UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

February 5, 2019

EA 18-182

Mr. Joseph W. Shea, Vice President
Nuclear Regulatory Affairs and
Support Services
Tennessee Valley Authority
1101 Market Street, LP 4A
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 05000390/2018004 AND 05000391/2018004

Dear Mr. Shea:

On December 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Watts Bar Nuclear Plant, Units 1 and 2. On January 24, 2019, the NRC inspectors discussed the results of this inspection with Mr. Tom Marshall and other members of your staff. The results of this inspection are documented in the enclosed report.

The enclosed inspection report discusses one finding for which the NRC has not yet reached a preliminary significance determination. As described in Section 71114.04 of the enclosed report, a finding was identified for Tennessee Valley Authority's (TVA) failure to ensure accurate radiation monitor threshold values are used for emergency classifications. This resulted in potential adverse impacts because the licensee's ability to declare a NOUE, Alert, SAE, and GE based on effluent radiation monitor values was degraded in that event classification using these radiation monitors could be delayed, as well as their ability to provide technically accurate estimates of projected offsite doses. This condition did not present an immediate safety concern because the licensee updated the affected procedures with correct values on September 17, 2018. The NRC will inform you in a separate correspondence when the preliminary significance has been determined. We intend to complete and issue our final safety significance determination within 90 days from the date of this letter. The NRC's significance determination process (SDP) is designed to encourage an open dialogue between your staff and the NRC; however, the dialogue should not affect the timeliness of our final determination. Because the NRC has not made a final determination in this matter, no notice of violation is being issued for this inspection finding at this time.

The finding is also an apparent violation of NRC requirements and is being considered for escalated enforcement action in accordance with the Enforcement Policy, which appears on the NRC's Web site at http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html.

NRC inspectors documented four findings of very low safety significance (Green) in this report.

These findings involved a violation of NRC requirements. The NRC is treating these as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

Further, inspectors documented two licensee-identified violations which were determined to be of very low safety significance in this report. The NRC is treating these violations as NCVs consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, 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, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; and the NRC resident inspector at the Watts Bar Nuclear Plant.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with 10 CFR 2.390, “Public Inspections, Exemptions, Requests for Withholding.”

Sincerely,

/RA/

Anthony Masters, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos.: 50-390, 50-391
License Nos.: NPF-90, 96

Enclosure:
IR 05000390/2018004, 05000391/2018004

cc: Distribution via ListServ

SUBJECT: WATTS BAR NUCLEAR PLANT – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 05000390/2018004 AND 05000391/2018004 - February 5, 2019

DISTRIBUTION:
M. Kowal, RII
K. Sloan, RII
OEMAIL
RIDSNRRDIRS
PUBLIC
RidsNrrPMWattsBarResource

ADAMS ACCESSION No. ML19036A682

OFFICE	RII/DRP	RII/DRP	RII/DRP	RII/DRP	RII/DRP	RII/DRS	RII/DRS
NAME	SNinh	WDeschain	JNadel	JHamman	DOrr	AGoldau	SSanchez
DATE	2/ 01/2019	1/31/2019	1/30/2019	1/30/2019	1/31/2019	1/30/2019	1/31/2019

OFFICE	RII/DRS	RII/DRS	RII/DRS	RII/DRS	RII/DCO	RII/DRP	
NAME	CFontana	EGuthrie for/JWalker	P. Capehart	DDumbacher	RMathis	AMasters	
DATE	1/31/2019	1/30/2019	1/30/2019	1/31/2019	2/01/2019	2/05/2019	

U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number(s):	50-390, 50-391
License Number(s):	NPF-90, NPF-96
Report Number(s):	05000390/2018004, 05000391/2018004
Enterprise Identifier:	I-2018-004-0037
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Watts Bar Nuclear Plant, Units 1 and 2
Location:	Spring City, TN 37381
Inspection Dates:	October 1 to December 31, 2018
Inspectors:	J. Nadel, Senior Resident Inspector J. Hamman, Resident Inspector R. Mathis, Resident Inspector D. Orr, Senior Resident Inspector W. Deschaine, Resident Inspector A. Goldau, Operations Engineer S. Sanchez, Senior Emergency Preparedness Inspector C. Fontana, Emergency Preparedness Inspector J. Walker, Emergency Preparedness Inspector P. Capehart, Senior Operations Engineer D. Dumbacher, Senior Operations Engineer
Approved By:	Anthony Masters, Chief Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee's performance by conducting a quarterly integrated inspection at Watts Bar Nuclear Plant, Units 1 and 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information. NRC and self-revealed findings, violations, and additional items are summarized in the table below. Licensee-identified non-cited violations are documented in report sections 71111.05AQ.

List of Findings and Violations

Failure to Follow Work Order Steps Results in Equipment Unavailability			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	GREEN NCV 05000390/391/2018004-01 Closed	[H.11] – Challenge the Unknown	71111.13 – Maintenance Risk
A self-revealed Green finding and associated Non-cited Violation (NCV) of Technical Specification 5.7.1, "Procedures," was identified when the licensee failed to follow the requirements of work order (WO) 118973001. Specifically, WO step 5.15 requires an engineering inspection of the completed installation of a seismic panel on 120 VAC vital power board I-1 and a determination if it is acceptable or not. The engineer determined the installation was not acceptable, but the panel cover was repositioned without completing the step to indicate the unacceptable condition.			

Failure to Follow Procedure Results in Unit 1 Turbine Driven Auxiliary Feedwater Pump Inoperability			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	GREEN NCV 5000390/2018004-02 Closed	[H.9] – Training	71111.15 – Operability Determinations
A self-revealed Green finding and associated NCV of Technical Specification 5.7.1.a, "Procedures," was identified when the licensee failed to install measuring and test equipment (M&TE) in accordance with surveillance instruction 1-SI-3-923-S, "Auxiliary Feedwater Pump 1A-S Comprehensive Pump Test." Specifically, the licensee failed to install the recirculation line differential pressure test gauge in the proper location, resulting in the failure of that gauge and subsequent inoperability of the Unit 1 turbine driven auxiliary feedwater pump.			

Failure to Follow Temporary Equipment Control Procedure Results in Multiple Inoperable Ice Condenser Intermediate Deck Doors			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000390/2018004-04 Closed	[H.12] – Avoid Complacency	71120 – Refueling and Other Outage Activities
A NRC-identified Green finding and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for the failure to follow the TVA temporary equipment control procedure. Specifically, on November 28, 2018, while performing			

a containment closure inspection, inspectors identified an A-frame ladder unattended and blocking at least four ice condenser intermediate deck doors in the upper ice condenser of Unit 1. This is not in accordance with TVA procedure NPG-SPP-09.17, Temporary Equipment Control, Revision 8, which requires temporary equipment that is left unattended to meet certain criteria for stability.

Failure to Maintain the Effectiveness of the Emergency Plan and a Standard Emergency Classification Scheme Which Included Facility Effluent Parameters			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Emergency Preparedness	TBD Apparent Violation (AV) 05000390,391/2018004-05 Open EA 18-182	[H.3] – Human Performance, Change Management	71114.04 – Emergency Action Level and Emergency Plan Changes
An Apparent Violation (AV) of 10 CFR Part 50.47(b)(4), (b)(9), and Part 50 Appendix E, for failure to maintain the effectiveness of the emergency plan and a standard emergency classification scheme which included facility effluent parameters. Specifically, since Unit 1 and Unit 2 initial plant startup until September 17, 2018, the licensee failed to maintain a standard emergency classification scheme which included facility effluent parameters in that effluent parameter classification threshold values for EALs RG1, RS1, RA1, and RU1 were significantly non-conservative. These radiation monitors were being relied upon to continuously assess the impact of the release of radioactive materials, provide criteria for determining the need for notification and participation of local and State agencies, and provide technically accurate dose assessments.			

Failure to Follow System Status Control Procedure Results in Unit 1 Trip			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000390/2018004-06 Closed	[H.13] – Consistent Process	71153 – Follow-up of Events and Notices of Enforcement Discretion
A self-revealed Green finding and associated NCV of Technical Specification 5.7.1, "Procedures," was identified when the licensee failed to follow the requirements of procedure NPG-SPP-10.1, System Status Control, Revision 9. Specifically, procedural requirements were not followed when restoring the normal feeder breaker 1-3 for reactor coolant pump (RCP) 3. As a result, the RCP failed to transfer to the normal 1-3 breaker from the alternate feeder breaker because the normal breaker was racked down. This resulted in a manual reactor trip.			

Additional Tracking Items

Type	Issue number	Title	Report Section	Status
LER	05000391/2018003-00	Reactor Trip Due to Main Generator Differential Relay Actuation	71153	Closed
LER	05000391/2018005-00	Automatic Reactor Trip Due to Turbine Control System Card Failure and Throttle Valve Closure	71153	Closed
LER	05000390/2018005-00	Manual Reactor Trip Due to Failure of Reactor Coolant Pump to Transfer to Normal Power	71153	Closed

PLANT STATUS

Unit 1 started the inspection period shutdown with refueling outage U1R15 in progress. The unit started up on October 26, 2018. On October 27, 2018 the unit had reached 20 percent power when operators inserted a manual trip due to the failure of reactor coolant pump #3 to transfer power between the alternate and normal bus. The unit restarted from this forced outage on October 30, 2018 and reached rated thermal power (RTP) on November 5, 2018. The unit remained at RTP for the remainder of the inspection period.

Unit 2 started the inspection period at or near RTP and remained there throughout the rest of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved Ips with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program – Operations Phase." The inspectors performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 – Adverse Weather Protection

External Flooding (1 Sample)

The inspectors evaluated readiness to cope with external flooding on November 11, 2018.

