



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

August 7, 2013

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
05000390/2013003**

Dear Mr. Shea:

On June 30, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Watts Bar Nuclear Plant, Unit 1. The enclosed inspection report documents the inspection results which were discussed on July 17, 2013, with Mr. T. Cleary and other members of the Watts Bar staff.

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

One NRC-identified finding of very low safety significance (Green) was identified. The finding was determined to involve a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest 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 Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Watts Bar 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.

J. Shea

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

Sincerely,

/RA/

Scott M. Shaeffer, Chief
Reactor Projects Branch 6
Division of Reactor Projects

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

Enclosure: NRC Inspection Report 05000390/2013003
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

J. Shea

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cc w/encl:
Mr. T. P. Cleary
Site Vice President
Watts Bar Nuclear Plant
Tennessee Valley Authority
Electronic Mail Distribution

Tennessee Department of Environment &
Conservation
Division of Radiological Health
401 Church Street
Nashville, TN 37243

David H. Gronek
Plant Manager
Watts Bar Nuclear Plant
Tennessee Valley Authority
Electronic Mail Distribution

Ann Harris
341 Swing Loop
Rockwood, TN 37854

Donna K. Guinn
Manager, Site Licensing
Watts Bar Nuclear Plant
Tennessee Valley Authority
Electronic Mail Distribution

Mr. E. D. Schrull
Manager, Corporate Licensing
Watts Bar Nuclear Plant
Tennessee Valley Authority
1101 Market Street, LP 4B-C
Chattanooga, TN 37402-2801

Edward J. Viglucci
Associate General Counsel, Nuclear
Tennessee Valley Authority
Electronic Mail Distribution

Gordon P. Arent
Senior Manager, Licensing WBN Unit 2
Watts Bar Nuclear Plant
Tennessee Valley Authority
Electronic Mail Distribution

County Mayor
Watts Bar Unit 1
P.O. Box 156
Decatur, TN 37322

County Executive
Watts Bar Unit 1
375 Church Street
Suite 215
Dayton, TN 37321

J. Shea

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Letter to Joseph Shea from Scott Shaeffer dated August 7, 2013

SUBJECT: WATTS BAR NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT
05000390/2013003

Distribution w/encl:

C. Evans, RII

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RidsNrrPMWattsBar2 Resource

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 50-390

License No.: NPF-90

Report No.: 05000390/2013003

Licensee: Tennessee Valley Authority (TVA)

Facility: Watts Bar Nuclear Plant, Unit 1

Location: Spring City, TN 37381

Dates: April 1 through June 30, 2013

Inspectors: R. Monk, Senior Resident Inspector
K. Miller, Resident Inspector
M. Coursey, Reactor Inspector (Section 4OA.5)

Approved by: Scott M. Shaeffer, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000390/2013-003; 04/01/2013 – 06/30/2013; Watts Bar, Unit 1; Fire Protection.

The report covered a three-month period of inspection by resident inspectors and announced inspections by regional inspectors. One Green finding was identified which involved a non-cited violation (NCV) of NRC requirements. The significance of most findings is identified by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP); the cross-cutting aspect was determined using IMC 0310, "Components Within the Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. 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

Cornerstone: Mitigating Systems

Green. The inspectors identified a Green NCV of the Unit 1 Operating License Condition 2.F for the licensee's failure to implement procedures required for fire protection program implementation in accordance with the approved Fire Protection Plan (FPP). Specifically, the licensee failed to meet a critical objective on April 30, 2013, during a fire drill as required by TVA-SPP-17.16, Conduct and Evaluation of Fire Drills, Revision 0. The licensee initiated problem evaluation report (PER) 742499 to address the inspector-identified deficiency.

