



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

August 5, 2021

Mr. Jim Barstow  
Vice President Nuclear Regulatory Affairs & Support Services  
Tennessee Valley Authority  
1101 Market Street, LP 4A-C  
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT – INTEGRATED INSPECTION REPORT  
05000259/2021002, 05000260/2021002 AND 05000296/2021002

Dear Mr. Barstow:

On June 30, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Browns Ferry Nuclear Plant. On July 27, 2021, the NRC inspectors discussed the results of this inspection with Mr. M. Rasmussen and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. One Severity Level IV violation without an associated finding is documented in this report. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations documented in this inspection report, 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 Browns Ferry 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 Browns Ferry 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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

J. Barstow

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Sincerely,

*/RA/*

Thomas A. Stephen, Chief  
Reactor Projects Branch #5  
Division of Reactor Projects

Docket Nos. 05000259, 05000260 and 05000296  
License Nos. DPR-33, DPR-52 and DPR-68

Enclosure:  
As stated

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SUBJECT: BROWNS FERRY NUCLEAR PLANT – INTEGRATED INSPECTION REPORT  
 05000259/2021002, 05000260/2021002 AND 05000296/2021002 Dated  
 August 5, 2021

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**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Numbers: 05000259, 05000260 and 05000296

License Numbers: DPR-33, DPR-52 and DPR-68

Report Numbers: 05000259/2021002, 05000260/2021002 and 05000296/2021002

Enterprise Identifier: I-2021-002-0017

Licensee: Tennessee Valley Authority

Facility: Browns Ferry Nuclear Plant

Location: Athens, Alabama

Inspection Dates: April 1, 2021 to June 30, 2021

Inspectors: D. Bacon, Senior Operations Engineer  
J. Diaz-Velez, Senior Health Physicist  
C. Fontana, Emergency Preparedness Inspector  
D. Hardage, Senior Resident Inspector  
N. Karlovich, Resident Inspector  
M. Kirk, Resident Inspector  
A. Nielsen, Senior Health Physicist  
J. Rivera, Health Physicist  
S. Sanchez, Senior Emergency Preparedness Insp  
J. Steward, Senior Resident Inspector  
J. Walker, Emergency Response Inspector

Approved By: Thomas A. Stephen, Chief  
Reactor Projects Branch #5  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Browns Ferry Nuclear Plant, 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.

### List of Findings and Violations

Failure to Critique a Risk Significant Planning Standard During a Graded Exercise			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Emergency Preparedness	Green NCV 05000259,05000260,05000296/2021002-01 Open/Closed	[H.12] - Avoid Complacency	71114.01
The inspectors identified a Green Non-Cited Violation (NCV) of Title 10 of the Code of Federal Regulations (CFR), Part 50.47(b)(14) and Appendix E, Section IV.F.2.g. Specifically, the licensee failed to identify and critique a weakness associated with a risk significant planning standard (RSPS) during their critique process following the June 23, 2021, biennial graded exercise.			

Unit 1 Main Steam Relief Valves Lift Settings Outside of Technical Specification Required Setpoints			
Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000259/2021002-02 Open/Closed	Not Applicable	71153
A self-revealed Severity Level IV NCV of Technical Specification (TS) 3.4.3 and TS 3.0.4 was identified when the licensee discovered, through as found test results, that four of thirteen main steam relief valves (MSRVs) that were removed for testing had as found lift settings outside of the +/-3 percent setpoint band required for their operability.			

### Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000259/2020-003-00	LER 2020-003-00 for Browns Ferry Nuclear Plant, Unit 1, Main Steam Relief Valves Lift Settings Outside of Technical Specifications Required Setpoints	71153	Closed
LER	05000259/2020-003-01	LER 2020-003-01 for Browns Ferry Nuclear Plant, Unit 1 Main Steam Relief Valves Lift Settings Outside	71153	Closed

		of Technical Specifications Required Setpoints		
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## **PLANT STATUS**

Unit 1 began the inspection period at 100 percent rated thermal power (RTP). On May 6, 2021, the Unit performed a planned downpower to approximately 35 percent RTP to perform feedwater drain line repairs, reactor core isolation cooling (RCIC) outboard steam line isolation valve motor replacement, control rod sequence exchange and other planned testing. Unit 1 returned to RTP on May 7, 2021, where it remained through the end of the inspection period.

Unit 2 began the inspection period shutdown in Mode 5 (Refueling), completing planned refueling outage (2R21) maintenance and testing including a temporary repair to the 0 degree and 180 degree azimuth core shroud access covers. Flaws were discovered during in-vessel visual inspection of both covers that required a temporary repair. The Unit entered Mode 2 and commenced a reactor startup on April 21, 2021. The Unit was placed in Mode 1 and the main generator synchronized with the grid on April 22, 2021. The Unit ascended in power and achieved RTP on May 3, 2021. The Unit operated at or near RTP through the remainder of the inspection period.

Unit 3 began the inspection period at RTP. On April 3, 2021, the Unit performed a planned downpower to approximately 70 percent power to perform a control rod sequence exchange and other planned testing. Unit 3 returned to RTP on April 3, 2021 and remained at or near RTP through the remainder 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 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. Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time, the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D; observed risk significant activities; and completed on site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or a portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

## **REACTOR SAFETY**

### 71111.04 - Equipment Alignment

#### Partial Walkdown Sample (IP Section 03.01) (5 Samples)

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

- (1) Unit 3 3B Diesel Generator (DG) while the 3D Diesel Generator was removed from service for planned maintenance on May 10, 2021
- (2) Unit 2 Core Spray (CS) Loop 2 while Residual Heat Removal (RHR) Loop 1 was removed from service for planned maintenance on May 26, 2021
- (3) Unit 2 RHR Loop 1 while RHR Loop 2 was removed from service for planned maintenance on June 17, 2021
- (4) Unit 1 CS Loop 2 while CS Loop 1 was removed from service for planned maintenance on June 30, 2021
- (5) Unit 1, 2, and 3, 250 Volt Direct Current (DC) Battery Bank 2, 250 Volt DC Battery bank 2 board, and Unit 2 High Pressure Coolant Injection (HPCI) while Battery Bank 1 was removed from service for planned maintenance on June 24, 2021

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

- (1) Reactor Core Isolation Cooling (RCIC) system on April 27, 2021 and April 29, 2021