71111.04 – Equipment Alignment

Partial Walkdown (3 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

(1) B train emergency core cooling system prior to mode 3 entry, on October 22, 2018
(2) A train safety injection system partial walkdown during Mode 3 of U1R15 outage on October 24, 2018
(3) A and B trains of Unit 1 residual heat removal to verify required alignment for the emergency core cooling mode in mode 1 during forced outage 109 on October 31, 2018

71111.05AQ – Fire Protection Annual/Quarterly

Quarterly Inspection (6 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

(1) Unit 1 lower containment on October 18, 2018
(2) Control building, elevation 729' and 741', cable spreading room, on November 21, 2018
(3) Auxiliary building, elevation 729', on November 20, 2018
(4) Room 713.0-A1, Auxiliary building 713' corridor, on December 12, 2018
(5) Unit 1 pipe chase, Auxiliary building 713', on December 12, 2018
(6) Unit 2 pipe chase, Auxiliary building 713', on December 12, 2018

71111.11 – Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

On November 27, 2018, inspectors observed simulator exam evaluation per scenario 3-OT-SRE-1014 Revision 9, rod motion while rod control was in manual requiring a reactor trip with subsequent loss of coolant accident.

Operator Performance (1 Sample)

The inspectors observed and evaluated the operator's response to a manual trip of Unit 1 on October 27, 2018.

Operator Requalification Program (1 Sample)

The inspectors evaluated the operator requalification program from November 13, 2018 to November 17, 2018.

Operator Exams (1 Sample)
On December 14, 2018, 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 "Operator's Licenses." The inspectors 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." These results were compared to the thresholds established in Section 3.02, "Requalification Examination Results," of IP 71111.11.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

(1) CR 142963, Main control room chiller B not cooling due to expansion valve failure
(2) CR 1335791, Failure of auxiliary building gas treatment damper 2-FCO-30-108

71111.13 - Maintenance Risk Assessments and Emergent Work Control (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

(1) Risk assessment for October 15, 2018, with Unit 1 in Yellow Risk due to reduced decay heat removal capability from low steam generator water inventory
(2) Risk assessment for October 22, 2018, for Unit 1 mode change from mode 5 to mode 4 with a qualitative risk assessment for 1-FI-3-170C, Steam generator #4 auxiliary control room flow indication, inoperable
(3) Risk assessment for work week 1105 with the turbine-driven auxiliary feedwater pump out of service due to water intrusion into the governor valve enclosure and 1B emergency diesel generator inoperability due to relay failure
(4) Risk Assessment/Defense-in-Depth for October 29, 2018, during Unit 1 forced outage in preparation for going from mode 3 to mode 2 following a reactor trip that occurred on October 27, 2018 as a result of reactor coolant pump 3 failing to transfer from the alternate to the normal power supply

71111.15 - Operability Determinations and Functionality Assessments (3 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) Prompt determination of operability (PDO) for CR 1455595, Impact of over-torqueing jam nuts on power-operated relief valves for the Unit 1 pressurizer, on October 31, 2018
(2) Operability for CR 1463113, Water intrusion into the enclosure for the turbine driven auxiliary feedwater pump governor valve enclosure
(3) Engineering work request EWR-18-MEC-074-350 for CR 1459406, Unit 1 residual heat removal valve vault manway left open in mode 4 with no compensatory measures in place

71111.18 - Plant Modifications (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

(1) Permanent modification design change notice (DCN) 60696A, replacement of pressurizer power operated relief valves due to current valves being obsolete, on November 29, 2018

71111.19 - Post Maintenance Testing (9 Samples)

The inspectors evaluated the following post maintenance tests:

(1) WO 115912875, MI-57.250, U1C13 - 18 month 10% MCCB Testing Following Replacement of 1-BKR-235-1/36, on October 1, 2018
(2) WO 114521906, 1-SI-68-904-B, Reactor Coolant System Valve Position Indication Verification (Train B), following replacement of 1-PCV-68-334-B, on October 12, 2018

(3) WO 114522013, 1-SI-68-904-A, Reactor Coolant System Valve Position Indication Verification (Train A), following replacement of 1-PCV-68-340A, on October 12, 2018
(4) WO 119867319, 1-SI-3-925-B, Auxiliary Feedwater Pump 1B-B Preservice Pump Test, following installation of cavitating venturi, on October 16, 2018
(5) WO 119867314, 1-SI-3-925-A, Auxiliary Feedwater Pump 1A-A Preservice Pump Test, following installation of cavitating venturi, on October 13, 2018
(6) WO 119994029, 1-SOI-3.02, A-S Auxiliary feedwater pump run as PMT for water intrusion into governor valve position controller enclosure on November 5, 2018
(7) WO 119997317, 0-SOI-82.02, Diesel Generator (DG) 1B-B, Rev. 10, after 1B-B DG control relay replacement, on November 7, 2018
(8) WO 119065075, 1-SI-0-906, Primary Pressure Boundary Isolation Valve Leak Test Safety Injection System Secondary Check Valves following replacement of 1-CKV-63-555, Cold Leg 3 Safety Injection Check Valve, on October 23, 2018
(9) WO 119205778, 0-TI-5.002, Flow testing of Unit 2 turbine driven auxiliary feedwater (TDAFW) pump room direct current (DC) exhaust fan following fan motor replacement, on December 18, 2018

71111.20 - Refueling and Other Outage Activities (2 Samples)

The inspectors evaluated Unit 1 refueling outage cycle 15 (U1R15) activities from October 1, 2018 to October 27, 2018.

The inspectors evaluated Unit 1 forced outage 109 (1FO109) activities from October 27, 2018 to November 1, 2018.

71111.22 - Surveillance Testing (2 Samples)

The inspectors evaluated the following surveillance tests:

Routine (1 Sample)

(1) WO 119064794, 0-SI-82-4, 18 Month Loss Of Offsite Power With Safety Injection Test - DG 1B-B, on October 10, 2018

Ice Condenser

(1) WO 119064783, 1-SI-61-2, 18 Month Ice Weighing, on 10/2/2018

EMERGENCY PREPAREDNESS

71114.02 - Alert and Notification System Testing (1 Sample)

The inspectors evaluated the maintenance and testing of the alert and notification system during the week of November 26, 2018.

71114.03 - Emergency Response Organization Staffing and Augmentation System (1 Sample)

The inspectors evaluated the readiness of the Emergency Response Organization during the week of November 26, 2018.

71114.04 - Emergency Action Level and Emergency Plan Changes (1 Sample)

The inspectors evaluated submitted Emergency Action Level, Emergency Plan, and Emergency Plan Implementing Procedure changes during the week of November 26, 2018. This evaluation does not constitute NRC approval.

71114.05 - Maintenance of Emergency Preparedness (1 Sample)

The inspectors evaluated the maintenance of the emergency preparedness program during the week of November 26, 2018.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification (3 Samples)

The inspectors verified the licensee's performance indicator submittals listed below for the period October 1, 2017 through September 30, 2018.

(1) EP01: Drill & Exercise Performance (1 Sample)
(2) EP02: Emergency Response Organization Drill Participation (1Sample)
(3) EP03: Alert & Notification System Reliability (1Sample)

71152 - Problem Identification and Resolution

Semiannual Trend Review (1 Sample)

The inspectors reviewed the licensee's corrective action program for trends that might be indicative of a more significant safety issue.

Annual Follow-up of Selected Issues (4 Samples)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

(1) CRs 1372963, 1372964, 1372977, 1373002, 1372931, 1373085, 1373122, 1375143, 1378000, 1373840, 1378038, 1378247, 1378775, Freeze protection issues
(2) CRs 1439271, 1439629, Post maintenance testing of the turbine driven auxiliary feedwater pump direct current exhaust fan
(3) CR 1420706, Inadvertent control room ventilation isolation on June 6, 2018
(4) CRs 1149859, 1177015, and 1349567, Missing bolts on emergency raw cooling water pump room floor hatches at the intake pumping station

71153 - Follow-up of Events and Notices of Enforcement Discretion

Events and Personnel Performance (1 Sample)

The inspectors evaluated both the plant and licensee's response to a manual trip of the Unit 1 reactor on October 27, 2018 caused by a failure of reactor coolant pump 3 to transfer from its alternate to normal power supply.

Licensee Event Reports (3 Samples)
The inspectors evaluated the following licensee event reports which can be accessed at https://lersearch.inl.gov/LERSearchCriteria.aspx:

(1) LER 05000391/2018003-00, Reactor Trip Due to Main Generator Differential Relay Actuation
(2) LER 05000391/2018005-00, Automatic Reactor Trip Due to Turbine Control System Card Failure and Throttle Valve Closure
(3) LER 05000390/2018005-00, Manual Reactor Trip Due to Failure of Reactor Coolant Pump to Transfer to Normal Power

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

Closure of Confirmatory Action Letter (CAL) NRR-12-001, Commitments to Address External Flooding Concerns and Unit 2 License Condition 2.C.(3)

The inspectors evaluated the licensee's corrective actions associated with CAL NRR-12-001, Commitments to Address External Flooding Concerns, commitments 7, 13, 14, 15, and 16 and Unit 2 License Condition 2.C.(3):

TVA shall implement permanent modifications to prevent overtopping of the embankments of the Fort Loudon Dam due to the Probable Maximum Flood by June 30, 2018.

Specifically, on November 29, 2018 inspectors performed an in-person inspection and review of the above open commitments and license condition 2.C.(3) at the Fort Loudon dam. These items and CAL NRR-12-001 are now closed.