The licensee's failure to implement procedures required for fire protection program implementation in accordance with the approved FPP was a performance deficiency. The inspectors reviewed IMC 0612 and determined that the finding was more than minor because the lack of adequate fire drill performance could negatively affect the fire brigade's capability to combat a fire. Using the Initial Characterization of Findings guidance of IMC 0609, the inspectors determined that the finding was of very low safety significance (Green) because the defense-in-depth attribute of the fire brigade was minimally affected. The fire brigade demonstrated the ability to meet the required time for fire extinguishment for the fire drill scenario, and the finding did not significantly affect the ability of the fire brigade to respond to a fire. The finding was directly related to the cross-cutting aspect in the area of Problem Identification and Resolution because of inadequate oversight and self-assessment of fire operations activities, specifically fire brigade training. (P.3 (a)) (See NCV 05000390/2012003, Section 1R05)

B. Licensee-Identified Violations

None

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REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near 100 percent rated thermal power until June 28 when the unit tripped from 100 percent power due to a fault on the WBN – Roane 500 kV transmission line. The trip resulted from operation of the differential overcurrent relay protection on the 'A' phase main transformer, due to the fault on the WBN – Roane 500 kV transmission line. The unit was in the process of returning to service as the reporting period ended.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

.1 Review of Offsite and Alternate AC Power System Readiness

a. Inspection Scope

Inspectors verified plant features, interviewed control room personnel, and reviewed procedures for operation and continued availability of offsite and alternate AC power systems and determined they were appropriate. Inspectors reviewed the licensee's procedures and interface agreements affecting these areas and the communications protocols between the northeast area dispatcher and the control room to verify that the appropriate information is exchanged when issues arise that could impact the offsite power system and the alternate AC power system. Documents reviewed are listed in the report Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns

a. Inspection Scope

The inspectors conducted three 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. This also includes that redundant trains are returned to service properly. The inspectors reviewed the functional system descriptions, 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

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which could affect operability of the redundant train or backup system. Documents reviewed are listed in the attachment.

- 1A and 1B motor-driven auxiliary feedwater (MDAFW) pumps while turbine-driven auxiliary feedwater (TDAFW) out of service (OOS) for preventive maintenance
- Containment spray pump (CSP) 1A-A while CSP-1B-B OOS for maintenance
- 1B MDAFW pump while 1A OOS for emergent maintenance

.2 Complete System Walkdown

a. Inspection Scope

The inspectors conducted one detailed walkdown/review of the alignment and condition of the ERCW to the diesel generator building component to verify proper equipment alignment and to identify any discrepancies that could impact the function of the system and increase risk. The inspectors utilized licensee procedures, as well as licensing and design documents, when verifying that the system alignment was correct. During the walkdown, the inspectors also verified, as appropriate, that: (1) valves were correctly positioned and did not exhibit leakage that would impact the function(s) of any valve; (2) electrical power was available as required; (3) major portions of the system and components were correctly labeled, cooled, ventilated, etc.; (4) hangers and supports were correctly installed and functional; (5) essential support systems were operational; (6) ancillary equipment or debris did not interfere with system performance; (7) tagging clearances were appropriate; and (8) valves were locked as required by the licensee's locked valve program. Pending design and equipment issues were reviewed to determine if the identified deficiencies significantly impacted the system's functions. Items included in this review were the operator workaround list, the temporary modification list, system health reports, and outstanding maintenance work requests/work orders (WOs). In addition, the inspectors reviewed the licensee's corrective action program (CAP) to ensure that the licensee was identifying equipment alignment problems and to ensure they were properly addressed for resolution.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Fire Protection Tours

a. Inspection Scope

The inspectors conducted tours of the nine 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, NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work). The inspectors evaluated, as appropriate, conditions related to: (1) licensee

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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 nine inspection samples.

- 1A residual heat removal (RHR) pump room
- 1B RHR pump room
- 1A containment spray (CS) pump room
- 1B CS pump room
- TDAFW pump room
- 1A coolant charging pump (CCP) room
- 1B CCP room
- 1A safety injection pump (SIP) room
- 1B SIP room

b. Findings

No findings were identified.

