required 27-hour time line. This activity constituted one inspection sample.

b. Findings

No findings were identified.

.2 Readiness for Seasonal Extreme Weather Readiness

a. Inspection Scope

The inspectors reviewed licensee actions taken in preparation for low temperature weather conditions to limit the risk of freeze-related initiating events and to adequately protect mitigating systems from its effects. The inspectors reviewed licensee procedure 1-PI-OPS-1-FP, Freeze Protection, and walked down selected components associated with the four areas listed below to evaluate implementation of plant freeze protection, including the material condition of insulation, heat trace elements, and temporary heated enclosures. Corrective actions for items identified in relevant problem evaluation reports (PERs) and work orders (WOs) were assessed for effectiveness and timeliness. This activity constituted one inspection sample. Documents reviewed are listed in the Attachment.

Enclosure

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns

a. Inspection Scope

The inspectors conducted the equipment alignment partial walkdowns, listed below, to evaluate the operability of selected redundant trains or backup systems with the other train or system inoperable or out of service (OOS). This also included that redundant trains were returned to service properly. The inspectors reviewed the functional system descriptions, the Updated Final Safety Analysis Report (UFSAR), system operating procedures, and Technical Specifications (TS) to determine correct system lineups for the current plant conditions. The inspectors performed walkdowns of the systems to verify that critical components were properly aligned and to identify any discrepancies which could affect operability of the redundant train or backup system. This activity constituted three inspection samples. Documents reviewed are listed in the Attachment.

- Realignment of the turbine-driven auxiliary feedwater (TDAFW) pump following preventive maintenance/corrective maintenance outage
- Partial walkdown of the 1A containment spray (CS) pump while 1B OOS for preventive maintenance
- Partial walkdown of the 1B residual heat removal (RHR) system while the 1A RHR system was OOS for preventive maintenance

b. Findings

No findings were identified.

1R05 Fire Protection

Fire Protection Tours

a. Inspection Scope

The inspectors conducted tours of the areas important to reactor safety, listed below, to verify the licensee's implementation of fire protection requirements as described in: the Fire Protection Program, Nuclear Power Group Standard Programs and Processes (NPG-SPP)-18.4.6, Control of Fire Protection Impairments; NPG-SPP-18.4.7, Control of Transient Combustibles; and NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work). The inspectors evaluated, as appropriate, conditions related to: 1) licensee control of transient combustibles and ignition sources; 2) the material condition, operational status, and operational lineup of fire protection systems, equipment, and features; and 3) the fire barriers used to prevent fire damage or fire propagation. This activity constituted 10 inspection samples.

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- Cable spreading room
- 480 V reactor (RX) motor-operated valve (MOV) board room 1A
- 480 V RX MOV board room 1B
- 480 V RX MOV board room 2A
- 480 V RX MOV board room 2B
- Vital battery room I, II, III, IV, V (counts as five samples)

b. Findings

No findings were identified.

1R06 Flood Protection Measures

.1 Auxiliary Building

a. Inspection Scope

The inspectors reviewed internal flood protection barriers associated with a refueling water storage tank, component cooling system (CCS) pipe break, and essential raw cooling water (ERCW) pipe break in the auxiliary building to verify that the flood protection barriers and equipment were being maintained consistent with the UFSAR. The licensee's corrective action documents and open WOs were reviewed to verify that internal flood-related items in the auxiliary building were being corrected. The inspectors walked down the auxiliary building 676' elevation, which contains risk-important equipment, to evaluate the adequacy of flood barriers, floor drains, and passive sump level switches, as well as their overall material condition. This activity constituted one inspection sample. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2 Cables in Underground Manholes

a. Inspection Scope

Inspectors directly observed one underground bunker/manhole, Manhole 7, subject to flooding that contained cables whose failure could disable risk-significant equipment. Specific attributes evaluated were: 1) the cables were not submerged in water; 2) the cables and/or splices appeared intact and the material condition of cable support structures was acceptable; and 3) dewatering devices (sump pump) operation and level alarm circuits were set appropriately to ensure that the cables would not be submerged or were in an environment for which they were qualified. This activity constituted one inspection sample.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualificationa. Inspection Scope

Quarterly Operator Regualification Review: On October 31, 2013, the inspectors observed the simulator evaluation for an operations staff crew per 3-OT-SRT-E1-7, Loss of Coolant, Revision 3. The plant conditions led to a Site Area Emergency. Performance indicator credit was not taken.