INSPECTION RESULTS

Licensee Identified Non-Cited Violation	71111.05AQ – Fire Protection Annual/Quarterly
This violation of very low safety significance was identified by the licensee and has been entered into the licensee's corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: Watts Bar Nuclear Plant (WBN) Unit 1 Operating License Number NPF-90, Condition 2.F, requires, in part, that TVA shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in the Fire Protection Report for the facility, as approved in Appendix FF Section 3.5 of Supplement 18 and Supplement 29 of the SER (NUREG-0847). The WBN Fire Protection Report was developed for WBN to ensure compliance with the requirements of this license condition. Fire Protection Report, Part II, is the Fire Protection Plan (FPP). FPP Section 14, Fire Protection Systems and Features Operating Requirements (ORs), Subsection 14.2, Water Supply, paragraph 14.2.1, requires a fire watch to be established in auxiliary building rooms 713-A10-A15 and 737-A8-A13 within one hour of declaring the diesel driven fire pump inoperable. Contrary to the above, on October 21, 2018, the licensee failed to establish a fire watch in auxiliary building rooms 713-A10-A15 and 737-A8-A13 within one hour of declaring the diesel driven fire pump inoperable. Significance/Severity Level: This violation is of very low safety significance (GREEN) based on the results of the IMC 0609, Appendix F, "Fire Protection Significance Determination Process," Phase I Screening Approach. Specifically,, the licensee's failure to establish a fire watch within one hour of declaring the diesel driven fire pump inoperable did not increase the likelihood of a fire, did not delay detection of a fire, nor did it result in a more significant fire than previously analyzed in auxiliary building rooms 713-A10-A15 and 737-A8-A13 (IMC 0609, Appendix F, Step 1.4.1, Question 1.4.1-A). Corrective Action Reference(s): This issue is being tracked in the licensee's corrective action program by Condition Report 1458579.	

Licensee Identified Non-Cited Violation	71111.05AQ – Fire Protection Annual/Quarterly
This violation of very low safety significance was identified by the licensee and has been entered into the licensee's corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: Watts Bar Nuclear Plant (WBN) Unit 1 Operating License Number NPF-90, Condition 2.F, requires, in part, that TVA shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in the Fire Protection Report for the facility, as approved in Appendix FF Section 3.5 of Supplement 18 and Supplement 29 of the SER (NUREG-0847). The WBN Fire Protection Report was developed for WBN to ensure compliance with the requirements of this license condition. Fire Protection Report, Part II, is the Fire Protection Plan (FPP). FPP Section 14, Fire Protection Systems and Features Operating Requirements (ORs), Subsection 14.8, Rated Fire Assemblies, paragraph 14.8.1.b, requires a roving fire watch be established on one side of auxiliary building doors 410-A68 and 410-A69 within one hour of declaring the doors inoperable due to breaching them open. Contrary to the above, on September 20, 2018 until September 23, 2018, the licensee failed to establish a fire watch on one side of auxiliary building doors 410-A68 and 410-A69 within one hour of declaring the doors inoperable due to breaching them open. Significance/Severity Level: This violation is of very low safety significance (GREEN) based on the results of the IMC 0609, Appendix F, "Fire Protection Significance Determination	

Process," Phase I Screening Approach. Specifically,, the licensee's failure to establish a fire watch within one hour of declaring the doors inoperable due to breaching them open did not increase the likelihood of a fire, did not delay detection of a fire, nor did it result in a more significant fire than previously analyzed in plant areas protected by auxiliary building doors 410-A68 and 410-A69 (IMC 0609, Appendix F, Step 1.4.1, Question 1.4.1-A).

Corrective Action Reference(s): This issue is being tracked in the licensee's corrective action program by Condition Report 1449853.

Failure to Follow Work Order Steps Results in Equipment Unavailability			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	GREEN NCV 05000390/391/2018004-01 Closed	[H.11] – Challenge the Unknown	71111.13 – Maintenance Risk

A NRC-identified Green finding and associated NCV of Technical Specification 5.7.1, "Procedures," was identified when the licensee failed to follow the requirements of work order (WO) 118973001. Specifically, WO step 5.15 requires an engineering inspection of the completed installation of a seismic panel on 120 VAC vital power board I-1 and a determination if it is acceptable or not. The engineer determined the installation was not acceptable, but the panel cover was repositioned without completing the step to indicate the unacceptable condition.

Description:

On September 18, 2018, technicians were performing a breaker replacement on 120 VAC vital power board I-1 in accordance with work order (WO) 118973001. Work on the I-1 board required Unit 2 to enter shutdown limiting condition for operation (LCO) 3.8.9.B, a two hour shutdown LCO, and, as documented in the Unit 2 logs, Unit 2 entered LCO 3.8.9 at 0200.

Breakers associated with both Unit 1 and Unit 2 are mounted inside the I-1 board with their switches protruding through cutouts in a front panel. The front panel must be removed in order to get access to the individual breakers to perform the work and it must be replaced after work is complete. The removal of the panel impacts the seismic qualification of the panel, necessitating the TS LCO 3.8.9.B entry. WO 118973001 had caution statements regarding inadvertent breaker operation when removing the panels and when replacing the panels. Step 5.15 of the WO required that Civil Site Engineering perform an inspection of the completed installation and document acceptance. The record copy of WO 118973001 shows that the "Acceptable" block was checked in step 5.15. However, Unit 2 operating logs document that Engineering informed the unit supervisor that the seismic qualification of 120 VAC vital power board I-1 is not acceptable. As documented in CR 1448281, Civil Engineering then required the electrical technicians to reposition the panel cover to restore acceptable seismic qualification. During this repositioning, one of the electrical technicians inadvertently tripped a breaker 1-BKR-235-1/33-D. The electrical technician then reset the tripped breaker before notifying supervision of the error. The inspectors followed up the event and identified that both the procedure error and the specific identification of which breaker had been tripped and its impact were not documented in the licensee's CAP or the investigation performed following the event. These two issues were subsequently documented in CRs 1485025 and 1450671, respectively.

1-BKR-235-1/33-D provides power to reactor building control air isolation valves 1-FCV-32-80 and 1-FCV-32-110 as well as indication for the position of those valves, and therefore caused both those functions to become unavailable. The operability review for CR 1450671 determined that the Unit 1 operating crew should have entered technical specification LCO 3.6.3 for the containment isolation valves and TS LCO 3.3.3 for the loss of indication. However, these entries would have been tracking only LCOs since those TS LCOs only applied in modes 1 through 4 and Unit 1 was in Mode 5 at the time of the event.

Due to the additional time involved in the response and investigation into both of these human performance events, Unit 2 entered LCO 3.8.9 condition D, which required Unit 2 to be in Mode 3 (hot standby) in 6 hours and Mode 5 (cold shutdown) within 36 hours. At 0423 Unit 2 operating crew briefed plant shutdown to Mode 3. This was required since Board I-1 had not yet been restored when the two hours of LCO 3.8.9.B expired at 0400. At 0504 the unit supervisor was informed by engineering that the seismic qualification of Board I-1 had been restored, and Unit 2 exited TS LCO 3.8.9.B and D.

Corrective Actions: The licensee's immediate corrective action was to verify that there was no impact to Unit 1, beyond the loss of power to the valves, due to opening the breaker and immediately re-closing it.

Corrective Action Reference: This issue was documented in the TVA corrective action program by Condition Reports 1448281, 1450671, and 1485025.

Performance Assessment:
Performance Deficiency: The failure to follow WO 118973001 step 5.15 was a performance deficiency. Specifically, the step was marked as acceptable while the control room narrative logs document the initial engineering assessment was that the condition of the I-1 Board was unacceptable.

Screening: The performance deficiency was determined to be more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affects the cornerstone objective to ensure availability, reliability, and capability of systems that respond to prevent undesirable consequences. Specifically, the I-1 Board remained unavailable for three hours and four minutes due to the response and investigations relating to the plant impacts and human performance aspects of the inadvertent breaker trip and the subsequent re-closing.

Significance: In accordance with IMC 0609, Attachment 4, the inspectors determined the Mitigating System cornerstone was affected due to the extended inoperability of the I-1 Board. The inspectors used the SDP Appendix Router to arrive at IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined that the finding screened to Green because it did not represent an actual loss of function of at least a single train for greater than its Tech Spec allowed outage time. Specifically, the I-1vital power board was restored in three hours and four minutes, well before the expiration of LCO 3.8.9.D.

Cross-Cutting Aspect: The finding had a cross-cutting aspect in the Challenge the Unknown attribute of the Human Performance area as defined in IMC 0310, "Aspects Within the Cross-Cutting Areas," because the licensee did not stop when faced with the uncertain condition of the panel installation not being acceptable with no work order steps to direct further action.

Specifically, the risk of proceeding past WO Step 5.15 should have been evaluated and managed before proceeding with panel re-positioning.

Enforcement:
Violation: Technical Specification 5.7.1, "Procedures," requires that written procedures covering activities that are recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, be established, implemented, and maintained. Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, section 9, Procedures for Performing Maintenance, requires, in part, in subsection a, that maintenance that can affect the performance of safety-related equipment should be properly performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstance. Contrary to the above, on September 18, 2018, the licensee failed to properly perform the documented instructions in WO 118973001, step 5.15, by proceeding to reposition the safety-related Board I-1 panel without procedural guidance for what to do when unacceptable conditions are identified.

Enforcement Actions: This violation is being treated as a Non-Cited Violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Follow Procedure Results in Unit 1 Turbine Driven Auxiliary Feedwater Pump Inoperability

Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	GREEN NCV 5000390/2018004-02 Closed	[H.9] – Training	71111.15 – Operability Determinations

A self-revealed Green finding and associated NCV of Technical Specification 5.7.1.a, "Procedures," was identified when the licensee failed to install measuring and test equipment (M&TE) in accordance with surveillance instruction 1-SI-3-923-S, "Auxiliary Feedwater Pump 1A-S Comprehensive Pump Test." Specifically, the licensee failed to install the recirculation line differential pressure test gauge in the proper location, resulting in the failure of that gauge and subsequent inoperability of the Unit 1 turbine driven auxiliary feedwater pump.