.2 Annual Drill Observations

a. Inspection Scope

On April 30, 2013, the inspectors observed an announced fire drill for a simulated fire on the 729' elevation on the Unit 2 side of the turbine building. The drill was observed to evaluate the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were: (1) specified number of individuals responding; (2) proper wearing of turnout gear; (3) self-contained breathing apparatus available and properly worn and used; (4) control room personnel followed procedures for initiation and verification of response; (5) fire brigade leader exhibited command and had a copy of the pre-fire plan; (6) fire brigade leader maintained control starting at the dress-out area; (7) fire brigade response was timely and followed the appropriate access route; (8) command/control set up near the location and communications were established; (9) proper use and layout of fire hoses; (10) fire area entered in a controlled manner; (11) sufficient firefighting equipment brought to the scene; (12) search for victims and propagation of the fire into other plant areas; (13) utilization of pre-planned strategies; (14) adherence to the pre-planned drill scenario and drill objectives acceptance criteria were met; and (15) firefighting equipment returned to a condition of readiness to respond to an actual fire. This activity constituted one inspection sample. The inspectors observed three additional drills on June 18 and June 23, 2013, as a follow-up to the observation on April 30, 2013, which resulted in a Green NCV.

- Fire drill – Unit 2 turbine building, electro-hydraulic control filter
- Fire drill – Unit 1 turbine building, unit boards
- Fire drills (2) – Unit 2 turbine building, electro-hydraulic control filter

b. Findings

- .1 Introduction: The inspectors identified a Green NCV of the Unit 1 Operating License Condition 2.F for the licensee's failure to implement procedures required for fire protection program implementation in accordance with the approved Fire Protection Plan (FPP). Specifically, the licensee failed to meet a critical objective on April 30, 2013, during a fire drill as required by TVA-SPP-17.16, Conduct and Evaluation of Fire Drills, Revision 0.

Description: On April 30, 2013, with the plant in Mode 1 power operation, the inspectors observed a fire drill in the Unit 2 turbine building. The inspectors observed the fire brigade members donning their protective equipment. During the donning process, the inspectors observed a brigade member donning a self-contained breathing apparatus (SCBA) mask without performing a negative pressure test and a test of the mask exhalation valve as described in HPT063, Respiratory Protection Course, Revision 10. The inspectors discussed this observation with the brigade members and fire operations management immediately following the post-drill critique.

Procedure TVA-SPP-17.16, Conduct and Evaluation of Fire Drills, Revision 0, Section 3.1 C.1., states: "Ensure deficiencies noted during drills or drill failures are entered into the Corrective Action Program." Appendix A of this procedure, Fire Drill Evaluation Report, specifies that critical drill objectives not met will result in a failure and will require remediation. The TVA Fire Drill Evaluation Report issued to document the results of this drill reported that the critical objective that brigade personnel had properly donned their protective clothing and SCBA was met when, in fact, the inspectors observed this objective was not met. Additionally, there was no documentation in the licensee's corrective action program (CAP) that the requirement of proper donning of protective equipment, a Critical Item in the Fire Brigade Actions Evaluation section of the report, was not met. On June 13, 2013, the licensee's quality assurance organization initiated a service request (PER 742499) to address the inspector's concerns with the April 30, 2013, fire drill. On June 23, 2013, the inspectors observed a remediation drill performed with the same fire brigade crew that was observed on April 30, 2013.

Analysis: The inspectors determined that the licensee's failure to implement procedures required for fire protection program implementation in accordance with the approved FPP, Section 9.0, Emergency Response, was a performance deficiency. Specifically, the licensee failed to meet a critical objective on April 30, 2013, during a fire drill as required by TVA-SPP-17.16, Conduct and Evaluation of Fire Drills, Revision 0. The performance deficiency was determined to be more than minor because it affected the protection against external events attribute (i.e., fire) of the Mitigating Systems cornerstone, in that it affects the objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the lack of adequate fire drill performance could negatively affect the fire brigade's capability to combat a fire. Findings associated with performance of the fire brigade are not evaluated using IMC 0609, Attachment F, Fire Protection Significance Determination Process, and require NRC management review using Appendix M, Significance Determination Process Using Qualitative Criteria, as described in NRC IMC 0609.04, Phase 1 - Initial Screening and Characterization of