The inspectors specifically evaluated the following attributes related to the operating crew's performance:

- Clarity and formality of communication
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms
- Correct use and implementation of abnormal operating instructions and emergency operating instructions
- Timely and appropriate Emergency Action Level declarations per emergency plan implementing procedures
- Control board operation and manipulation, including high-risk operator actions
- Command and Control provided by the unit supervisor and shift manager

The inspectors also attended the critique to assess the effectiveness of the licensee evaluators, and to verify that licensee-identified issues were comparable to issues identified by the inspector. This activity constituted one inspection sample.

Quarterly Observation of Operator Performance: Inspectors observed and assessed licensed operator performance in the plant and main control room, particularly during periods of heightened activity or risk and where the activities could affect plant safety. Inspectors reviewed various licensee policies and procedures such as procedures OPDP-1, Conduct of Operations; NPG-SPP-10.0, Plant Operations; and GO-4, Normal Power Operation.

The inspectors utilized activities such as post maintenance testing, surveillance testing and refueling, and other outage activities to focus on the following conduct of operations as appropriate;

- Operator compliance and use of procedures
- Control board manipulations
- Communication between crew members
- Use and interpretation of plant instruments, indications, and alarms
- Use of human error prevention techniques
- Documentation of activities, including initials and sign-offs in procedures

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- Supervision of activities, including risk and reactivity management
- Pre-job briefs

This activity constituted one inspection sample.

Annual Review of Licensee Requalification Examination Results: On December 13, 2013, the licensee completed the annual requalification operating examinations required to be administered to all licensed operators in accordance with Title 10 of the Code of Federal Regulations 55.59(a)(2), "Requalification requirements," of the NRC's "Operators' Licenses." The inspector performed an in-office review of the overall pass/fail results of the individual operating examinations and the crew simulator operating examinations in accordance with Inspection Procedure (IP) 71111.11, "Licensed Operator Requalification Program and Licensed Operator Performance." The results were compared to the thresholds established in Section 3.02, "Requalification Examination Results," of IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the performance-based problems listed below. A review was performed to assess the effectiveness of maintenance efforts that apply to scoped structures, systems, or components (SSCs) and to verify that the licensee was following the requirements of TI-119, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting 10 CFR 50.65, and NPG-SPP-03.4, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting 10 CFR 50.65. Reviews focused, as appropriate, on: 1) appropriate work practices; 2) identification and resolution of common cause failures; 3) scoping in accordance with 10 CFR 50.65; 4) characterization of reliability issues; 5) charging unavailability time; 6) trending key parameters; 7) 10 CFR 50.65 (a)(1) or (a)(2) classification and reclassification; and 8) the appropriateness of performance criteria for SSCs classified as (a)(2) or goals and corrective actions for SSCs classified as (a)(1). This activity constituted two inspection samples.

- Review of addition of flood mode functions into the scope of the program and category classification
- Review of Revision 2 of the (a)(1) action plan for the demineralized water system

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, for the work activities listed below:

1) the effectiveness of the risk assessments performed before maintenance activities were conducted; 2) the management of risk; 3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and 4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. The inspectors verified that the licensee was complying with the requirements of 10 CFR 50.65 (a)(4); NPG-SPP-07.0, Work Control and Outage Management; NPG-SPP-07.1, On Line Work Management; and TI-124, Equipment to Plant Risk Matrix. This activity constituted three inspection samples.

- Risk assessment for emergent failure of the A main control room (MCR) chiller while the A emergency board room chiller was OOS for corrective maintenance
- Risk assessment for emergent failure of the TDAFW pump while ERCW pump E-B was OOS for preventive maintenance
- Risk assessment for the impacts of the Unit 2B CCS flush on the Unit 1B CCS system

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the operability evaluations affecting risk-significant mitigating systems listed below, to assess, as appropriate: 1) the technical adequacy of the evaluations; 2) whether continued system operability was warranted; 3) whether the compensatory measures, if involved, were in place, would work as intended, and were appropriately controlled; 4) where continued operability was considered unjustified, the impact on TS Limiting Conditions for Operation and the risk significance in accordance with the significant determination process (SDP). The inspectors verified that the operability evaluations were performed in accordance with NPG-SPP-03.1, Corrective Action Program. This activity constituted two inspection samples.

- Prompt determination of operability (PDO) for PER 73250 - ABSCE/MCRHZ penetration seals
- PDO for PER 632402-Turbine Overspeed Protection

b. Findings

No findings were identified.