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (8 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Unit 1 Fire Areas 1-1 and 1-2, Reactor Building Elevation 565' on May 6, 2021
- (2) Unit 1 Fire Area 4, Reactor Building Elevation 593', Electrical Board Room 1B on May 20, 2021
- (3) Unit 2 Fire Area 2-2, Reactor Building Elevations 519 and 541, Northeast and Southeast Quads on May 25, 2021
- (4) Unit 2 Fire Area 2-1, Reactor Building Elevations 519 and 541, Southwest Quadrant on June 17, 2021
- (5) Units 1, 2 and 3, Fire Area Yard, Switchyard Main Transformers on June 30, 2021
- (6) Unit 3 Fire Area 16-O, Auxiliary Instrument Room # 3 on June 21, 2021
- (7) Units 1, 2 and 3, Fire Area 16-N, Communications Battery Room, Communications Battery Board Room, Communications Room, and Computer Room on June 28, 2021
- (8) Units 1 and 2 Fire Area 16-A, Cable Spreading Room A on June 25, 2021

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 03.01) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) Unit 1 HPCI

71111.07A - Heat Sink Performance



Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

- (1) 2-HEX-074-0900A, Unit 2 RHR A Heat Exchanger on May 28, 2021

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1)
  - The inspectors observed and evaluated licensed operator performance in Unit 2 Control Room on April 21, 2021 during control rod withdrawal to criticality and power ascension to the point of adding heat (POAH).
  - The inspectors also observed and evaluated licensed operator performance in the Unit 3 Control Room on June 12, 2021 during a planned downpower from 75 percent power to 50 percent power for planned maintenance on the 3C2 main condenser waterbox and rod sequence exchange.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance during two simulator scenarios on the Unit 3 simulator on June 28, 2021. The first scenario incorporated a partial loss of reactor building closed cooling water (RBCCW), loss of instrumentation and control (I and C) bus B, anticipated transient without scram (ATWS), followed by a lower water level for power control with bypass valves. The second scenario incorporated a diesel generator surveillance, fire and medical emergency, loss of I and C bus A with a loss of main condenser vacuum, reactor scram followed by an unisolable HPCI system steam leak which required emergency depressurization.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

- (1) Unit 3 Function 31-S, 4KV Shutdown Board Room Chillers (a)(1) status evaluation on June 30, 2021

Quality Control (IP Section 03.02) (1 Sample)

The inspectors evaluated the effectiveness of maintenance and quality control activities to ensure the following SSC remains capable of performing its intended function:

- (1) Replacement and Commercial Grade Dedication of the 250 Volt Remote Motor Operated Valve (RMOV) Board 2B Normal Supply Handswitch on June 25, 2021

71111.13 - Maintenance Risk Assessments and Emergent Work Control

### Risk Assessment and Management Sample (IP Section 03.01) (2 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) Unit 2 elevated risk due to a direct current (DC) ground on the 2C inboard Main Steam Isolation Valve (MSIV) solenoid which occurred on April 29, 2021. Inspectors reviewed ground isolation strategy per work order 122076896 and development of a temporary modification (T-Mod) to install a DC to DC converter per work order 122097702.
- (2) Unit 2 elevated risk from the 2C inboard MSIV opening while under a closed signal. Simple troubleshooting performed per work order 122093878 on June 5, 2021.

### 71111.15 - Operability Determinations and Functionality Assessments

#### Operability Determination or Functionality Assessment (IP Section 03.01) (6 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Unit 1 and Unit 2 Control Room Radiation Monitor BFN-0-RM-090-0259A, adjusting the Gamma Scale Factor on April 6, 2021
- (2) Unit 2 Reactor Protection System (RPS) following a trip of the 2A RPS motor generator set on April 1, 2021
- (3) Unit 2 Containment Atmosphere Dilution System Valve Operability missed surveillance on May 6, 2021
- (4) Main Bank Battery 1 following failure to meet specific gravity acceptance criteria after charging on June 29, 2021
- (5) Common Shutdown Board Battery Bank A following the weekly check for the shutdown board batteries on June 30, 2021
- (6) Unit 1 Automatic Depressurization System (ADS) high drywell pressure instrumentation following discovery of a low reading of drywell pressure on June 30, 2021

### 71111.18 - Plant Modifications

#### Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Unit 1 reactor recirculation loop B flow measurement per BFN-1-2020-068-003 on June 9, 2021
- (2) Unit 2 Shroud Access Hole Cover Weld Flaw Repair per BFN-2-2021-068-001 on May 12, 2021

### 71111.19 - Post-Maintenance Testing

### Post-Maintenance Test Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the following post-maintenance test activities to verify system operability and functionality:

- (1) Unit 2, RCIC following 10-year preventative maintenance activities on April 23, 2021
- (2) Unit 2, 2 out of 4 voter power supply replacement for Average Power Range Monitor (APRM) 4 following failure on April 22, 2021
- (3) Unit 1, RCIC Steam Line Outboard Isolation Valve, 1-FCV-71-3, post maintenance test following motor actuator replacement on May 21, 2021
- (4) Unit 3, 3A Control Bay chiller following replacement of compressor on May 6, 2021
- (5) Unit 3, 3D battery bank for the 3D DG following replacement of the batteries on May 12, 2021
- (6) Unit 3, 3C DG following preventative maintenance activities on June 13, 2021

### 71111.20 - Refueling and Other Outage Activities

#### Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated the remaining maintenance and repair activities during the Unit 2 refueling outage which included emergent temporary repairs to the Core Shroud Access Hole Covers from the start of the inspection period April 1, 2021 to April 21, 2021.

### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

#### Surveillance Tests (other) (IP Section 03.01) (1 Sample)

- (1) 2-SR-3.1.4.1, Scram Insertion Time Testing on April 18, 2021.

#### Inservice Testing (IP Section 03.01) (1 Sample)

- (1) Unit 2 RHR System Motor Operated Valve (MOV) Operability - Loop 1 on June 9, 2021

### 71114.01 - Exercise Evaluation

#### Inspection Review (IP Section 02.01-02.11) (1 Sample)

- (1) The inspectors evaluated the biennial emergency preparedness exercise during the week of June 21, 2020. The simulated scenario began with a main steam line relief valve failing open and causing the operating crew to reduce reactor power. Then a report came in of high radiation measured at the independent spent fuel storage installation pad. This met the criteria for declaration of an Unusual Event. As an initial steam leak degraded, drywell pressure increased to meet the conditions for declaration of an Alert. Sometime later, an unanticipated loss of reactor pressure vessel water level occurred, thus meeting conditions for declaration of a Site Area Emergency. Lastly, a wetwell access hatch gasket leak occurred, thus meeting conditions for declaration of a General Emergency (GE). Following the GE, the

Offsite Response Organizations demonstrated their ability to implement emergency actions.