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Findings. The NRC concluded that the finding was of very low safety significance (Green) because the defense-in-depth attribute of the fire brigade was minimally affected. The fire brigade demonstrated the ability to meet the required time for fire extinguishment for the fire drill scenario, and the finding did not significantly affect the ability of the fire brigade to respond to a fire. The finding was directly related to the cross-cutting aspect in the area of Problem Identification and Resolution because of inadequate oversight and self-assessment of fire operations activities, specifically fire brigade training. (P.3 (a))

Enforcement: Watts Bar Unit 1 Operating License Condition 2.F requires that the licensee implement and maintain in effect all provisions of the approved FPP as described in the Fire Protection Report (FPR) for the facility, as approved in Supplements 18 and 19 of the safety evaluation report (NUREG-0847). The FPP, Section 9.0, Emergency Response, requires that the licensee conduct fire drills as part of the fire brigade training and qualification program.

Contrary to the above, the licensee failed to implement and maintain in effect all provisions of the approved fire protection program as described in the FPR for the facility, as approved in Supplements 18 and 19 of the safety evaluation report (NUREG-0847). Specifically, the licensee failed to implement the requirements of the FPP, Section 9.0, Emergency Response, by failing to meet a critical objective on April 30, 2013, during a fire drill as required by TVA-SPP-17.16, Conduct and Evaluation of Fire Drills, Revision 0. Because this finding was of low safety significance (Green) and was entered into the licensee's CAP as PER 742499, this violation is being treated as a non-cited violation (NCV), consistent with the NRC Enforcement Policy and is identified as NCV 05000390/2013003-01, Failure to Meet a Critical Objective During a Drill in Accordance with the Approved Fire Protection Plan.

1R06 Flood Protection Measures

.1 Diesel Building

a. Inspection Scope

The inspectors reviewed internal flood protection measures for the emergency diesel generator building. Flood protection features were examined to verify that they were installed and maintained consistent with the plant design basis. The inspectors also reviewed the licensee flooding study calculation for determining maximum flood level in all building rooms for piping failures of the essential raw cooling water (ERCW) system and confirmed that flood mitigation features such as drains and curbs were not degraded in such a manner as to adversely impact the conclusions of the study. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2 Cables in Underground Manholes

a. Inspection Scope

Inspectors directly observed four underground bunker/manholes 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. Below are the bunker/manholes that were inspected.

- Manhole 18
- Manhole 24
- Manhole 25
- Manhole 27

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification

a. Inspection Scope

Routine Operator Regualification Review: On May 21, 2013, the inspectors observed the simulator evaluations for Operations Crew 2 per 3-OT-SRT-AOI-6-1, Rev. 1, Loss of LCV-106 and Small RCS Leak. The plant conditions led to an Alert level classification. Performance indicator credit was taken.

The inspectors specifically evaluated the following attributes related to the operating crews' 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.

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.

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two 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).

- Review of shutdown board room (SDBR) train A heating, ventilation, and air conditioning (HVAC) a(1) plan
- Control air system a(1) plan second revision

b. Findings

No findings were identified.

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1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, for the six 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 inspection satisfied five inspection samples for Maintenance Risk Assessment and Emergent Work Control.

- Emergent failure of train A auxiliary control air system risk assessment
- Emergent issue with excessive seal leakage on 1B containment spray pump, declared inoperable risk assessment
- Emergent failure of 1-LCV-3-156 risk assessment
- Emergent failure of train A auxiliary control air system risk assessment (2nd occurrence)
- Risk assessment for extended outage (beyond technical specifications) for 1B CSP
- Emergent failure of train A main control room (MCR) chiller

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed six 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 (LCOs) 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.