1R18 Plant Modificationsa. Inspection Scope

The inspectors reviewed a permanent plant modification against the requirements of NPG-SPP-09.3, Plant Modifications and Engineering Change Control, and NPG-SPP-09.4, 10 CFR 50.59 Evaluation of Changes, Tests, and Experiments, and verified that the modification did not affect system operability or availability as described by the TS or the UFSAR. In addition, the inspectors determined whether: 1) the installation of the permanent modification was in accordance with the work package; 2) adequate configuration control was in place; 3) procedures and drawings were updated; and 4) post-installation tests verified operability of the affected systems. This activity constituted one inspection sample. Documents reviewed are listed in the Attachment.

- DCN 61571, Revision A, Revise the seismic classification of the Steam Surface Condenser and CCW Piping (WBN-1&2-COND-002-0001, -0007, -0010; WBN-1&2-PIPE-027-H in the turbine building).

b. Findings

No findings were identified.

1R19 Post-Maintenance Testinga. Inspection Scope

The inspectors reviewed the post-maintenance test procedures and/or test activities, (listed below) as appropriate, for selected risk-significant mitigating systems to assess whether: 1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; 2) testing was adequate for the maintenance performed; 3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; 4) test instrumentation had current calibrations, range, and accuracy consistent with the application; 5) tests were performed as written with applicable prerequisites satisfied; 6) jumpers installed or leads lifted were properly controlled; 7) test equipment was removed following testing; and 8) equipment was returned to the status required to perform its safety function. The inspectors verified that these activities were performed in accordance with NPG-SPP-06.9, Testing Programs; NPG-SPP-06.3, Pre-/Post-Maintenance Testing; and NPG-SPP-07.1, On Line Work Management. This activity constituted eight inspection samples.

- WO 115156188, Replacement of 1-XM-46-57, TDAFW pump demand isolator
- WO 114511140, Replace diesel generator engine 1A2 fuel oil priming pump, WBN-1-PMP-018-0059/1-A
- WO 115257354, Repair of TDAFW steam admission valve limit switch
- WO 113722377, Vacuum pump vane replacement for containment building lower compartment area radiation monitor fan B, 1-PMP-090-0106B

- WO 112092077, 1-FCV-67-66A, 1A EDG ERCW supply valve wiring change to auto open on EDG start
- WO 112092077, 2-FCV-67-66A, 2A EDG ERCW supply valve wiring change to auto open on EDG start
- WO 112092141, 1-FCV-67-67B, 1B EDG ERCW supply valve wiring change to auto open on EDG start
- WO 112092141, 2-FCV-67-67B, 2B EDG ERCW supply valve wiring change to auto open on EDG start

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed the surveillance tests and/or reviewed test data of selected risk-significant SSCs listed below, to assess, as appropriate, whether the SSCs met the requirements of the TS; the UFSAR; NPG-SPP-06.9, Testing Programs; NPG-SPP-06.9.2, Surveillance Test Program; and NPG-SPP-09.1, ASME Section XI. The inspectors also determined whether the testing effectively demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions. This activity constituted six inspection samples.

In-Service Test:

- WO 114667657, 1-SI-3-902, Turbine driven auxiliary feedwater pump 1A-S quarterly performance test

RCS Leak Detection

- WO 114435658, 1-SI-61-6, 92 day COT containment building lower compartment particulate rad monitor loop 1-LPR-90-106A

Ice Condenser

- WO 114845325, 1-SI-90-13, Weekly Ice Condenser Intermediate Deck Doors Visual Inspection

Other Surveillances

- WO 115168118, 0-SI-67-901-B, Emergency raw cooling water pump E-B and pump G-B performance test
- WO 114667548, 1-SI-62-901-A, Centrifugal charging pump 1A-A quarterly performance test
- WO 114667524, 0-SI-82-11-A, Monthly diesel generator start and load test DG 1A-A

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b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changesa. Inspection Scope

The NSIR headquarters staff performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures (EPIPs) and the Emergency Plan located under ADAMS accession numbers ML12326A678, ML13025A102, ML13070A025, ML13219A022, and ML13234A356, as listed in the Attachment.

The licensee determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, these revisions are subject to future inspection. Documents reviewed are listed in the Attachment. This inspection activity satisfied one inspection sample for the emergency action level and emergency plan changes on an annual basis.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution.1 Review of Items Entered into the Corrective Action Program (CAP)

As required by Inspection Procedure (IP) 71152, Problem Identification and Resolution, and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by reviewing daily PER summary reports and periodically attending daily PER review meetings.