Description:
On September 13, 2018, M&TE was installed as part of the field preparation steps for surveillance instruction 1-SI-3-923-S. M&TE installation consisted of connecting a discharge pressure gauge, a suction pressure gauge, a differential pressure (DP) gauge for the recirculation line, and a DP gauge for the steam generator flow line.

On September 14, 2018, the Unit 1 TDAFW pump was started for performance of 1-SI-3-923-S and the DP gauge installed at the steam generator flow line failed, as evidenced by the gauge glass breaking and a stream of water coming from the gauge. The operating crew stopped the TDAFW pump, declared it inoperable and entered technical specification (TS) limiting condition for operability (LCO) 3.7.5, Condition B for one train of auxiliary feedwater inoperable starting at the time the gauge was installed, 0400 on September 13, 2018. This was an unplanned TS LCO because the pump was not previously considered inoperable due to the comprehensive surveillance testing itself. The cause of the DP gauge failure was that a DP gauge with a lower allowable pressure range was installed to measure steam generator flow. Specifically, the gauge to be installed on the recirculation line was installed on the steam generator flow line. Therefore, the gauge intended for the lower pressure of the recirculation line failed when exposed to the higher pressure of the steam generator flow line. The

licensee isolated the damaged gauge and restored operability of the pump at 1755 on September 14, 2018.

Inspectors noted that step 4.4.2[3] of procedure 1-SI-2-923-S requires that the steam generator flow M&TE DP test gauge be installed with a valve manifold across a flow element in the steam generator flow path. Instead, licensee personnel installed the recirculation flow M&TE DP test gauge at this location.

Corrective Actions: The licensee's immediate corrective action was to install the correct M&TE on the system, thereby restoring the TDAFW pump to operable status. Additional corrective measures were implemented to better coordinate between Operations, Maintenance Services, and contract workers.

Corrective Action Reference: This issue was documented in the TVA corrective action program by Condition Report 1447484. Additional corrective measures were implemented under CR 1447534.

Performance Assessment:
Performance Deficiency: The failure to follow surveillance instruction 1-SI-3-923-S, "Auxiliary Feedwater Pump 1A-S Comprehensive Pump Test" was a performance deficiency. Specifically, the licensee failed to install the steam generator flow DP test gauge as prescribed by procedure 1-SI-3-923-S step 4.4.2[3].

Screening: The performance deficiency was determined to be more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affects the cornerstone objective to ensure availability, reliability, and capability of systems that respond to prevent undesirable consequences. Specifically, the performance deficiency caused the TDAFW pump to be inoperable and therefore not available to respond to prevent undesirable consequences.

Significance: In accordance with IMC 0609, Attachment 4, the inspectors determined the Mitigating Systems cornerstone was affected due to the impact to short term heat removal. The inspectors used the SDP Appendix Router to arrive at IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined that the finding was green because it did not represent an actual loss of function of at least a single train for greater than its Tech Spec allowed outage time. Specifically, the TDAFW pump was inoperable due to the performance deficiency for 37 hours and 55 minutes, while the TS allowed outage time is 72 hours.

Cross-Cutting Aspect: The finding had a cross-cutting aspect in the Training attribute of the Human Performance area as defined in IMC 0310, "Aspects Within the Cross-Cutting Areas," because the licensee did not ensure knowledge transfer to the contract workers installing the M&TE. Specifically, there were knowledge gaps between the contract workers performing the M&TE installation and that of the operations and maintenance department in the areas of procedure use and adherence and M&TE knowledge.

Enforcement:
Violation: Technical Specification 5.7.1, "Procedures," requires that written procedures covering activities that are recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, which include surveillance tests, be established, implemented, and

maintained. Contrary to the above, on September 13, 2018, the licensee failed to adequately implement surveillance instruction 1-SI-3-923-S, “Auxiliary Feedwater Pump 1A-S Comprehensive Pump Test” step 4.4.2[3] when the incorrect DP gauge was installed on the steam generator flow line, causing the gauge to break, resulting in the inoperability of the 1A-S TDAFW pump.

Enforcement Actions: This violation is being treated as a Non-Cited Violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

Unit 1 Turbine Driven Auxiliary Feedwater Pump Inoperable Due to Inadvertent Overfilling of the Primary Water Storage Tank		
Unresolved Item (Open)	URI 05000390/2018-004-03	71111.19 – Post Maintenance Testing

Description:

On November 4, 2018, during operations to fill the primary water storage tank (PWST), the licensee inadvertently overfilled the tank due to a human performance related configuration control error. The tank overflow was directed into the emergency raw cooling water (ERCW) pipe tunnel in the Auxiliary Building. The floor drains in the pipe tunnel were not able to handle the volume of water and the pipe tunnel overflowed to the roof of the Unit 1 TDAFW pump room and down the sides of the outside of the room onto the 692ft elevation of the Auxiliary Building. Turbine positioner panel 1-PNL-276-L326A is an electrical cabinet mounted on the outside wall of the Unit 1 TDAFW pump room. The panel contains the circuitry that controls the position of the TDAFW pump governor valve. It was installed during the fall 2018 refueling outage, U1R15, as part of a DCN 58314 to upgrade the TDAFW pump governor controls from analog to digital.

The overflowing PWST water wetted the turbine positioner panel as it flowed over the outside wall of the Unit 1 TDAFW pump room. The water entered the cabinet through two conduit penetrations in the top and caused a MCR trouble alarm. Operators responded to the alarm, discovered the internal flooding caused by the PWST overfill, and declared the Unit 1 TDAFW pump inoperable at 2134 on November 4, 2018 by entering 72 hour TS LCO 3.7.5.

After securing the flow path to the PWST operators dried out the turbine positioner panel and performed a PMT surveillance run of the TDAFW pump to confirm it would operate as designed. The pump performed satisfactorily and the TDAFW pump was declared operable at 1551 on November 5, 2018.

During their review, the inspectors identified an issue of concern. On December 18, 2018, the inspectors questioned the ability of the Unit 1 TDAFW pump to perform its design function under all design bases events, such as nearby fire sprinkler discharges or a medium energy line break (MELB) in the ERCW pipe tunnel, which would cause identical conditions to those that resulted in the TDAFW pump being inoperable on November 4, 2018. As a result, Unit 1 TDAFW pump was declared inoperable and the 72 hour TS LCO 3.7.5 was entered. TS LCO 3.7.5 was exited following the repairs to the Unit 1 TDAFW positioner panel on December 18, 2018 at 2248. A Past Operability Evaluation (POE) was also initiated.

The inspectors determined that review of the POE is needed to determine if performance deficiencies exist. Due to the POE being in-process and not available for review, the need to open a URI was warranted.

Planned Closure Actions:

- Licensee to complete Past Operability Evaluation (POE)
- NRC to review POE to determine if performance deficiencies exist
- NRC inspectors need to evaluate the human performance related aspects of overfilling the PWST

Licensee Actions: On December 18, 2018, the Licensee completed repairs to the Unit 1 TDAFW Pump Turbine Positioner Panel bringing it into compliance with the NEMA-4 panel rating. The repairs included sealing the two conduit penetrations located on the top surface of the panel.

Corrective Action References: This issue is being tracked in TVA's corrective action program by Condition Reports 1463113, 1463499, and 1476680.

Failure to Follow Temporary Equipment Control Procedure Results in Multiple Inoperable Ice Condenser Intermediate Deck Doors

Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000390/2018004-04 Closed	[H.12] – Avoid Complacency	71120 – Refueling and Other Outage Activities

A NRC-identified Green finding and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for the failure to follow the TVA temporary equipment control procedure. Specifically, on November 28, 2018 while performing a containment closure inspection, inspectors identified an A-frame ladder unattended and blocking at least four ice condenser intermediate deck doors in the upper ice condenser of Unit 1. This is not in accordance with TVA procedure NPG-SPP-09.17, Temporary Equipment Control, Revision 8, which requires temporary equipment that is left unattended to meet certain criteria for stability.

Description:

On November 28, 2018, inspectors entered Unit 1 upper containment to complete the containment closeout inspection required by inspection procedure 71111.20, Refueling and Other Outage Activities, section 71111.20-03.01.e.2. Upon entering the upper ice condenser, inspectors identified an approximately 10 foot high A-frame ladder unattended with each of its four feet blocking a different intermediate deck door in bay 6. The ladder was not secured to any plant equipment or structure and there were no personnel in containment except the inspectors and licensee personnel supporting the inspection.

The intermediate deck doors function during a design bases accident to open and allow high pressure steam and loss of coolant accident (LOCA) energy from lower containment to pass through the ice condenser into upper containment. Operators in the main control room were immediately notified of the ladder and it was quickly removed. Operators determined that the four affected intermediate deck doors were inoperable because the weight of the ladder would have prevented them from opening as required and they entered technical specification (TS) 3.6.12.B, Ice Condenser Doors. A subsequent past operability evaluation (POE) found that the doors had been inoperable since 0835 on November 28, 2018 based on earlier upper containment entry logs from that day. TS 3.6.12.B requires verification of maximum ice bed temperature within four hours and restoration of the inoperable doors within 14 days. The POE concluded that the three hour and 34 minute time period the doors were inoperable did not result in a failure to meet the requirement of TS 3.6.12.B. Based on only four doors being

inoperable, the POE also determined that the ice condenser as a whole would still have been able to perform its design basis function.