71114.04 - Emergency Action Level and Emergency Plan Changes

Inspection Review (IP Section 02.01-02.03) (1 Sample)

- (1) The inspectors evaluated submitted Emergency Action Level, Emergency Plan, and Emergency Plan Implementing Procedure changes during the week of June 21, 2020. This evaluation does not constitute NRC approval.

71114.06 - Drill Evaluation

Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

The inspectors evaluated:

- (1) Classifications and notifications during an emergency response training evolution on April 28, 2021

71114.08 - Exercise Evaluation Scenario Review

Inspection Review (IP Section 02.01 - 02.04) (1 Sample)

- (1) The inspectors reviewed and evaluated in-office, the proposed scenario for the biennial emergency plan exercise at least 30 days prior to the day of the exercise.

**RADIATION SAFETY**

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

Instructions to Workers (IP Section 03.02) (1 Sample)

The inspectors evaluated instructions to workers including radiation work permits used to access high radiation areas.

- (1) The inspectors reviewed the following:

Radiation Work Packages

- Radiation Work Permit (RWP) 21280042, 2R21 Drywell Insulator Support, Rev. 0
- RWP 21280052, 2R21 Drywell General Maintenance Activities, Rev. 0
- RWP 21280092, 2R21 Drywell ISI / FAC / IWE Activities, Rev. 0

Contamination and Radioactive Material Control (IP Section 03.03) (2 Samples)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material.

- (1) Observed workers and potentially contaminated material exiting the Unit 2 drywell during the U2R21 refueling outage.
- (2) Observed workers and potentially contaminated material exiting the RCA during the U2R21 refueling outage.

#### Radiological Hazards Control and Work Coverage (IP Section 03.04) (3 Samples)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities.

- (1) RWP 21280149, 2R21 Drywell Undervessel Maintenance Activities, Rev. 0
- (2) RWP 21280159, 2R21 Drywell Replace Stem, Wedge, & Wedge Pin in 68-3, Rev. 0
- (3) RWP 21270198, 2R21 Reactor Bldg Torus Desludge / Inspection Activities / Extremities (Divers), Rev. 0

#### High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (3 Samples)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

- (1) Various locations in the reactor building.
- (2) Various locations in the radwaste building.
- (3) Various locations in the turbine building.

#### Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 03.06) (1 Sample)

- (1) The inspectors evaluated radiation worker and radiation protection technician performance as it pertains to radiation protection requirements.

#### 71124.02 - Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls

##### Radiological Work Planning (IP Section 03.01) (5 Samples)

The inspectors evaluated the licensee's radiological work planning.

- (1) ALARA Plan 21-0210, 2R21 Outage Drywell Undervessel Maintenance
- (2) ALARA Plan 21-0222, 2R21 Outage Refuel Floor Maintenance Activities
- (3) ALARA Plan 21-0227, 2R21 LP Turbine Replacement
- (4) ALARA Plan 21-0205, 2R21 Drywell insulation/Shielding
- (5) ALARA Plan 21-0204, 2R21 Drywell Carpenter Support

#### Verification of Dose Estimates and Exposure Tracking Systems (IP Section 03.02) (4 Samples)

The inspectors evaluated dose estimates and exposure tracking.

- (1) 2R21 Repair 2-FCV-068-003

- (2) ALARA In-progress Review, ALARA Plan 21-0210, 2R21 Outage Drywell Undervessel Maintenance
- (3) ALARA In-progress Review, ALARA Plan 21-0204, 2R21 Drywell Carpenter Support
- (4) ALARA Plan 21-0237, 2R21 Transferring Torus desludge filter liner to LLM

#### Implementation of ALARA and Radiological Work Controls (IP Section 03.03) (3 Samples)

The inspectors reviewed as low as reasonably achievable practices and radiological work controls.

- (1) RWP 21280142 - 2R21 Drywell Undervessel Maintenance Activities, Rev. 0
- (2) RWP 21290001 - 2R21 Refuel Floor Activities, Rev. 0
- (3) RWP 21280142 - 2R21 Drywell Undervessel Maintenance Activities, Rev. 1

#### Radiation Worker Performance (IP Section 03.04) (1 Sample)

The inspectors evaluated radiation worker and radiation protection technician performance during:

- (1) Drywell Undervessel Maintenance Activities

#### 71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

##### Permanent Ventilation Systems (IP Section 03.01) (1 Sample)

The inspectors evaluated the configuration of the following permanently installed ventilation systems:

- (1) Control Room Emergency Ventilation System (CREVS)

##### Temporary Ventilation Systems (IP Section 03.02) (1 Sample)

- (1) Portable HEPA filter no. 002

##### Use of Respiratory Protection Devices (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated the licensee's use of respiratory protection devices.

##### Self-Contained Breathing Apparatus for Emergency Use (IP Section 03.04) (1 Sample)

- (1) The inspectors evaluated the licensee's use and maintenance of self-contained breathing apparatuses.

#### 71124.04 - Occupational Dose Assessment

##### Source Term Characterization (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated licensee performance as it pertains to radioactive source term characterization.

##### External Dosimetry (IP Section 03.02) (1 Sample)

- (1) The inspectors observed the issuance, use, and storage of external dosimeters.

#### Internal Dosimetry (IP Section 03.03) (2 Samples)

The inspectors evaluated the internal dosimetry program implementation.

- (1) 2R21 investigative whole body counts
- (2) In-vitro bioassay for torus divers

#### Special Dosimetric Situations (IP Section 03.04) (2 Samples)

The inspectors evaluated the following special dosimetric situations:

- (1) Management of radiation exposure for seven declared pregnant workers.
- (2) Calculation of shallow dose equivalent to the extremities for torus divers.