Findings and Observations

Introduction: A Green, NRC-identified NCV of 10 CFR 50, Appendix B, Criterion XV, Nonconforming Materials, Parts, or Components, was identified for the licensee's failure to ensure that three failed QA/1 pressure switches (BTN027C) returned to power stores were adequately labeled or segregated to prevent their inadvertent use or installation.

Description: During the daily review of the SR package, the inspectors noted that SR 792287 (later PER 794117) identified an attempt to install defective safety-related pressure switches. A follow-up review with the originator indicated that three safety-

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related pressure switches had failed to calibrate for use on safety-related component, B Main Control Room Chiller. They had been returned to the warehouse with SR 781194 dated September 17, 2013, attached, indicating that all three new pressure switches had failed to calibrate. Warehouse personnel placed the switches in a box on a shelf with the SR attached awaiting instructions as to what method was going to be used to disposition these switches. On September 24, 2013, a different warehouse employee was called after normal working hours to come to the plant and give Maintenance personnel these same failed pressure switches for use on a different safety-related component. None of the three failed pressure switches were installed due to again failing the calibration procedure. The inspectors monitored the licensee's handling of the issue in the CAP and determined the licensee did not recognize that they had not properly segregated the failed components as required by 10 CFR 50 Appendix B Criterion XV, Nonconforming Materials, Parts, or Components. Once the inspectors informed the licensee of the non-compliance with Criterion XV, the licensee modified PER 794117 to include briefings of all Material Handlers and site Materials Management concerning the proper disposition of defective and non-conforming materials.

Analysis: The licensee's failure to ensure that three non-conforming safety-related pressure switches were not quarantined in a manner that would prevent issuance of them to Maintenance personnel for use in the plant was a performance deficiency. The inspectors determined that the finding was more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the subject safety-related defective pressure switches could have been installed in another safety-related component. Using IMC 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and IMC 0906, Appendix A, "The Significance Determination Process (SDP) for Findings At Power, dated June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because the pressure switches were not installed into a subsequent component and did not cause a loss of function of a system. The cause of the finding was directly related to the cross-cutting aspect that the licensee defines and effectively communicates expectations regarding procedural compliance and personnel follow procedures in the Work Practices component of the Human Performance area, in that, the licensee failed to provide adequate and timely direction to prevent the pressure switches from being returned to the Maintenance personnel. [H.4(b)]

Enforcement: Title 10 CFR 50, Appendix B, Criterion XV, Nonconforming Materials, Parts, or Components, states, in part, that measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation. These measures shall include, as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations. Contrary to the above requirement, from September 19 until September 27, the licensee failed to control three defective pressure switches which did not conform to requirements in order to prevent their inadvertent use or installation. Immediate corrective action to restore compliance was to segregate the defective switches. The violation was entered into the licensee's CAP as PER 794117. This violation is being treated as an NCV, consistent with the Section 2.3.2 of the NRC Enforcement Policy and will be identified as NCV 05000390/2013005-01, Failure to Adequately Control Non-Conforming or Degraded Equipment.

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.2 Semi-Annual Review to Identify Trends

a. Inspection Scope

As required by IP 71152, Problem Identification and Resolution, the inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on human performance trends, licensee trending efforts, and repetitive equipment and corrective maintenance issues. The inspectors also considered the results of the daily inspector CAP item screening discussed in Section 4OA2.1. The inspectors' review nominally considered the six-month period of July 2013 through December 2013, although some examples expanded beyond those dates when the scope of the trend warranted. This activity constituted one inspection sample.

b. Observations

No findings were identified. Those systems listed in this section of IR 2013003 (ice condenser intermediate deck doors, main control room, 6.9 kV shutdown board room and 480 V board room chillers) as having long-standing reliability issues continue to linger. The licensee has identified that there has been an upward trend in the number of maintenance rule preventable functional failures. The inspectors have engaged the licensee on the long-standing equipment issues a number of times. Also, the inspectors have noted what appears to be an increase in a trend of obtaining incorrect replacement parts or late parts arrival/approval. Most of these issues manifest themselves in delayed maintenance activities. Although, on at least one occasion, the incorrect relay coil type was installed in a non-safety-related service air compressor. Inspectors will continue to monitor these activities.

.3 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors reviewed the operator workaround program to verify that workarounds were identified at an appropriate threshold, were entered into the CAP, and that corrective actions were proposed or implemented. Specifically, the inspectors reviewed the licensee's workaround list and repair schedules, conducted tours, and interviewed operators about required compensatory actions. Additionally, the inspectors looked for undocumented workarounds, reviewed appropriate system health documents, and reviewed PERs related to items on the workaround list. This activity constituted one inspection sample. Documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified.