TVA procedure NPG-SPP-09.17, Temporary Equipment Control, Revision 8, requires temporary equipment that is left unattended to meet certain criteria for stability. Section 3.2.4.C specifies that the requirements of sections 3.2.5 through 3.2.8 shall apply to portable ladders which are either not attended or not stored in their permanent storage location. Section 3.2.7, Establishing the Stability of Temporary Equipment, has detailed requirements for ensuring that unsecured and unattended temporary equipment will remain stable. A 10 foot A-frame ladder that is not secured to any structure does not meet these requirements.

Corrective Actions: The licensee immediately removed the unattended ladder upon discovery. Additional corrective actions have included updates to containment closure procedures for both units to specifically disallow any unattended equipment on top of the intermediate deck doors.

Corrective Action Reference: This issue is being tracked in TVA's corrective action program by Condition Report 1470869.

Performance Assessment:
Performance Deficiency: The failure to follow TVA procedure NPG-SPP-09.17, Temporary Equipment Control, Revision 8, sections 3.2.4.C and 3.2.7 was a performance deficiency. Specifically, the 10 foot A-frame ladder that was not secured to any structure did not meet the stability requirements of section 3.2.7.

Screening: The performance deficiency was determined to be more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, at least four intermediate deck doors were rendered inoperable and TS 3.6.12 was entered for the doors as a result of the unattended ladder.

Significance: In accordance with IMC 0609, Attachment 4, the inspectors determined the Mitigating Systems cornerstone was affected due to the impact to long term heat removal. The inspectors used the SDP Appendix Router to arrive at IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined that the finding screened to Green in accordance with IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," Section A, "Mitigating SSCs and Functionality," because the finding did not result in an actual loss of function of at least a single train for greater than its TS allowed outage time.

Cross-Cutting Aspect: The finding had a cross-cutting aspect in the Avoid Complacency attribute of the Human Performance area as defined in IMC 0310, "Aspects Within the Cross-Cutting Areas," because the licensee failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk when making use of temporary equipment in the Unit 1 upper ice condenser.

Enforcement:
Violation: 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" states, in part, that "activities affecting quality shall be prescribed by documented instructions,

procedures, or drawings, of a type appropriate to the circumstances, and shall be accomplished in accordance with these instructions, procedures, or drawings." Contrary to the above, on November 28, 2018, the licensee failed to accomplish the control of temporary equipment in accordance with the requirements of procedure NPG-SPP-09.17, Temporary Equipment Control, Revision 8, when a ladder was left unattended in the Unit 1 upper ice condenser.

Enforcement Actions: This violation is being treated as a Non-Cited Violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

Observation	71152 - Annual Follow-up of Selected Issues
Inspectors assessed the licensee's performance regarding problem identification and resolution against selected attributes listed in section 03.06 of Inspection Procedure 71152. Inspectors reviewed condition reports associated with freeze protection issues to verify that problems were being promptly identified, evaluated, prioritized and resolved within the licensee's corrective action program. Inspectors reviewed CRs 1372963, 1372964, 1372977, 1373002, 1372931, 1373085, 1373122, 1375143, 1378000, 1373840, 1378038, 1378247, 1378775 all having to do with freezing issues during the winter of 2017/2018. No findings were identified; however, inspectors observed that Procedure 0-PI-OPS-1 revisions made since 01/20/17 do not appear to have incorporated the requested changes from CRs written since freezing problems were identified during the 2017/2018 winter. The work order to install a cold air blocking boot on unit 2 feedwater piping building penetrations had not been performed, but has been in a "ready" status since 7/31/18. Inspectors also observed "temporary" freeze protection measures from last winter had not been completely removed and procedure 0-PI-OPS-1 does not direct that removal.	

Observation	71152 - Annual Follow-up of Selected Issues
Inspectors assessed the licensee's performance regarding problem identification and resolution against selected attributes listed in section 03.06 of Inspection Procedure 71152. Inspectors reviewed condition reports (CR) 1439271 and CR 1439629 associated with the Unit 2 TDAFW pump DC exhaust fan post maintenance testing. No findings were identified. The inspectors observed that during post maintenance testing in August of 2018, fan speed was measured at 2010 rpm, resulting in a calculated air flow of 1368 actual cubic feet per minute (acfm), which was 14% above the acceptable design flow of 1200 acfm (acceptance criteria is +/- 10%). This was documented in CR 1439271, and accepted on the technical basis that for the nominal DC power supply voltage of 134 VDC, calculated fan speed would be 2010 rpm. The inspectors also reviewed CR 1439629, which questioned the conclusions of CR 1439271 based on fan speed and airflow obtained during a test in 2013. During the 2013 test measured fan speed was 1710 rpm. Given that DC bus voltage is constant at approximately 134 VDC, the same model fan was used in both tests, and there was no change in downstream ductwork between performances, fan speed should have been closer to 2010 rpm. CR 1439629 was closed to "immediate actions documented". The inspectors concluded that CR 1439629 was closed using the same logic as CR 1439271, and never addressed the fan speed difference of the 2013 test. The licensee documented this in CR 1476971. The inspectors reviewed actual duct air flow testing performed in 2004, actual DC power supply panel meter voltage, the work order for the August 2018 post maintenance test (PMT), and concluded that the DC exhaust fan remained operable.	

Observation	71152 - Annual Follow-up of Selected Issues
Inspectors assessed the licensee's performance regarding problem identification and resolution against selected attributes listed in section 03.06 of Inspection Procedure 71152. Inspectors reviewed condition report (CR) 1420706 associated with an inadvertent control room ventilation isolation on June 6, 2018. During clearance placement for work on the upper containment radiation monitor breaker 1-BKR-235-2/35 was opened in accordance with the tag out sequence. Opening this breaker removed power to upper containment radiation monitor, but also removed power to the main control room emergency ventilation radiation monitor, and, in turn, resulted in a control building isolation. The inspectors verified that the licensee's completed and planned corrective actions were commensurate with the significance of identified issue. During their review, the inspectors identified that alarm response instruction (ARI) 0-ARI-180-187 had a typographical error. Specifically, Probable Cause C was written as "Maintenance on 0-RM-90-20 or 0-RM-90-205", instead of Maintenance on 0-RM-90-20 or 0-RM-90-206" The licensee entered this in to their corrective action program as CR 1449703.	

Observation	71152 - Annual Follow-up of Selected Issues
Inspectors assessed the licensee's performance regarding problem identification and resolution against selected attributes listed in section 03.06 of Inspection Procedure 71152. Inspectors reviewed condition reports (CRs) 1149859, 1177015, and 1349567 associated with missing bolts on an access hatch in the intake pumping station. On March 15, 2016 the inspectors identified that the access hatch on the floor between essential raw water cooling pumps A-A and B-A was only held in place by two bolts. The inspectors also noted that the hatch was identified as a fire barrier by a sign attached to the surface of the hatch cover. This was brought to the attention of the licensee since the hatch openings are within 1.56 inches of the probable maximum flood level and were marked by the aforementioned signs as fire barriers. The licensee documented this CR 1149859 which had four actions: 1) Operations superintendent validate the NRC has no further questions on this issue, 2) Licensing to review CR after all actions completed (and before CR closure), 3) Perform closure review, and 4) Validate with WBN resident no additional questions. The CR also stated that it was "Determined in review that the hatch of concern is not a barrier against internal or external flood, or fire". The inspectors reviewed WBN TI-64, Breaching Hazard Barriers, revision 10 Appendix A which showed that the hatches are neither flood nor fire barriers. On June 1, 2016, CR 1177015 was written since during a review of CR 1149859 the licensee discovered that no work order had been written to actually replace the missing bolts. WO 117877240 was then written as a result of CR 1177015 and the bolts were replaced on June 5, 2016. On October 10, 2017, the inspectors noted inconsistent signage on two other smaller hatches on the floor of the IPS. One was missing a sign and the other had remnants of a sign identifying the hatch as a fire barrier. The licensee documented this in CR 1349567 with actions to replace the missing sign and the damaged sign. The signs were replaced on February 26, 2018, again identifying these hatches as fire barriers. When reviewing the inconsistency between CR 1149859, which determined that the hatches were not a fire barrier, and CR 1349567, which placed signs on the hatches identifying the as fire barriers, the inspectors found out that Revision 12 to TI-64 changed the hatches to being fire barriers based on a note on drawing 0-47W240-9. However, inspectors identified that the revision to TI-64 was in error and the note does not refer to the specific hatches in question in the ERCW pump rooms. While those hatches are not a rated fire barrier for heat, they do serve to collect smoke from the ERCW strainer rooms below and if	

missing, would potentially prevent detection and suppression from functioning in those rooms. For this reason, they were identified with signs referring to them as a “barrier” and fire watches are required when they are removed for any reason. This is not clear from TI-64, Revision 12, drawing 0-47W240-9, or the fire protection report. Furthermore, neither revision 10 nor revision 12 of TI-64 correctly and fully describes the requirements associated with these hazard barriers. The licensee captured this concern in CR 1482863, which will drive corrective actions associated with the appropriate sections of T-64.

Failure to Maintain the Effectiveness of the Emergency Plan and a Standard Emergency Classification Scheme Which Included Facility Effluent Parameters s			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Emergency Preparedness	TBD Apparent Violation (AV) 05000390,391/2018004-05 Open EA 18-182	[H.3] – Human Performance, Change Management	71114.04 – Emergency Action Level and Emergency Plan Changes

An Apparent Violation (AV) of 10 CFR Part 50.47(b)(4), (b)(9), and Part 50 Appendix E, for failure to maintain the effectiveness of the emergency plan and a standard emergency classification scheme which included facility effluent parameters. Specifically, since Unit 1 and Unit 2 initial plant startup until September 17, 2018, the licensee failed to maintain a standard emergency classification scheme which included facility effluent parameters in that effluent parameter classification threshold values for EALs RG1, RS1, RA1, and RU1 were significantly non-conservative. These radiation monitors were being relied upon to continuously assess the impact of the release of radioactive materials, provide criteria for determining the need for notification and participation of local and State agencies, and provide technically accurate dose assessments.