#### 71124.05 - Radiation Monitoring Instrumentation

##### Walkdowns and Observations (IP Section 03.01) (5 Samples)

The inspectors evaluated the following radiation detection instrumentation during plant walkdowns and observations of response checks:

- (1) Area radiation monitors in the turbine building, radwaste building, refuel floor, and Unit 1 and Unit 3 reactor buildings
- (2) RCA exit point detection instruments
- (3) Continuous air monitors in the Unit 3 reactor building and on the refuel floor
- (4) Hand and foot friskers at the refuel floor exit point
- (5) Portable survey instruments in use during the 2R21 refueling outage and portable instruments stored and ready for use

##### Calibration and Testing Program (IP Section 03.02) (10 Samples)

The inspectors evaluated the calibration and testing of the following radiation detection instruments:

- (1) Inter-laboratory count-room instrument comparison program results for CY 2019-2020.
- (2) Whole Body Counter, 2019 BFN WBC2 and 2020 BFN02
- (3) Ludlum Model 9-3, Ion Chamber, Ser. No.: 279912, Cal. Date: 1/26/2021
- (4) Ludlum Model 12-4 (with Neutron Detector), Ser. No.: 299394, Cal. Date: 7/28/2020
- (5) Mirion Telepole WR, Ser. No.: 0913-059, Cal. Date: 11/16/2020
- (6) Unit 2, 2-RM-90-273A, Containment High Range Radiation Monitor, Cal. Date: 6/9/17 and 4/26/19
- (7) Unit 2, 2-RM-90-272A, Containment High Range Radiation Monitor, Cal. Date: 12/29/16 and 4/15/19
- (8) ARGOS-5AB, Personnel Contamination Monitor, Serial Number: 1283 -825 (RE-90-025), Cal. Date: 12/31/2020
- (9) INST-51, Small Article Monitor, SAM-11, TVA Tag No: 841990, Cal. Date: 8/3/2020
- (10) MGP Instruments, Electronic Alarming Dosimeter, SN: 876056, Cal Date: 11/19/2020

### Effluent Monitoring Calibration and Testing Program Sample (IP Sample 03.03) (3 Samples)

The inspectors evaluated the calibration and maintenance of the following radioactive effluent monitoring and measurement instrumentation:

- (1) 0-RM-90-130(A, B, and C) Liquid Effluent Radiation Monitor, Cal. Dates: 07/30/2018 and 05/21/2020
- (2) 0-RM-90-147 and 0-RM-90-148 Gas Stack Radiation Monitors, Cal. Dates: 04/19/2018, 06/26/2019 and 02/19/2020
- (3) 0-RM-90-252 Radwaste Building Vent Exhaust Radiation Monitor, Cal Date: 10/25/2017, and 05/17/2019

### 71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

#### Walkdowns and Observations (IP Section 03.01) (3 Samples)

The inspectors evaluated the following radioactive effluent systems during walkdowns:

- (1) Main plant stack and associated effluent monitors RM-90-147 and RM-90-148.
- (2) Radwaste building vent and associated effluent monitor RM-90-252.
- (3) Liquid radwaste discharge and associated effluent monitor RM-90-130.

#### Sampling and Analysis (IP Section 03.02) (3 Samples)

Inspectors evaluated effluent samples, sampling processes and compensatory samples, as available.

- (1) Unit 1 turbine building vent compensatory sampling of noble gas.
- (2) Main stack sampling of particulate, iodine, and noble gas.
- (3) Compensatory sampling records for 3-RM-90-250, Unit 3 reactor building vent, 1/25/20 - 2/26/20.

#### Dose Calculations (IP Section 03.03) (2 Samples)

The inspectors evaluated the following dose calculations:

- (1) Gaseous release permit G-20200616-495-C, 6/23/20
- (2) Liquid release permit L-20210512-033-B, 5/15/21

#### Abnormal Discharges (IP Section 03.04) (2 Samples)

The inspectors evaluated the following abnormal discharges:

- (1) Gaseous tritium releases from the auxiliary boiler, 1st, 2nd, and 4th quarter 2020.
- (2) Liquid tritium releases from the Unit 1 and Unit 2 station sumps, various times throughout 2020.

### 71124.07 - Radiological Environmental Monitoring Program

#### Environmental Monitoring Equipment and Sampling (IP Section 03.01) (1 Sample)



- (1) The inspectors evaluated environmental monitoring equipment and observed collection of environmental samples.

Radiological Environmental Monitoring Program (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the implementation of the licensee's radiological environmental monitoring program.

GPI Implementation (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated the licensee's implementation of the Groundwater Protection Initiative program to identify incomplete or discontinued program elements.

**OTHER ACTIVITIES – BASELINE**

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS05: Safety System Functional Failures (SSFFs) Sample (IP Section 02.04) (3 Samples)

- (1) Unit 1 (April 01, 2020 through March 31, 2021)
- (2) Unit 2 (April 01, 2020 through March 31, 2021)
- (3) Unit 3 (April 01, 2020 through March 31, 2021)

MS07: High Pressure Injection Systems (IP Section 02.06) (3 Samples)

- (1) Unit 1 (April 01, 2020 through March 31, 2021)
- (2) Unit 2 (April 01, 2020 through March 31, 2021)
- (3) Unit 3 (April 01, 2020 through March 31, 2021)

MS08: Heat Removal Systems (IP Section 02.07) (3 Samples)

- (1) Unit 1 (April 01, 2020 through March 31, 2021)
- (2) Unit 2 (April 01, 2020 through March 31, 2021)
- (3) Unit 3 (April 01, 2020 through March 31, 2021)

OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

The inspectors evaluated the accuracy of the licensee's Performance Indicator data through a review of electronic dosimeter alarm logs and condition reports for the following period:

- (1) February 2020 - April 2021

PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample  
(IP Section 02.16) (1 Sample)

The inspectors evaluated the accuracy of the licensee's Performance Indicator data through a review of Liquid and Gaseous effluents reports and condition reports for the following period:

- (1) February 2020 - February 2021

EP01: Drill/Exercise Performance (DEP) Sample (IP Section 02.12) (1 Sample)

- (1) Unit 1 (April 1, 2020, through March 31, 2021)  
Unit 2 (April 1, 2020, through March 31, 2021)  
Unit 3 (April 1, 2020, through March 31, 2021)

EP02: Emergency Response Organization (ERO) Drill Participation (IP Section 02.13) (1 Sample)

- (1) Unit 1 (April 1, 2020, through March 31, 2021)  
Unit 2 (April 1, 2020, through March 31, 2021)  
Unit 3 (April 1, 2020, through March 31, 2021)

EP03: Alert And Notification System (ANS) Reliability Sample (IP Section 02.14) (1 Sample)

- (1) Unit 1 (April 1, 2020, through March 31, 2021)  
Unit 2 (April 1, 2020, through March 31, 2021)  
Unit 3 (April 1, 2020, through March 31, 2021)

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

- (1) The inspectors reviewed the licensee's corrective action program for potential adverse trends in the program administration and execution of the foreign material exclusion program that might be indicative of a more significant safety issue. The inspectors focused their review on the number of issues and challenges the licensee continues to experience with the introduction of foreign material in the spent fuel pools, the reactor vessel and most recently on the main operating turbine floor and how these issues can if allowed to continue adversely affect reliable equipment operation and fuel reliability.