- Prompt determination of operability (PDO), Revision 1, for PER 667589, Inadequate flood barrier walls used around turbine building elevation 708' hatches to control building when hatches were opened
- PDO for PER 703444, Harmonic distortion of AC wave form on class 1E distribution busses affects on degraded grid relay rest

- PDO for PER 709191, Turbine-driven auxiliary feedwater pump 1-PMP-3-1A-S degraded performance during 1-SI-3-902
- PDO for PER 710841, Turbine-driven auxiliary feedwater pump 1-PMP-3-1A-S MCR speed indicator (1-SI-46-56A) indicating greater than actual speed
- PDO for PER 720012, Review of WBN diesel generator possible unanalyzed condition for steady state frequency
- Functional evaluation (FE) for PER 652770 Revision 1, SCCW isolation to the turbine building due to seismic concerns

b. Findings

No findings were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed one 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 effected systems. Documents reviewed are listed in the Attachment.

- Design Change Notice (DCN) 60571, Revision A, Replace motor and/or fan due to obsolescence and recent brush failures – (TDAFW pump room direct current (DC) fan WBN-1-MTR-030-0214-S)

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed eight 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;

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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.

- WO 113330485, Replacement and testing of alarm relays per PM 600105703 for WBN-2-GEN-082-0002B-B, diesel generator 2B-B
- WO 114126532, Inspection of diesel generator 2B-B, perform MI 82.008 for WBN-2-GEN-082-0002B-B diesel generator 2B-B
- WO 114097199, Inspection of diesel generator 2B-B, perform MI 82.003 for WBN-2-GEN-082-0002B-B diesel generator 2B-B
- WO 114089479, Install new motor for turbine driven auxiliary feedwater pump room, direct current (DC) fan WBN-1-MTR-030-214-S
- WO 114769106, Perform diagnostic verification on valve WBN-1-LCV-003-0156-A
- WO 114769250, rebuild valve WBN-1-LCV-003-0156-A
- WO 114770338, replace 1-POS-3-156, WBN-1-LCV-003-0156-A (SG 2 level control)
- WO 113818175, Replace mechanical seal – WBN-1-PMP-072-0010-B, containment spray pump 1B -B

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed five 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.

In-Service Test:

- WO 114223343, 1-SI-63-901-B, Safety injection pump 1B-B quarterly performance test
- WO 114223534, 1-SI-3-902, Turbine driven auxiliary feedwater pump 1A-S quarterly performance test (1-PMP-3-1A-S)
- WO 114635637, 1-SI-3-902, Turbine driven auxiliary feedwater pump 1A-S quarterly performance test (1-PMP-3-1A-S)

Other Surveillances

- WO 114258618, 0-SI-82-20-B, 184-day fast start and load test DG 2B-B
- WO 114291581, 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

1EP6 Drill Evaluationa. Inspection Scope

On June 26, 2013, the inspectors observed a licensee-evaluated emergency preparedness drill, listed below, to verify that the emergency response organization was properly classifying the event in accordance with emergency plan implementing procedure (EPIP)-1, Emergency Plan Classification Flowchart, and making accurate and timely notifications and protective action recommendations in accordance with EPIP-2, Notification of Unusual Event; EPIP-3, Alert; EPIP-4, Site Area Emergency; EPIP-5, General Emergency; and the Radiological Emergency Plan. In addition, the inspectors verified that licensee evaluators were identifying deficiencies and properly dispositioning performance against the performance indicator criteria in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline. Elements of the scenario are listed below.

- An earthquake occurs of a magnitude 4.3 on the Richter scale with the epicenter at Sweetwater TN, which results in meeting the conditions for the ALERT based on Emergency Action Level (EAL) 5.1 instrumentation.
- The plant experiences an after-shock. The loop 3 reactor coolant pump (RCP) rotor locks and a large break loss of coolant accident (LOCA) occurs. The reactor trips and when sub-cooling is lost, conditions exist for EAL 1.2.2L reactor coolant system (RCS) leak resulting in loss of subcooling.
- A break occurs on the train A RHR injection line outside containment which results in General Emergency based on EAL 1.3.4P. Unexplained VALID increase in area or ventilation RAD monitors in areas adjacent to CNTMT (with LOCA in progress).
- Appropriate protective action recommendations (PARS) made.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

The inspectors sampled licensee submittals for the two PIs listed below. To verify the accuracy of the PI data reported during the periods listed, PI definitions and guidance contained in NEI 99-02, Regulatory Assessment Indicator Guideline, Revision 6, were used to verify the basis in reporting for each data element.