Description:

During implementation of NEI 99-01, Revision 6, “Development of Emergency Action Levels for Non-Passive Reactors”, the licensee identified errors that originated from a design change impact review and resulted in incorrect values in the Radiological Emergency Plan (REP) Appendix C and Watts Bar Emergency Action Level (EAL) implementing procedure EPIP-1. The licensee compiled and determined that a multitude of calculation errors over time contributed to the EAL radiation monitor threshold values being incorrect. These errors, which impacted EPIP-1 and EPIP-13 (dose assessment implementing procedure), were determined to exist from Unit 1 and 2 initial plant startup, until September 17, 2018, when the affected procedures were updated with correct values. For several of the radiation monitors, the licensee recognized that emergency declarations would be declared in a degraded manner and that dose assessment would not be technically accurate under certain accident conditions.

The inspectors reviewed the compiled information describing timeframes, types of errors, and the impact of those errors, to help understand the significance of the errors. The licensee’s ability to declare emergencies based on effluent radiation monitor values was degraded because event classification using these radiation monitors would be delayed under certain accident conditions. The accident conditions were failed fuel and steam generator tube rupture. The affected radiation monitors were shield building exhaust, condenser vacuum exhaust, and main steam line radiation monitors. The radiation monitor threshold values calibrated for these radiation monitors were significantly non-conservative and therefore, would cause the Unusual Event, Alert, Site Area, & General emergencies to be declared in an untimely manner. Additionally, the non-conservative discrepant radiation monitor threshold

values affected the licensee's ability to adequately provide technically accurate dose assessments under these same accident conditions.

Corrective Action(s): The licensee entered the issue into the corrective action program on September 11, 2018. The affected procedures were corrected on September 17, 2018. Other actions taken by the licensee were to perform an extent of condition and correct the errors in the procedures and associated calculations. In addition, a Root Cause Analysis was in progress during the time of the inspection, with an expected completion date before the end of calendar year 2018.

Corrective Action Reference: CR 1446537

Performance Assessment:
Performance Deficiency: The failure to maintain the effectiveness of an emergency plan to meet the requirements of Title 10 CFR Part 50.47(b)(4), (b)(9), and Part 50 Appendix E to have a standardized EAL scheme with adequate methods, systems, and equipment in use based on facility system and effluent parameters for assessing and monitoring actual or potential offsite consequences of a radiological emergency, was a performance deficiency.

Screening: The performance deficiency was determined to be more than minor because it was associated with the Emergency Preparedness cornerstone attribute of Procedure Quality and adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, the licensee's ability to declare a Notification of Unusual Event (NOUE), Alert, Site Area Emergency (SAE), and General Emergency (GE) based on effluent radiation monitor values was degraded in that event classification using these radiation monitors could be delayed, as well as their ability to provide technically accurate estimates of projected offsite doses.

Significance: TBD

Cross-Cutting Aspect: The cause of the finding was determined to be associated with a cross-cutting aspect in the change management component of the human performance area because the licensee failed to use a systematic process for evaluating and implementing changes so that nuclear safety remains the overriding priority [H.3].

Enforcement:
Violation: Title 10 CFR Part 50.54(q)(2) requires that a holder of a nuclear power reactor operating license under this part, shall follow and maintain the effectiveness of an emergency plan that meets the requirements in Appendix E to this part and the planning standards of 10 CFR 50.47(b). Title 10 CFR Part 50.47(b)(4) requires a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures. Title 10 CFR 50.47(b)(9) requires adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use. Title 10 CFR Part 50, Appendix E, Section IV.B., "Assessment Actions," requires in part, that the means to be used for determining the magnitude of, and for continuously assessing the impact of, the release of radioactive materials shall be described, including EALs that are to be used as criteria for determining the

need for notification and participation of local and State agencies, the Commission, and other federal agencies. The EALs shall be based on in-plant conditions and instrumentation, in addition to onsite and offsite monitoring.

Contrary to the above, since Unit 1 and Unit 2 initial plant startup until September 17, 2018, the licensee failed to maintain the effectiveness of their emergency plan and a standard emergency classification scheme which included facility effluent parameters. Specifically, the licensee failed to maintain a standard emergency classification scheme which included facility effluent parameters in that effluent parameter classification threshold values for EALs RG1, RS1, RA1, and RU1 were significantly non-conservative. These radiation monitors were being relied upon to continuously assess the impact of the release of radioactive materials, provide criteria for determining the need for notification and participation of local and State agencies, and provide technically accurate dose assessments. The failure to maintain the effectiveness of an emergency plan to meet the requirements of 10 CFR Part 50.47(b)(4), (b)(9), and Part 50 Appendix E, pending final determination, is identified as AV 05000390, 391/2018004-05, "Calculation Errors Results in Significantly Non-Conservative EAL Threshold Values and Technically Inaccurate Dose Assessments".

Enforcement Action: This violation is being treated as an AV pending a final significance determination.

Failure to Follow System Status Control Procedure Results in Unit 1 Trip			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Initiating Events	Green NCV 05000390/2018004-06 Closed	[H.13] – Consistent Process	71153 – Follow-up of Events and Notices of Enforcement Discretion

A self-revealed Green finding and associated Non-cited Violation (NCV) of Technical Specification 5.7.1, "Procedures," was identified when the licensee failed to follow the requirements of procedure NPG-SPP-10.1, System Status Control, Revision 9. Specifically, procedural requirements were not followed when restoring the normal feeder breaker 1-3 for reactor coolant pump (RCP) 3. As a result, the RCP failed to transfer to the normal 1-3 breaker from the alternate feeder breaker because the normal breaker was racked down. This resulted in a manual reactor trip.

Description:

On October 27, 2018, Watts Bar Nuclear Plant Unit 1 was in Mode 1 with the main generator synchronized to the grid. The unit was in power ascension at approximately 20% power following refueling outage 1R15. The operating crew reached the point where, by procedure, the reactor coolant pumps were to be transferred from the alternate start bus to the normal source. During this transfer, RCP 3 failed to transfer to its normal source and Unit 1 was manually tripped as required by procedure. Troubleshooting determined that the normal feeder breaker 1-3 for RCP 3 was in the racked down position and thus unable to be closed to the bus.

A review of the status history for normal feeder breaker 1-3 revealed that the responsible employee (RE) for the outage clearance on the breaker had lifted the clearance with the breaker in the racked down position, which is not the normal or operational position. The RE knew that the next activity on the breaker was electrical testing performed by the electrical maintenance group which required the breaker to be racked down. The RE had a

conversation with the electrical maintenance representative to ensure he understood that the breaker should be returned to the racked up position upon completion of the testing.

TVA procedure NPG-SPP-10.1, System Status Control, Revision 9 has specific requirements when using a work order to control system status or configuration. While this is allowed in general, step 3.2.6.A.2 requires, in part,

When it is known that a procedure or work document will require the manipulation of plant components, those components shall be adequately identified and listed within the work document, or procedure, and properly dispositioned with applicable sign-offs.

The electrical maintenance work document, work order 119064779 for 1-TRI-202-3, 18-month RCP 3 Penetration Aux Overcurrent Protective Relay Calibration, Revision 7, had steps that directed the breaker to be returned to its as-found position. Despite the conversation between the RE and the electrical maintenance representative, the breaker was returned to the as-found position of racked down upon the completion of the maintenance. The conversation about the intended position of the normal feeder breaker did not meet the requirements of NPG-SPP-10.1. If the breaker had been left in the racked up position by the RE, there would have been no doubt as to the "as-found" position being the correct and normal configuration.

Corrective Actions: The licensee's immediate corrective actions were to correctly configure the normal feeder breaker for plant start up. Additional checks were also added to some Operations surveillance procedures to check the status of the breakers before each transfer activity.

Corrective Action Reference: This issue was documented in the TVA corrective action program by Condition Report 1460667.

Performance Assessment:
Performance Deficiency: The failure to follow NPG-SPP-10.1, System Status Control, Revision 9, was a performance deficiency. Specifically, when it was known that work order 119064779 would require the manipulation of the plant RCP 3 normal feeder breaker, the work document did not adequately identify or properly disposition the breaker with applicable sign-offs.

Screening: The performance deficiency was determined to be more than minor because it is associated with the Human Performance attribute of the Initiating Events cornerstone and adversely affects the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to follow system status control requirements resulted in a component misposition that led to a Unit 1 trip.

Significance: In accordance with IMC 0609, Attachment 4, the inspectors determined the Initiating Events cornerstone was affected due to the plant trip. The inspectors used the SDP Appendix Router to arrive at IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined that the finding screened to Green in accordance with IMC 0609, Appendix A, Exhibit 1, "Initiating Events Screening Questions," Section B, "Transient Initiators," because it did not result in both a trip and a loss of mitigation equipment relied upon to transition from the onset of the trip to a stable shutdown condition.

Cross-Cutting Aspect: The finding had a cross-cutting aspect in the Consistent Process attribute of the Human Performance area as defined in IMC 0310, “Aspects Within the Cross-Cutting Areas,” because the licensee did not use a consistent systematic process when making decisions that affect or could potentially affect the configuration control of the plant.

Enforcement:
Violation: Technical Specification 5.7.1, “Procedures,” requires that written procedures covering activities that are recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, be established, implemented, and maintained. Regulatory Guide 1.33, Revision 2, Appendix A, February 1978, section 1, Administrative Procedures, requires, in subsection c, in part, procedures for equipment control. Contrary to the above, on October 18, 2018, the licensee failed to adequately implement an administrative procedure for equipment control, NPG-SPP-10.1, System Status Control, Revision 9, when restoring the RCP 3 normal feeder breaker prior to planned additional electrical maintenance testing.