The inspectors selectively reviewed licensee corrective action reports from October 2, 2020 through April 20, 2021. This period covered a planned Unit 1 refueling outage (1R13) and a Unit 2 planned refueling outage (2R21), which included replacement of the Unit 2 low pressure turbine rotors and inner casing lower halves as part of a first of a kind major upgrade project. The inspectors reviewed the licensee's foreign material exclusion program document, NPG-SPP-06.5, Foreign Material Control, and a self-assessment documented under Condition Report (CR) 1670967. Of the fifteen issues classified in the assessment as human performance deficiencies, six were determined to be foreign material exclusion (FME) intrusion events defined as where a foreign material enters a plant system, equipment or component. Seven other events were determined to be worker behavior gaps in performance that did not meet the standard established by the program document. The remaining two issues were determined to be associated with FME covers not used as required and FME

boundary violations. The inspectors also reviewed the FME Project Plan developed specifically in support of the 2R21 Low Pressure Turbine Steam Path Replacement Project. The inspectors note that the licensee initiated CR 1697395 to document performance deficiencies captured as procedure violations in FME cover usage, FME intrusion events and FME worker behaviors during 2R21. Resident Inspectors plan to perform a future trend review following the Unit 3 planned refueling outage (3R20) to compare and evaluate the effectiveness of corrective action plans implemented since completion of 2R21.

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples)

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

- (1) Repairs and corrective actions associated with the failure of the Unit 2 High Pressure Coolant Injection (HPCI) pump inboard pump seal during the flow rate test at 150 PSIG on April 10, 2021 and April 14, 2021
- (2) Units 1, 2 and 3, Common and individual unit operator workarounds and associated corrective actions.

71153 - Follow Up of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000259/2020-003-01, Main Steam Relief Valves Lift Settings Outside of Technical Specifications Required Setpoints (ADAMS Accession No. ML21092A022)

The inspectors reviewed the updated LER submittal as stated herein, as well as the original LER 50-259/2020-003-00, ADAMS Accession No. ML21033A787. The inspectors determined that it was not reasonable to foresee or correct the cause discussed in the LER therefore no performance deficiency was identified. The inspection conclusions associated with this LER are documented in this report under Inspection Results Section 71153.

**INSPECTION RESULTS**

Failure to Critique a Risk Significant Planning Standard During a Graded Exercise			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Emergency Preparedness	Green NCV 05000259,05000260,05000296/202102-01 Open/Closed	[H.12] - Avoid Complacency	71114.01
The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (CFR), Part 50.47(b)(14) and Appendix E, Section IV.F.2.g. Specifically, the licensee failed to identify and critique a weakness associated with a risk significant planning standard (RSPS) during their critique process following the June 23, 2021, biennial graded exercise.			

Description: Following the biennial graded exercise on June 23, 2021, the inspectors identified a significant (two orders of magnitude) discrepancy between the dose assessment runs performed during the exercise versus the dose assessment runs performed during the scenario development and validation process. The major difference was the selection of the scenario expected wetwell release pathway versus a drywell release pathway selected by the dose assessors during the exercise. This mattered because a wetwell release pathway provides for some “scrubbing” of radionuclides prior to an environmental release via the plant stack. The resultant dose assessment indicated two orders of magnitude higher radioactivity being released to the environment. The inspectors observed that the exercise was terminated prior to the field monitoring team data being provided to the dose assessors. Measurement data from the field monitoring teams were not used by the dose assessors for dose assessment comparison and validation of their results which used plant instrumentation data.

The inspectors did not observe any reference to the dose assessment discrepancy throughout the licensee’s critique process, nor was there any corrective action program document generated about said discrepancy. Following discussions with the licensee regarding this observation, the inspectors concluded that the licensee failed to critique the weakness associated with a RSPS (dose assessment) during the full-scale exercise.

Corrective Actions: The licensee entered the issue into the corrective action program on June 28, 2021.

Corrective Action References: Condition Reports 1704158 and 1704159.

Performance Assessment:

Performance Deficiency: The inspectors determined that not identifying an exercise weakness related to dose assessment was a performance deficiency that was reasonably within the ability of the licensee to foresee and correct.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the ERO Performance attribute of the Emergency Preparedness cornerstone and adversely affected the cornerstone objective to ensure 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 did not identify a weakness during the exercise critique process that was associated with a RSPS when dose assessors utilized a different release pathway during the exercise than what was expected per the submitted scenario.

Significance: The inspectors assessed the significance of the finding using Appendix B, “Emergency Preparedness SDP.” The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, “Significance Determination Process”, Attachment 4, Tables 1, 2, and 3 worksheets (issue date December 13, 2019), and the corresponding Appendix B, “Emergency Preparedness Significance Determination Process,” Figure 5.14-1, “Significance Determination for Critique Findings” (issue date September 22, 2015), the performance deficiency was determined to have very low safety significance (Green) because it was a critique finding during a full-scale exercise that was associated with a RSPS but the Drill and Exercise Participation (DEP) performance indicator was a success.

Cross-Cutting Aspect: H.12 - Avoid Complacency: Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful

outcomes. Individuals implement appropriate error reduction tools. The finding had a cross-cutting aspect of avoid complacency associated with human performance because the licensee did not plan for the possibility of the ERO selecting a different release pathway and incorporating that into the scenario development and validation process.

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)(14) requires, in part, that periodic exercises be conducted to evaluate major portions of emergency response capabilities and that deficiencies identified as a result of exercises be corrected. Section IV.F.2.g of Appendix E to 10 CFR Part 50 requires that all training, including exercises, shall provide for formal critiques to identify weak or deficient areas that need correction. Any weaknesses or deficiencies that are identified shall be corrected.

Contrary to the above, during a formal critique on June 24, 2021, the licensee failed to identify a weakness needing correction that was demonstrated during a full participation exercise on June 23, 2021. Specifically, the licensee failed to identify that the dose assessment runs generated during the exercise were significantly different than the dose assessment runs generated prior to the exercise during validation runs of the scenario with no corrective actions identified. There was no actual or potential safety significance because the weak performance occurred during an exercise.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Unit 1 Main Steam Relief Valves Lift Settings Outside of Technical Specification Required Setpoints

Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000259/2021002-02 Open/Closed	Not Applicable	71153

A self-revealed Severity Level IV NCV of Technical Specification (TS) 3.4.3 and TS 3.0.4 was identified when the licensee discovered, through as found test results, that four of thirteen MSRVs that were removed for testing had as found lift settings outside of the +/-3 percent setpoint band required for their operability.