4OA5 Other Activities.1 (Closed) Unresolved Item (URI) 050000390/2012005-01: Engineering Justification for Design of Control Building Watertight Hatchesa. Inspection Scope

The Watts Bar 1 integrated inspection report 05000390/2012005 identified a URI associated with the design requirement that the two equipment hatches at elevation 708.0 feet in the control building be watertight. Section 3.8.4.1.1 of the UFSAR, and Design Criteria WB-DC-20-21, Miscellaneous Steel Components for Category I Structures, Revision 13, both specified the watertight design requirement for the floor hatches (WBN-1-EQH-271-0008 and WBN-2-EQH-271-0008). In addition, Design Criteria Document WB-DC-40-60, Special Hatches and Manways, Revision 6, Section 3.12.2.2, stated that the hatches must withstand a pressure of 1.3 psi from topside (water to elevation 711.0 feet due to a turbine building (TB) flood resulting from a rupture in the condenser circulating water (CCW) system).

As part of the inspectors' review during the internal flooding inspection, it was noted that Service Request (SR) 427917 (initiated September 5, 2011) reported:

“Water leaking down into the EBR Chiller Room – Water leaking through the equipment hatch (WBN-2-EQH-271-0008) seals and dripping down into the EBR Chiller room and pooling in front of the door. Repair/replace leaking hatch seals and the seals around the coffer dam. The source of water appears to be from rain water entering the TB around the Steam & Feed line penetrations in the NE corner elevation 729 feet, Unit-2 side. Cover/close/or seal these penetrations to prevent rain water from entering TB.”

This SR was closed to WO 112678945, and the WO was cancelled on May 9, 2012. It is unlikely that the hatches are capable of being watertight at a pressure of 1.3 psi from topside (water to elevation 711.0 feet) if they leak rain water from the floor at elevation 708.0 feet. According to UFSAR, Section 3.8.4.1.1, the covers (hatches) will remain closed at all times during plant operation to ensure that essential safety equipment located below elevation 708.0 feet is protected from water resulting from a CCW system rupture in the turbine building.

Following the fourth quarter 2012 internal flooding inspection, the licensee prepared and approved a new calculation, Calculation CDQ0010272013000268, Seismic II/I Evaluation of the Condenser Circulating Water (CCW) Piping and Condenser in the Turbine Building, Rev. 4. This calculation provided the seismic II/I evaluations of the CCW inlet and outlet piping and waterboxes to the condenser, and the condenser anchorage for pressure boundary integrity under safe shutdown earthquake (SSE) loads. The conclusion of the calculation stated that internal flooding of the turbine building after an SSE event due to gross failure of the CCW piping need not be postulated. This calculation was completed in support of Design Change Notice (DCN) 61571. The DCN documents that the turbine building “watertight” equipment hatches at elevation 708.0 feet are no longer required to be maintained watertight. The CCW line

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break is no longer postulated to flood the turbine building to a level of elevation 708.0 feet. This design change (documentation only) applies to both Watts Bar Unit 1 and Unit 2. All affected documents have been revised to reflect removal of the watertight design requirement for the floor hatches (WBN-1-EQH-271-0008 and WBN-2-EQH-271-0008).

Based upon review and verification of this information for the floor hatches (WBN-1-EQH-271-0008 and WBN-2-EQH-271-0008), the inspectors confirmed that current hatch design was adequate, as documented in the calculation and DCN.

b. Findings

No findings were identified.

.2 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings were identified.

4OA6 Meetings, including Exit

On January 16, 2014, the resident inspectors presented the quarterly inspection results to members of the licensee staff. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTARY INFORMATION

Enclosure

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

Y. Aboulfaida, Systems Engineering
G. Arent, Licensing Manager
R. Bankes, Chemistry/Environmental Manager
L. Belvin, QA Manager
G. Boerschig, Plant Manager
M. Bottorff, Operations Superintendent
M. Casner, Site Engineering Director
T. Cleary, Site Vice President
S. Connors, Operations Manager
T. Detchemende, Emergency Preparedness Manager
K. Dietrich, Engineering Programs Manager
D. Gronek, Plant Manager
W. Hooks, Radiation Protection Manager
B. Hunt, Operations Support Superintendent
D. Jacques, Security Manager
T. Morgan, Licensing Engineer
D. Murphy, Maintenance Manager
W. Prevatt, Work Control Manager
R. Stroud, Site Licensing