Enforcement Actions: This violation is being treated as a Non-Cited Violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On January 24, 2019, the inspector presented the quarterly resident inspector inspection results to Mr. Paul Simmons and other members of the licensee staff.

LIST OF DOCUMENTS REVIEWED

Section 71111.01: Adverse Weather Protection

CR 1149859
CR 1177015
CR 1349567
Drawing 38N202, Rev. 13
Drawing 38N203, Rev. 7
Drawing 37W206-1, Rev. 32
Drawing 38N204, Rev. 6
Watts Bar Final Safety Analysis Report, Section 2.4 Hydrologic Engineering
TI-64 Breaching Hazard Barriers, Rev. 13
0-TI-443, External Flood Protection Program Bases Document, Rev. 3
0-TI-444. External Flood Protection Program, Rev. 3
WBN-DCD-40-29, Flood Protection Provisions Watts Bar Nuclear Plant Unit 1/Unit 2, Rev. 0016

Section 71111.04: Equipment Alignment

Procedures
1-GO-1, Unit Startup from Cold Shutdown to Hot Standby, Rev. 19
1-SOI-74.01 ATT 1V, Residual Heat Removal System Valve Checklist 1-74.01-1V, Rev. 0000
1-SOI-63.01 ATT 1P, Safety Injection System Power Checklist 1-SOI-63.01-1P, Rev. 9
1-SOI-63.01 ATT 1V, Safety Injection System Valve Checklist 1-SOI-63.01-1V, Rev. 12

Drawings
1-47W811-1

Section 71111.05AQ: Fire Protection

Fire Protection Report, Part II, Fire Protection Plan, Rev. 54
CON-0-729-01, Watts Bar Nuclear-Prefire Plan, Elevation 729', Rev. 2
AUX-0-729-01, Watts Bar Nuclear-Prefire Plan, Elevation 729', Rev. 2
CR 1468635
WO 119307084
WO 119106999
WBN-Prefire Plan AUX-0-713-01, Rev. 1
WBN-Prefire Plan AUX-0-713-02, Rev. 3
WBN-Prefire Plan AUX-0-713-03, Rev. 3

Section 71111.11: Licensed Operator Requalification Program

Simulator Exercise Guide 3-OT-SRE-1014 Annual Operating Exam, Rev. 9
NPG-SPP-17.8.1, Licensed operator Requalification Examination Development and Implementation, Rev. 0017
3-OT-SRE-1019, Rev 5
3-OT-SRE-1040, Rev 1
3-OT-SRE-1006, Rev 1
3-OT-SRE-1018, Rev 7
2017 BRE 1R, Rev 0
2017 BRE 1S, Rev 0
3-OT-J2F-0-1AB-S3.2, Rev 7
3-OT-J2B-0-1CB-E1, Rev 0

3-OT-J1C-1-1SI-A2, Rev 4
3-OT-J2C-1-1SI-A13, Rev 9
3-OT-J2B-0-1AR-S6802, Rev 2
3-OT-J0N-0-1AB-E0A8-1, Rev 0
3-OT-J2A-0-2TB-EC00, Rev 5
3-OT-J2C-1-1SI-S62E0, Rev 5
3-OT-J1A-1-1SI-FZ1, Rev 2
3-OT-J2C-1AR-S5401, Rev 0

Section 71111.12: Maintenance Effectiveness

Cause Determination Evaluation (CDE) 1589
CDE 1426
CR 1429639
0-TI-119, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting – 10CFR50.65, Rev. 0006
Past Operability Evaluation Documentation for PER 1335791
CR 1335791
CDE 1372 and 1596
NUMARC 93-01

Section 71111.13: Maintenance Risk Assessments and Emergent Work Control

CR 1453918
NPG-SPP-07.2.11, Shutdown Risk Management, Rev. 12
WBN Defense in Depth Assessment dated October, 15, 2018
NEDP-26-4, PRA Evaluation Response, WBN-1-18-137, R0
NPG-SPP-09.11.1, Equipment Out of Service Management, Rev. 0012
WBN Defense in Depth Assessment, dated October 29, 2018

Section 71111.15: Operability Determinations and Functionality Assessments

CR 1455595
Engineering work request EWR18PROG068333
WO 114521906
WO 114522013
CR 1463113
NPG-SPP-09.11.1, Equipment Out of Service Management, Rev. 0012
1-SOI-3.02, Auxiliary Feedwater System, Rev. 0022

Section 71111.18: Plant Modifications

Design change notice 6069A

Section 71111.19: Post Maintenance Testing

WO 115912875
0-MI-57.250, 18 Month Periodic Testing of 1E Molded Case Circuit Breakers with 1E Loads, Rev. 0001
WO 114521906
1-SI-68-904-B, Reactor Coolant System Valve Position Indication Verification (Train B), Rev. 0020
CR 1455595

WO 114522013
1-SI-68-904-A, Reactor Coolant System Valve Position Indication Verification (Train A), Rev. 0021
1-SI-3-925-B, Auxiliary Feedwater Pump 1B-B Preservice Pump Test, Rev. 0
WO 119867319
WO 119867314
1-SI-3-925-A, Auxiliary Feedwater Pump 1A-A Preservice Pump Test, Rev. 0
WO 119994029
1-SOI-3.02, Auxiliary Feedwater System, Rev. 0022
WO 119997317
0-SOI-82.02, Diesel Generator (DG) 1B-B, Rev. 0010
Surveillance Task Shet (STS) WO 119065544
WO 119082606
Badge Access Transaction Report dated 11/6/18
Dwg 47W435-9, Rev. 23
Dwg 47W435-9, Rev. 25
Dwg 1-47W811-1, Rev. 64
Dwg 1-47W435-220C, Rev. 2
Dwg 1-47W435-280. Rev. 3
1-SI-0-906, Primary Pressure Boundary Isolation Valve Leak Test SIS Secondary Check Valves, Rev. 0008
STS WO 119065075
WO 119205778
WO 04-811737-000
0-TI-5.002, Flow Testing of Ventilation Systems, Rev. 2
CR 1439271
Engineering Work Request EWR18MEC003301, dated August 14, 2018
CR 1476971

Section 71111.20: Refueling and Other Outage Activities

WO 119049266
1-MI-68.001, Disassembly and Reassembly of the Unit 1 Reactor Pressure Vessel, Rev. 0011
Operating Experience Smart Sample (OpESS) 2007/03, Crane and Heavy Lift Inspection, Supplemental Guidance to IP 71111.20 and IP 71111.13, Rev. 3

Section 71111.22: Surveillance Testing

WO 119064794
0-SI-82-4, 18 Month Loss of Offsite Power with Safety Injection Test – DG 1B-B, Rev. 68
WO 119064783
1-SI-61-2, 18 Month Ice Weighing, Rev. 0023
0-MI-61.06, Servicing Ice Condenser, Rev. 0007
0-MI-61.06, Servicing Ice Condenser, Rev. 0008

Section 71114.02: Alert and Notification System Evaluation

Procedures

EPDP-10, Facilitation of the Alert and Notification System and Notification Tests, Rev. 7
EPFS-9, Inspection, Service, and Maintenance of the Alert & Notification System (ANS) at Browns Ferry, Sequoyah, and Watts Bar Nuclear Plants, Rev. 11
Federal Signal Safety & Security Systems, Models 2001-130, Equinox, & 508-128 Sirens,

Installation, Operation, & Service Manual, Rev.A1
FEMA REP-10 A&NS Design Report, Rev. 3
FEMA approval letter, dated 12/3/14

Records and Data
Monthly and Bi-weekly Activation Results, dated October 2017 – October 2018

Corrective Action Program Documents (Condition Reports)
CR 1344832, Siren WBN-0-PNS-901-075 failed to sound & rotate during test
CR 1376914, WBN ANS siren 017 failed to respond to scheduled bi-weekly silent test
CR 1376983, Required bi-weekly silent test of SQN & WBN A&NS sirens not performed on-time
CR 1394101, WBN-0-PNS-901-041 siren failed to activate during the monthly activation test
CR 1410983, ANS siren 023 failed to properly sound on monthly test
CR 1415394, WBN ANS siren 087 failed to respond during silent test

Section 71114.03: Emergency Response Organization Staffing and Augmentation System

Procedures
EPDP-1, Procedures, Maps and Drawings, Rev. 15
EPDP-2, Emergency Duty Officer, EP Staff and Operations Duty Specialist Notifications Procedure, Rev. 8
EPDP-10, Facilitation of the Alert and Notification System and Notification Tests, Rev. 7
EPDP-11, Emergency Preparedness Performance Indicators, Rev. 11
TRN-30, Radiological Emergency Preparedness Training, Rev. 38
WBN Plant Radiological Emergency Plan, Appendix C, Rev. 113

Records and Data
2018 ERO Notification System call-out test results
- WBN TEENS, EP Office, Off-Hours Test – 05/17/18
- WBN TEENS, “C” Team, Off-Hours Test – 09/13/18
- WBN TEENS, EP Office, Routine Test – 11/06/18
- WBN TEENS, EP Office, Routine Test – 11/20/18

Watts Bar Nuclear Station On-Shift Staffing Analysis Report, dated 11/13/14
Selected employee training records
Emergency Response Organization current duty roster

Corrective Action Documents
1393563, Training change to enhance implementation of WBN IER 13-10 Rec 6
1413878, WBN REP Drill Team A 05-09-2018 Staffing position simulated
1425046, WBN REP Drill 6-20-18 TEENS notification error

Section 71114.04: Emergency Action Level and Emergency Plan Changes

Change Packages
WBN-2018-011, EPDP-17, Attachment 2 Screening Evaluation Form for EPIP-1 Rev. 48, dated 5/31/18
WBN-2018-011, EPDP-17, Attachment 4 Effectiveness Evaluation Form for EPIP-1 Rev. 48, dated 5/31/18
WBN-2018-016-E Rev. 1, EPDP-17, Attachment 2 Screening Evaluation Form for EPIP-1 Rev.