Description: The Browns Ferry Unit 1 TS 3.4.3 requires twelve of the thirteen MSRVs to be operable while in Modes 1, 2, and 3. On December 4, 2020, the Tennessee Valley Authority was notified of as-found testing results that four MSRVs from Unit 1 were outside of the +/-3 percent setpoint band required for operability. It was determined that one of these MSRVs failed due to corrosion bonding between the pilot valve disc and seat. The other three were determined to have failed due to the relaxation of the setpoint spring over time. More than one MSRV were considered to be inoperable during the entire operating cycle from November 20, 2018 to October 3, 2020 and longer than permitted by TS 3.4.3. Additionally, TS 3.0.4 requires that when a limiting condition for operation (LCO) is not met, entry into an applicable Mode or specified condition is not permitted unless the associated actions permit continued operation. On July 29, 2020, following a restart from an unrelated manual scram in

response to a biofouling-induced degradation of the main condenser vacuum, the licensee entered a TS 3.4.3 applicable Mode when the required actions for continued operation were not met.

The affected valves remained capable of maintaining reactor pressure below the American Society of Mechanical Engineers code limit of 1375 psig. All thirteen of the MSR/V pilot valves have been replaced during the Unit 1 Fall 2020 refueling outage. The previous corrective action from LER 05000260/2019-002-00 to apply a platinum coating to the pilot using the plasma enhanced magnetron sputtering deposition method (PEMS), which improves the quality and adhesion of the coating, had not yet been implemented.

Corrective Actions: The licensee replaced all thirteen MSR/V pilot valves during the Fall 2020 refueling outage. The installed valves have implemented corrective actions from past occurrences of corrosion bonding that include preparing the pilot discs in accordance with the revised procedure and vendor recommendations. The currently installed refurbished valves had platinum coatings applied utilizing the PEMS deposition method, and as-left valves were verified to be within +/- one percent of their setpoints.

Additionally, the licensee is revising procedure MCI-0-001-VLV002 to include stricter criteria for spring testing, so springs might be replaced prior to the point of significant relaxation resulting in as-found setpoint testing failures

Corrective Action References: CRs 1286467, 1658693

Performance Assessment: The NRC determined this violation was not reasonably foreseeable and preventable by the licensee and therefore is not a performance deficiency.

Enforcement:

Severity: This violation is characterized as a Severity Level IV NCV based on its similarity to SLIV example 6.1.d.1 in the Enforcement Policy. The inspectors also reviewed NRC Enforcement Policy, Section 2.2.1, "Factors Affecting Assessment of Violations", which states, in part, that in determining the appropriate enforcement response to a violation, the NRC considers, whenever possible, risk information in assessing the safety or security significance of violations and assigning severity levels. The inspectors determined the issue to be of very low safety significance because the valves remained capable of performing their required safety function.

Violation: Browns Ferry Nuclear Plant, Unit 1 TS Subsection 3.4.3, 'Safety/Relief Valves (S/RVs),' Condition A, requires that with one or more required S/RVs inoperable, that the unit be in Mode 3 within 12 hours and Mode 4 in 36 hours. Contrary to the above, three required S/RVs were inoperable from November 20, 2018, to October 3, 2020, and the unit did not enter Mode 3 and Mode 4 in 12 hours and 36 hours, respectively.

Browns Ferry Nuclear Plant, Unit 1 TS Section 3.0, 'LCO Applicability', Subsection LCO 3.0.4, requires, in part, that when an LCO is not met, entry into a mode or other specified condition in the applicability shall only be made when the associated actions to be entered permit continued operation in the mode or other specified condition in the applicability for an unlimited period of time. Contrary to the above, on July 29, 2020, Unit 1 entered a TS 3.4.3 applicable mode when LCO TS 3.4.3 required actions were not met

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

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## **EXIT MEETINGS AND DEBRIEFS**

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

- On July 27, 2021, the inspectors presented the integrated inspection results to Mr. M. Rasmussen and other members of the licensee staff.
- On April 16, 2021, the inspectors presented the RP Inspection Exit Meeting inspection results to Mr. M. Rasmussen and other members of the licensee staff.
- On June 11, 2021, the inspectors presented the RP Inspection Exit Meeting inspection results to Mr. M. Rasmussen and other members of the licensee staff.
- On June 25, 2021, the inspectors presented the Emergency Preparedness Exercise Inspection results to Mr. J. Quinn and other members of the licensee staff.
- On July 9, 2021, the inspectors presented the Emergency Preparedness Exercise Inspection Re-Exit inspection results to Mr. D. Komm and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Corrective Action Documents	CR 1553610, 839840, 1590578, 1252881, 1431939, 877794, 1431941, 1156341, 1431946		
71111.04	Drawings	1-47E814-1	Flow Diagram Core Spray System	Revision 24
71111.04	Drawings	2-47E811-1	Unit 2 Flow Diagram Residual Heat Removal System	77
71111.04	Drawings	2-47E812-1	Flow Diagram High Pressure Coolant Injection System	Revision 77
71111.04	Drawings	2-47E813-1	Flow Diagram Reactor Core Isolation Cooling System	Revision 60
71111.04	Drawings	2-47E814-1	Flow Diagram Core Spray System	56
71111.04	Miscellaneous	Section 4.8	Updated FSAR Residual Heat Removal System (RHRS)	06/17/2021
71111.04	Miscellaneous	Section 7.4.3.4	Final Safety Analysis Report, Core Spray System Control and Instrumentation	28
71111.04	Procedures	0-OI-57D	DC Electrical System	Revision 179
71111.04	Procedures	1-OI-75/ATT-1	Core Spray System Valve Lineup Checklist	Revision 21
71111.04	Procedures	1-OI-75/ATT-2	Core Spray System Panel Lineup Checklist	Revision 22
71111.04	Procedures	1-SR-3.8.4.4(MB-1)	Main Bank 1 Battery Modified Performance Test	Revision 28
71111.04	Procedures	2-OI-71/ATT-1	Reactor Core Isolation Cooling Valve Lineup Checklist	Revision 61
71111.04	Procedures	2-OI-71/ATT-2	Reactor Core Isolation Cooling Panel Lineup Checklist	Revision 62
71111.04	Procedures	2-OI-71/ATT-3	Reactor Core Isolation Cooling Electrical Lineup Checklist	Revision 60
71111.04	Procedures	2-OI-74 (Attachment 1)	Valve Lineup Checklist Unit 2	142
71111.04	Procedures	2-OI-74(Attachment 2)	Panel Lineup Checklist	143
71111.04	Procedures	2-OI-74(Attachment 3)	Electrical Lineup Checklist	144
71111.04	Procedures	2-OI-75/Attachment 1	Attachment 1 Core Spray System Valve Lineup Checklist	106
71111.04	Procedures	2-OI-	Panel Lineup Checklist Unit 2	107



Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		75/Attachment 2		
71111.04	Procedures	3-OI-82	Standby Diesel Generator System	Revision 152
71111.04	Procedures	3-OI-82/ATT-1B	Standby Diesel Generator 3B Valve Lineup Checklist	Revision 99
71111.04	Procedures	3-OI-82/ATT-2B	Standby Diesel Generator 3B Panel Lineup Checklist	98
71111.04	Procedures	3-OI-82/ATT-3	Standby Diesel Generator Common Electrical Lineup Checklist	Revision 96
71111.04	Procedures	3-OI-82/ATT-3B	Standby Diesel Generator 3B Electrical Lineup Checklist	Revision 98
71111.04	Procedures	3-OI-82/ATT-4B	Standby Diesel Generator 3B Instrument Inspection Checklist	Revision 99
71111.04	Work Orders	WO 120741845, 120827149, 121142262, 118457084, 119735864, 115749694, 119735865, 119735863		
71111.05	Fire Plans	FPR Volume 2	Fire Protection Report	68
71111.05	Procedures	FPR-Volume 2	Attachment 21, Section I Pre-Fire-Plans for Browns Ferry Nuclear Plant - Yard Areas	Revision 68
71111.05	Procedures	NFPA 805 Fire Protection Report Appendix F	Fire Area 16	Revision 4
71111.05	Procedures	NPG-SPP-01.3	Housekeeping	8
71111.05	Procedures	NPG-SPP-18.4.7	Control of Transient Combustibles	13
71111.05	Procedures	NPG-SPP-18.4.8	Control of Ignition Sources (Hot Work)	11
71111.06	Calculations	NDN-000-999-2007-0031	BFN Probabilistic Risk Assessment - Internal Flooding Analysis	Revision 2
71111.07A	Calculations	Calculation 18-159	Browns Ferry Nuclear Plant Unit 2A and 2C RHR Heat Exchanger Thermal Performance Test Report	10/03/2018
71111.07A	Drawings	2-47E811-1	Flow Diagram Residual Heat Removal System	77
71111.07A	Drawings	2-47E858-1	Flow Diagram RHR Service Water System	30
71111.07A	Miscellaneous	0-TPP-ENG-389	Raw Water Fouling and Corrosion Control - Microbiological Test Results	05/24/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.07A	Miscellaneous	BFN-2-HEX-074-0900A	Eddy Current Examination Results Residual Heat Removal HEX 2A	05/24/2021
71111.07A	Miscellaneous	NPG-SPP-09.14	Generic Letter (GL) 89-13 Implementation	5
71111.07A	Miscellaneous	NPG-SPP-09.14-1 (TVA 41343)	Heat Exchanger Visual Inspection and Evaluation Form	05/24/2021
71111.07A	Procedures	0-TPP-ENG-389	Raw Water Fouling and Corrosion Control	4
71111.07A	Work Orders	121387215		05/24/2021
71111.11Q	Procedures	3-GOI-100-12	Power Maneuvering	Revision 50
71111.11Q	Procedures	3-OI-68	Reactor Recirculation System	Revision 99
71111.11Q	Procedures	3-OI-85	Control Rod Drive System	Revision 92
71111.11Q	Procedures	OPL175S029	Simulator Exercise Guide: DG Surveillance, Fire and Medical Emergency, Loss of I and C Bus A with a loss of vacuum, Reactor Scram followed by an Unisolable HPCI System Steam Leak	1
71111.11Q	Procedures	OPL175S039	Simulator Exercise Guide: Partial Loss of RBCCW, Loss of I and C Bus B, ATWS, Lower Water Level for Power Control with Bypass Valves	1
71111.12	Corrective Action Documents	1684467	Site Focus on repair and maintenance of the Unit 3 Shutdown Board Room Chillers is lacking	04/07/2021
71111.12	Engineering Evaluations	TE-96205-M0	Rotary control Switch SBM Type	Revision 1
71111.12	Miscellaneous	CRU309H_MIF	Material Inspection Form for switch CRV309H	07/30/2018
71111.12	Miscellaneous	DS-C1.2.11	Maintaining Seismic/Structural Qualification - Replacement Items	Revision 6
71111.12	Miscellaneous	Function 31-S	Maintenance Rule Expert Panel Agenda	06/09/2021
71111.12	Work Orders	119767948		
71111.13	Corrective Action Documents	1699014		06/05/2021
71111.13	Corrective Action Documents	1699015		06/05/2021
71111.13	Work Orders	122076896	Troubleshooting work order to implement ground isolation techniques to locate the dc ground on Battery Board #3	04/27/2021
71111.13	Work Orders	122097702	Temporary Modification to install a DC to DC converter	05/08/2021
71111.15	Calculations	0-SIMI-90B	Radiation Monitoring System Scaling and Setpoint	Revision 43