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- RCS leakage
- Safety system functional failures

b. Findings

No findings were identified.

4OA2 Identification & Resolution of Problems

.1 Review of Items Entered into the CAP

As required by Inspection Procedure (IP) 71152, Identification and Resolution of Problems, 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. Documents reviewed are listed in the Attachment.

.2 Semi-Annual Review to Identify Trends

a. Inspection Scope

As required by IP 71152, Identification and Resolution of Problems, 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 January 2013 through June 2013, although some examples expanded beyond those dates when the scope of the trend warranted.

b. Observations

No findings were identified. However, the inspectors noted a number of long standing equipment issues that continue to exist for a variety of reasons. The ice condenser continues a summer trend of ice accumulation and freezing of the intermediate deck doors. Safety related chiller units, main control room, 6.9 kV shutdown board room (SDBR) and 480 V board room, continue to have very low reliability. The service air system which is nonsafety-related but risk significant along with the auxiliary air system, which is safety related, continue to demonstrate low compressor and air dryer reliability. Some of these systems have been on the Maintenance Rule a(1) list since 2009 and 2010; for example, the service air system and the ice condenser system, respectively. Others have been on and off the a(1) list a number of times; for example, the various chiller units. The service air compressors and chiller units are obsolete and have been designated for replacement, pending delays. The ice condenser has not had the long term, continued focus to resolve its ice accumulation issue although recent repairs have been made to suspect system leaks which have contributed to this problem. These

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issues have not caused any plant level impacts to date. However, these systems are a significant drain of resources to maintain them; for example twice per day containment entries to maintain the intermediate deck doors clear of ice for this and the past three summers.

.3 Annual Sample: Corrective Actions Associated with NCV 05000390/2011003-04, Failure to Translate Moderate Energy Line Break Study Output into a Plant Procedure

a. Inspection Scope

The inspectors reviewed the CAP, PER 341568, and the actions completed for NCV 05000390/2011003-04, Failure to Translate Moderate Energy Line Break Study Output into a Plant Procedure. Documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings were identified.

4OA3 Event Follow-up

Unit 1 Reactor Trip – June 28, 2013

a. Inspection Scope

The inspectors responded to a Unit 1 automatic reactor and turbine trip that occurred on June 28, 2013. The inspectors discussed the preliminary cause of the scram with licensee management, operations, and engineering. The inspectors reviewed unit parameters and system response to verify that equipment responded to the scram as designed. The inspectors also reviewed parts of the licensee's post-scram review. The inspectors reviewed the initial licensee event notification to verify that it met regulatory requirements.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 Temporary Instruction (TI) 2515/182: Review of the Implementation of the Industry Initiative to Control Degradation of Underground Piping and Tanks, Phase 1

a. Inspection Scope

Leakage from buried and underground pipes has resulted in ground water contamination incidents with associated heightened NRC and public interest. The industry issued a guidance document, Nuclear Energy Institute (NEI) 09-14, "Guideline for the Management of Buried Piping Integrity," Agencywide Documents Access and

Management System (ADAMS Accession No. ML1030901420), to describe the goals and required actions (commitments made by the licensee) resulting from this underground piping and tank initiative.

On December 31, 2010, NEI issued Revision 1 to NEI 09-14, "Guidance for the Management of Underground Piping and Tank Integrity," (ADAMS Accession No. ML110700122), with an expanded scope of components which included underground piping that was not in direct contact with the soil and underground tanks. On November 17, 2011, the NRC issued TI 2515/182, "Review of the Industry Initiative to Control Degradation of Underground Piping and Tanks," to gather information related to the industry's implementation of this initiative.