49 editorial changes, dated 11/7/18
WBN-2018-016-T Rev. 1, EPDP-17, Attachment 2 Screening Evaluation Form for EPIP-1 Rev. 49 non-editorial changes, dated 10/30/18
WBN-2018-016-T Rev. 1, EPDP-17, Attachment 4 Effectiveness Evaluation Form for EPIP-1 Rev. 49 non-editorial changes, dated 10/30/18
WBN-2018-017 Rev. 1, EPDP-17, Attachment 2 Screening Evaluation Form for EPIP-1 Rev. 49, dated 11/8/18
WBN-2018-019, EPDP-17, Attachment 2 Screening Evaluation Form for EPIP-1 Rev. 50, dated 7/17/18
WBN-2018-019, EPDP-17, Attachment 4 Effectiveness Evaluation Form for EPIP-1 Rev. 50, dated 7/17/18
WBN-2018-027, EPDP-17, Attachment 2 Screening Evaluation Form for EPIP-1 Rev. 51, dated 9/17/18
WBN-2018-027, EPDP-17, Attachment 4 Effectiveness Evaluation Form for EPIP-1 Rev. 51, dated 9/17/18
WBN-2018-028, EPDP-17, Attachment 2 Screening Evaluation Form for EPIP-1 Rev. 51, dated 9/17/18
WBN-2018-028, EPDP-17, Attachment 4 Effectiveness Evaluation Form for EPIP-1 Rev. 51, dated 9/17/18
WBN-2018-029, EPDP-17, Attachment 2 Screening Evaluation Form for EPIP-1 Rev. 51, Wallboards, dated 9/17/18

Corrective Action Program Documents
CR 1367722, 2017 NRC inspection – 50.54(q) tracking number not recorded on document
CR 1367726, 2017 NRC inspection – 50.54(q) grammar errors
CR 1428481, PCR WBN EPIP-1
CR 1429910, WBN EP – evaluation of potential EP-related NRC finding
CR 1446537, Error in calculation WBNAP53047 R9
CR 1452605, Adverse trend in Engineering/EP interface issues across the fleet
CR 1462595, Recommend a Level 1 evaluation for condition described in CR 1446537

Section 71114.05: Maintenance of Emergency Preparedness

Procedures
CECC-EPIP-1, CECC Operations, Rev. 66
EPDP-3, Emergency Plan Exercises & Preparedness Drills, Rev. 15
EPIP-2, Notification of Unusual Event, Rev. 40
EPIP-5, General Emergency, Rev. 50
EPIP-6, Activation and Operation of the Technical Support Center, Rev. 52
EPIP-7, Activation and Operation of the Operations Support Center, Rev. 39
EPIP-12, Emergency Equipment and Supplies, Rev. 40
NPG-SPP-03.18, Conduct of Quality Assurance Assessments, Rev. 7
NPG-SPP-18.3.5, Equipment Important to Emergency Response, Rev. 5
NPG-SPP-18.3.7, Alternate Facility Activation and Operation, Rev. 2
NPG-SPP-22.102, NPG Self-Assessment & Benchmarking Programs, Rev. 5
NPG-SPP-22.300, Corrective Action Program, Rev. 12
NPG-SPP-22.600, Issue Resolution, Rev. 5
Records and Data
Final After Action Report, Watts Bar Nuclear Plant, Radiological Emergency Preparedness Exercise, Date: December, 2017, dated 8/24/2018

2017 TVA Watts Bar Nuclear (WBN) Graded exercise, dated 12/13/17
2018 TVA WBN EMPE Drill, dated 1/9/18
March 2018 B Team SAMG, TVA WBN, dated 3/21/18
May 2018 A Team Training Drill, TVA WBN, dated 5/9/18
WBN June 2018 Off Year Training Drill, TVA WBN, dated 8/20/18
Drill Report Watts Bar, dated 7/17/18
SSA171, Site Audit Report, Radiological Emergency Preparedness, Watts Bar Nuclear Plant, October 10 – 20, 2017
Annual review and Approval of ETE Update letters, dated 12/9/16 and 12/9/17
Letters of Agreement
QA-CH-18-001, Radiological Emergency Preparedness Assessment, Chattanooga Office Complex (COC), dated 5/15-23/18
QA-CH-18-009, Radiological Emergency Preparedness (REP) Drill, Watts Bar Nuclear (WBN) Nuclear Site, dated 5/9/18
QA-CH-18-011, REP Drill, WBN Nuclear Site, dated 6/20/18
QA-CH-18-012, WBN Plant, Quality Assurance, June Site report, dated 7/13/18
QA-CH-18-019, WBN Plant, Quality Assurance, September Site report, dated 10/10/18
WO 118022, Surveillance Task Sheet (STS), C-TRI-52-1 Channel calculation of kinemetrics triaxial accelerometer FB-3, dated 9/7/17
Annual Population Update for WBN Plant 10-milew EPZ, December 2017
EITER (Siren) Tracking Matrix, 8/23/16 – 11/4/18
WBN-EP-BM-18-002- Bench Mark Report, dated 8/27-29/18
WBN-EP-BM-18-006- Bench Mark Report, dated 8/15-9/29/18
WBNAPS3047, NPG Calculation Coversheet/CTS Update, Rev. 8
WBNAPS3047, NPG Calculation Coversheet/CTS Update, Rev. 11
TRIPS234, NPG Calculation Coversheet/CTS Update, Rev. 12
Watts Bar 2018 Calendar with information to the public within the 10 mile EPZ

Corrective Action Documents
CR 1368683, 2017 WBN Graded Exercise – Dose Assessment Use
CR 1368703, 2017 WBN Graded Exercise – Objective 14 failure
CR 1368797, 2017 WBN Graded Exercise – REP Drill participation
CR 1368976, 2017 WBN Graded Exercise – abbreviated TSC facility critique
CR 1376281, Perform informal benchmark for evaluation of initial time (T-0) for REP declaration
CR 1376290, Inaccurate classification during emergency scenario
CR 1376436, 1/9/2018 WBN EMPE REP Drill failed drill objective E4, SM made inaccurate declaration
CR 1376442, 1/9/18 EMPE REP drill failed drill objective, D1, DEP inaccurate classification
CR 1381546, CR to document inaccurate classification during licensed operator requal. exam
CR 1384949, WBN MET Tower area and Environmental Data System building improvements
CR 1393348, WBN EPIP-5- Missing sector B3 from PAR worksheets
CR 1394101, WBN-0-PN-901-041, failed to activate during monthly test
CR 1399031, 3/21/18 WBN REP Drill-CECC Facility and Equipment issues
CR 1399033, 3/21/18 WBN REP Drill-objective E3 failure for periodic state updates
CR 1399072, 3/21/18 WBN REP Drill-CECC EPIP-19 regarding TP BARs
CR 1410933, ANS siren 23 failed to properly sound on monthly test
CR 1420941, WBN Alert and Notification System siren WBN-O-PNS-901-073 failed to rotate during monthly activation
CR 1421033, Instrument malfunction 2-RM-90-112
CR 1425045, WBN REP Drill 6-20-18: EPIP-1 copy in TSC

CR 1425662, 10 meter MET tower data lost
CR 1428568, ANS Siren WBN-0-PNS-901-012 failed to respond properly during monthly test
CR 1443981, Need definitive interpretation of the requirement to declare an Alert per 1C CA3
CR 1446266, EPIP-14 Rev 27 screening and effectiveness evaluation tracking number missing
CR 1446537, Error in calculation WBNAPS3047 R9
CR 1462247, WBN-EP-SA-18-001 UNSAT Objective 4 - E-Plan Implementing procedure

Section 71151: Performance Indicator Verification

Procedures

EPDP-11, Emergency Preparedness Performance Indicators, Rev. 9

Records and Data

DEP opportunities documentation for 4th quarter 2017; 1st, 2nd, & 3rd quarters 2018
Siren test data for 4th quarter 2017; 1st, 2nd, & 3rd quarters 2018
Drill and exercise participation records of ERO personnel for 4th quarter 2017; 1st, 2nd, & 3rd quarters 2018

Corrective Action Documents

CR 1367538, 2017 NRC inspection – DEP paperwork
CR 1428793, Potential trend: WBN ANS siren tests

Section 71152: Problem Identification and Resolution

CR 143340
CR 1404243
CR 1405515
CR 1408747
CR 1409393
CR 1429017
QA-WB-18-008, Watts Bar Nuclear Plant - Quality Assurance April Site Report, May 11, 2018
QA-WB-18-010, Watts Bar Nuclear Plant – Quality Assurance May Site Report, June 11, 2018
QA-WB-18-012, Watts Bar Nuclear Plant – Quality Assurance June Site Report, July 13, 2018
QA-WB-18-015, Watts Bar Nuclear Plant – Quality Assurance July Site Report, August 13, 2018
QA-WB-18-018, Watts Bar Nuclear Plant – Quality Assurance August Site Report, September 12, 2018
QA-WB-18-019, Watts Bar Nuclear Plant – Quality Assurance September Site Report, October 10, 2018
Site Trimester Performance Assessment June 2018 – September 2018
Site Trimester Performance Assessment February 2018 – May 2018
Operations Department Performance Assessment, March 1 through April 30, 2018
Operations Department Performance Assessment, May through June 2018
Operations Department Performance Assessment, July through August 2018