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000390/2013005-01	NCV	Failure to Adequately Control Non-Conforming or Degraded Equipment. (Section 40A2.1)
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Closed

05000390/2012005-01	URI	Engineering Justification for Design of Control Building Watertight Hatches (Section 40A5)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

AOI-7.01, Maximum Probable Flood
PER 764536
PER 784020
PER 784059
PER 740086

Section 1R04: Equipment Alignment

SOI-3.02, Auxiliary Feedwater System Power Checklist 3.02-1P
SOI-3.02, Auxiliary Feedwater System Valve Checklist 3.02-1V
SOI-72.01, Containment Spray System Power Checklist 72.01-1P
SOI-72.01, Containment Spray System Valve Checklist 72.01-1V
SOI-74-01, Residual Heat Removal System Power Checklist 74.01-3P
SOI-74-01, Residual Heat Removal System Valve Checklist 74.01-3V

Section 1R06: Flood Protection Measures

Updated Final Safety Analysis Report (UFSAR) Sections 3.6A.2, 3.4
WBNOSG4099, Moderate Energy Line Break Flooding Study
WO 114044412 and WO 114404417, 0-SI-77-1, 18 month channel calibration auxiliary building passive sump loop 0-LPL-77-134
WO 114044408 and WO 114044401, 0-SI-77-2, 18 month channel calibration auxiliary building passive sump loop 0-LPL-77-135
AOI-13, Rev. 1, Loss of Essential Raw Cooling Water
AOI-17, Rev. 0, Loss of Component Cooling Water System
PER 339112

Section 1R18: Plant Modifications

DCN 61571
PER 652770
PER 666516
PER 667589
PER 669065
PER 671993
PER 689314
UFSAR Section 3.8.4.1.1
NPG Calculation WBNAPS2-165, Turbine Building Flooding Due to a Break in the Condenser Circulating Water System, Rev. 7
NPG Calculation WCGE023, Review of Flood Protection Requirements for Watertight Doors and Hatches, Rev. 4
Design Criteria Document WB-DC-40-60, Special Hatches and Manways, Rev. 6
Design Criteria Document WB-DC-20-21, Miscellaneous Steel Components for Category I Structures, Rev. 13
WBN Maintenance Instruction MI-270-07, Visual Examination of Control and Auxiliary Building Doors and Hatchways, Rev. 15

Calculation CDQ0010272013000268, Seismic II/I Evaluation of the CCW Piping and Condenser in the Turbine Building, Rev. 4

Procedure 1-AOI-9, Earthquake, Rev. 4

Procedure ARI-166-172, Miscellaneous & HPFP, Rev. 21

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Change Packages

TVA Radiological Emergency Plan, Revision 99 and 100

CECC EPIP-2, "Operations Duty Specialist Procedure for Notification of Unusual Event," Revision 43

CECC EPIP-3, "Operations Duty Specialist Procedure for Alert," Revision 44

CECC EPIP-4, "Operations Duty Specialist Procedure for Site Area Emergency," Revision 45

CECC EPIP-5, "Operations Duty Specialist Procedure for General Emergency," Revision 50

CECC EPIP-7, "CECC Radiological Assessment Staff Procedure for Alert, Site Area Emergency, and General Emergency," Revision 34

TVA Radiological Emergency Plan, Revision 101

Evacuation Time Estimate Study Update

Section 4OA2: Problem Identification and Resolution

WO 115279843-Work around for CVCS dilution flow indicator

LIST OF ACRONYMS

CAP	Corrective Action Program
CCS	component cooling system
CCW	condenser circulating water
CFR	<i>Code of Federal Regulations</i>
CS	containment spray
CY	calendar year
DCN	Design Change Notice
ERCW	essential raw cooling water
IMC	Inspection Manual Chapter
IP	inspection procedure
MCR	main control room
NCV	non-cited violation
NPG-SPP	nuclear power group standard programs and processes
NRC	Nuclear Regulatory Commission
OOS	out of service
PER	problem evaluation report
PDO	prompt determination of operability
RHR	residual heat removal
SDP	Significance Determination Process
SR	service request
SSCs	structures, systems, or components
SSE	safe shutdown earthquake
TDAFW	turbine-driven auxiliary feedwater
TS	technical specifications
TVA	Tennessee Valley Authority
UFSAR	Updated Final Safety Analysis Report
URI	unresolved item
WBN	Watts Bar Nuclear Plant
WO	work order