The inspectors reviewed the licensee's programs for buried pipe and underground piping and tanks in accordance with TI 2515/182 to determine if the program attributes and completion dates identified in Sections 3.3A and 3.3B of NEI 09-14, Revision 1, were contained in the licensee's program and implementing procedures. For the buried pipe and underground piping program attributes, with completion dates that had passed, the inspectors reviewed records to determine if the attribute was, in fact, complete and to determine if the attribute was accomplished in a manner which reflected good or poor practices in program management.

b. Findings

The licensee's buried piping and underground piping and tanks program was inspected in accordance with paragraphs 3.01.a through 3.01.c of TI 2515/182 and was found to meet all applicable aspects of NEI 09-14, Revision 1, as set forth in Table 1 of the TI.

Based upon the scope of the review described above, Phase 1 of TI 2515/182 was complete.

No findings were identified.

4OA6 Meetings, including Exit

On July 17, 2013, the resident inspectors presented the quarterly inspection results to Mr. Timothy Cleary, Site Vice President, and other members of the licensee staff. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

An exit meeting was conducted by phone on June 6, 2013, with Keith Dietrich, Engineering Programs Manager, and other members of the licensee staff. The inspectors verified that all proprietary information was returned to the licensee.

4OA7 Licensee-Identified Violations

None

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Bankes, Chemistry/Environmental Manager
M. Casner, Site Engineering Director
T. Cleary, Site Vice President
S. Connors, Operations Manager
T. Detchemende, Emergency Preparedness Manager
K. Dietrich, Engineering Programs Manager
R. Dittmer, Operations Superintendent
D. Gronek, Plant Manager
D. Guinn, Licensing 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

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Opened and Closed

05000390/2013003-01	NCV	Failure to meet a critical drill objective in accordance with the approved Fire Protection Plan (Section 1R05)
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Discussed

2515/182	TI	Review of the implementation of the industry initiative to control degradation of underground piping and tanks, Phase 1 (Section 4OA5)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

TVA-SPP-10.010, NREC Standard Compliance Processes Shared by TVA's Nuclear Power and Energy Delivery Organizations
TRO-TO-SOP-30.130, Watts Bar Nuclear Plant (WBN) Grid Operating Guide
NPG-SPP-07.1.6, On Line Work Control Power System Alerts / Offsite Power
NPG-SPP-07.1.7, Station Seasonal Readiness
TI-12.15, 161 kV Offsite Power Requirements
TRO-EA-SOP-30.403, Nuclear Offsite Power Disqualification Notification and Call-Out Procedure
TRO-SPP-30.006, Supervisory Control Data Acquisition (SCADA) and Energy Management System (EMS) Impairment Procedure

Section 1R04: Equipment Alignment

SOI-72.01, Containment Spray System Power Checklist 72.01-1P
SOI-72.01, Containment Spray System Valve Checklist 72.01-1V
SOI-3.02, Auxiliary Feedwater System Power Checklist 3.02-1P
SOI-3.02, Auxiliary Feedwater System Valve Checklist 3.02-1V

Section 1R06: Flood Protection Measures

TVA Calculation WBNOSG4099, Moderate Energy Line Break (MELB) Flooding Study
TVA Calculation WBNOSG4100, System Isolation for MELB Flooding
TVA Calculation WBNOSG4101, MELB Safe Shutdown Logic Diagram and Equipment List
WB-DC-40-31.51, Evaluating the Effects of Flooding Due To Moderate Energy Pipe Failures Inside and Outside Containment
N3-82-4002, Standby Diesel Generator System Description
TVA Drawing 47E235-29, Environmental Data, Environment Mild, Elevation 742.0
WB-DC-40-31.51 Evaluating The Effects Of Flooding Due To Moderate Energy Pipe Failures Inside And Outside Containment
TVA Calculation 3C38-1086-001 Moderate Energy Line Break Flooding Study, Appendices D, H, J
TVAN System Description Document Standby Diesel Generator System N3-82-4002
WBNP Drawing 16W418-2 R11 Diesel Generator Building
WBNP Drawing SK-D-7468 Type SA-600 Motor Control Center
WBNP Drawing M-17W 585-1 R22 Drains and Embedded Piping
WBNP Drawing M-17W 585-3 R22 Drains and Embedded Piping

Section 1R18: Plant Modifications

DCN 60571
PIC 61421
PER 630119
Calculation WBNEEBMSTI110004, Rev. 071, 125V DC Voltage Analysis
Calculation EPMPKB012191, Rev. 009, HVAC Cooling Load and Room Temperature
Calculation: Turbine Driven Aux Feedwater Pump Room
Calculation EDQ00023620070003, Rev. 021, 125V DC Vital Battery System Analysis
Calculation WBNEEBMSTI070005, Rev. 067, 125V DC Protection and Coordination Calculation

WO 114303230
 WO 114089479
 WO 114689635

Section 40A2: Identification & Resolution of Problems

EDC 57926-A-Provide Guidance for Mitigation of MELB in the Unisolable Portion of the RWST Discharge Header
 WBN OSG4099- Moderate Energy Line Break (MELB) Flooding Study, Appendix I and I34
 0-SOI-78.01, Spent Fuel Pool Cooling And Cleaning System
 ARI-124-130, MISC (panel 127D)

Section 40A5: Other Activities

Corrective Action Documents Reviewed

PER 530864, WBN-ENG-I-12-BM18 Buried Piping Benchmarking Report (LO-1), dated 5/3/2012
 PER 280893, Underground piping leak, dated 11/5/2010
 PER 242277, Underground piping excavation, dated 7/31/2010

Procedure

TI-32.015, Underground Piping and Tanks Integrity Program, Rev. 06
 NPG-SPP-09.15, Underground Piping and Tanks Integrity Program (UPTI), Rev. 02

Other Documents

EPRI TR 1016456, Recommendations for an Effective Program to Control the Degradation of Buried Pipe
 Nuclear Energy Institute (NEI) 09-14, Guideline for the Management of Buried Piping Integrity, Rev. 3
 CRP-ENG-F-12-002, TVA Fleet-wide Underground Piping and Tanks Integrity Program (UPTI) Focused Self-Assessment Report, dated 3/30/2012
 Buried Piping Program Health Report for 7/1/2012-12/31/2012
 WBN-ENG-F-09-003, Buried Piping Assessment, dated 7/7/09
 WBN UPTI Inspection Plan, Rev. 03
 CSI Risk Ranking Database dated May 31, 2013
 Work Order # 111160396, OA- Buried Piping Inspections
 CSI Report No. 0803.103-01, Tennessee Valley Authority Watts Bar Nuclear Plant Buried Piping Integrity Program Basis Document, Revision 1
 Work Order # 112592854, System 26 A-train header has reduced pipe wall
 Work Order # 112689386, Replace the HPFP "A" Header in the yard per DCN# TBD
 Work Order # 111234694, Repair leaking HPFP "A" header piping
 Work Order # 111632626, Repair/Replace a portion of the HPFP "A" header piping
 Work Order # 113109716, Underground Piping and Tank Visual Inspection of WBN-0-MISC-000 Waste Condensate buried piping
 Work Order # 112833366, Underground Piping and Tank Visual Inspection of WBN-0-MISC-000 SGBD buried piping
 Work Order # 113109692, Underground Piping and Tank Visual Inspection of WBN-0-PIPE-077 Radwaste buried piping

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System (NRC)
CAP	Corrective Action Program
CFR	<i>Code of Federal Regulations</i>
CSP	containment spray pump
DCN	Design Change Notice
FE	functional evaluation
FSAR	Final Safety Analysis Report
HVAC	heating, ventilation, and air conditioning
IMC	Inspection Manual Chapter
IP	inspection procedure
LCO	limiting condition of operation
LER	licensee event report
MCR	main control room
MDAFW	motor-driven auxiliary feedwater
NEI	Nuclear Energy Institute
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
PI	performance indicator
POE	past operability evaluation
PMT	post maintenance test
RCS	reactor coolant system
RHR	residual heat removal
SDBR	shutdown board room
SDP	Significance Determination Process
SIP	safety injection pump
SSCs	structures, systems, or components
TDAFW	turbine-driven auxiliary feedwater
TS	technical specifications
TVA	Tennessee Valley Authority
UFSAR	Updated Final Safety Analysis Report
WBN	Watts Bar Nuclear Plant
WO	work order