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			Documents	
71111.15	Corrective Action Documents		CR 1683358 Support Refute/Troubleshooting Recommendations	
71111.15	Corrective Action Documents	1681989		
71111.15	Corrective Action Documents	1682100		
71111.15	Corrective Action Documents	1684160		
71111.15	Corrective Action Documents	CR 1692069		05/05/2021
71111.15	Drawings	1-45E670-2	Wiring Diagrams ECCS Division I Analog Trip units Schematic Diagrams SH2	Revision 3
71111.15	Drawings	2-3300B15A4368	Elementary/Connection Diagram - RPS Motor Generator	Revision 4
71111.15	Engineering Evaluations	DCN 51243	Modifications in the U1 Reactor building to RPS and ECCS panels	Revision A
71111.15	Miscellaneous	BFN-VTD-C070-0015	Operation and Maintenance Manual Control Room Emergency Ventilation System Radiation Monitor System	Revision 2
71111.15	Miscellaneous	TS B3.8.6	Bases for Technical Specification 3.8.6 Battery Cell Parameters	Revision 0
71111.15	Procedures	2-SR-3.6.1.3.5(CAD)	Containment Atmosphere Dilution System Valve Operability	04/16/2021
71111.15	Procedures	OPDP-8	Operability Determination Process and Limiting Conditions for Operation Tracking	Revision 27
71111.15	Work Orders	120134906		
71111.15	Work Orders	121165734		
71111.15	Work Orders	121267979	Work Order for post maintenance test for 2-FCV 84-19	04/16/2021
71111.18	Corrective Action Documents	1649288		1
71111.18	Corrective Action Documents	1690843		May 12, 2021
71111.18	Work Orders	122093878		May 12, 2021
71111.19	Corrective Action	CR 1693707,		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents	1693393		
71111.19	Drawings	2-107E5784 Sheets 5, 6, 10, 10A,		
71111.19	Procedures	1-SR- 3.6.1.3.5(RCIC CSD)	RCIC System MOV Operability During Cold Shutdown	1
71111.19	Procedures	2-SR-3.5.3.3	RCIC System Rated Flow at Normal Operating Pressure	Revision 74
71111.19	Procedures	3-SR-3.8.1.1(3C)	Diesel Generator 3C Monthly Operability Test	Revision 61
71111.19	Procedures	BFN-500135692	BFN-2-SC-071-0010 Replace Electrolytic Capacitor On RCIC EGM Converter Board	Revision 0
71111.19	Procedures	ECI-0-071- GOV001	RCIC Governor Control System Calibration	Revision 42
71111.19	Procedures	ECI-0-254- BAT002	Replacement and Cleaning of the 125V DC Diesel Generator Battery Cells	Revision 7
71111.19	Procedures	MCI-0-000- FIT001	Maintenance of Flared Fittings	Revision 2
71111.19	Procedures	MCI-0-071- VLV002	RCIC Turbine Governor Valve FCV-71-10 Disassembly, Inspection, Rework and Reassembly	Revision 24
71111.19	Procedures	MMTP-142.1	Limiter Motor Operator Repair and Adjustment Guidelines for SMB-000, SMB-00, SB-00, and SBD-00	1
71111.19	Procedures	MMTP-144	Motor Operated Valve Diagnostic Testing	5
71111.19	Procedures	MMTP-151	Air Operated Valve Maintenance And Setup	Revision 0
71111.19	Procedures	PM 14771	Attachment 1 to Task 10 BFN-2-SM-071-0010 Replace U2 RCIC EGR Amph Conn	Revision 0
71111.19	Work Orders	WO 120995043, 120995036, 120229508, 120418767, 120982287, 120995211		
71111.19	Work Orders	WO 121290050		
71111.19	Work Orders	WO 121343810		
71111.19	Work Orders	WO 122069148	2-LGC-092-0004	Revision 0

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71111.19	Work Orders	WO 122069236, 118404127		
71111.19	Work Orders	WO 122115542, 122129614, 121125328, 120972243		
71111.20	Miscellaneous		Work Schedules, Hours Worked, Deviations and Waivers for Various Departments	
71111.20	Procedures	NPG-SPP-03.21	Nuclear Fatigue Management Program	Revision 26
71111.22	Procedures	2-SR-3.1.4.1	Scram Insertion Times	36
71111.22	Procedures	2-SR-3.6.1.3.5 (RHR I)	RHR System Motor Operated Valve (MOV) Operability Loop I	41
71114.01	Corrective Action Documents Resulting from Inspection	CR 1704158	"C" Blue Team NRC Graded Exercise – scenario to performance differences	06/28/2021
71114.01	Corrective Action Documents Resulting from Inspection	CR 1704159	"C" Blue Team NRC Graded Exercise – request for additional information	06/28/2021
71114.01	Miscellaneous		2021 BFN Graded Exercise, TVA, Browns Ferry	06/23/2021
71114.01	Miscellaneous		Browns Ferry Graded Exercise Management Debrief	06/24/2021
71114.01	Procedures	CECC EPIP-1	Central Emergency Control Center (CECC) Operations	Rev. 69
71114.01	Procedures	CECC EPIP-7	CECC Radiological Assessment Staff Procedure for Alert, Site Area Emergency, and General Emergency	Rev. 41
71114.01	Procedures	CECC EPIP-8	Dose Assessment Staff Activities During Nuclear Plant Radiological Emergencies	Rev. 51
71114.01	Procedures	EPIP-13	Dose Assessment	Rev. 27
71124.01	Corrective Action Documents	CR 1505571		
71124.01	Procedures	NPG-SPP-05.1	Radiological Controls	Revision 0013
71124.02	Corrective Action Documents	CR 1588677		

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71124.02	Corrective Action Documents	CR 1682387		
71124.02	Procedures	NPG-SPP-05.2.3	Outage Exposure Estimating and Tracking	Rev. 0004
71124.03	Corrective Action Documents	CR 1566016		
71124.03	Procedures	RCI-3.1	Respiratory Protection Program Implementation	Revision 0039
71124.04	Corrective Action Documents	CR 1682653		
71124.04	Corrective Action Documents	CR 1682657		
71124.04	Procedures	RCDP-7	Bioassay and Internal Dose Program	Rev. 10
71124.05	Corrective Action Documents	CRs: 1568541, 1606981, 1529394, 1502214, 1660950 and 1550608	Corrective Action Reports	Various
71124.05	Procedures	CI-466.11	OFF GAS STACK WIDE RANGE GASEOUS EFFLUENT RADIATION MONITOR (WRGERM) - NORMAL RANGE CHARCOAL AND PARTICULATE FILTER REPLACEMENT	Rev. 36
71124.05	Procedures	NISP-RP-001	Portable Survey Instruments	Rev. 1
71124.05	Procedures	RCDP-8	Radiological Instrumentation/Equipment Controls	Rev. 9
71124.05	Procedures	RCI-1.4	Radiation Protection Particulate CAM Maintenance	Rev. 5
71124.05	Procedures	RCI-11.1	Radiation Protection Instrument Program Implementation	Rev. 77
71124.05	Procedures	RCI-11.11	Calibration of the SAM11	Rev. 2
71124.05	Procedures	RCI-11.13	Counting Equipment Calibration and Performance Tests	Rev. 9
71124.05	Procedures	RCI-11.14	Calibration of the Canberra Argos 5PAB Personnel Contamination Monitor	Rev. 0
71124.05	Procedures	RCI-11.6	Calibration of the Canberra Argos 5AB Personnel Contamination Monitor	Rev. 7
71124.05	Work Orders	WO#:	Work Orders # 120133618, 118568181, 120556010,	Various

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		120133618, 118568181, 120556010, 118058069, 119696132, 118058091, 119598545, 114011904, 118373606, 118571048, 117450292, and 118571051	118058069, 119696132, 118058091, 119598545, 114011904, 118373606, 118571048, 117450292, and 118571051	
71124.06	Corrective Action Documents Resulting from Inspection	CR 1700491		
71124.06	Miscellaneous		2019 Annual Radioactive Effluent Release Report	
71124.06	Procedures	0-SI-4.8.B.1.a.2	Airborne Effluent Release Rate by Manual Sampling When a Gaseous Effluent Monitor is Inoperable	Rev. 39
71124.06	Procedures	0-SI-4.8.B.2-8	Airborne Effluent Analysis - Stack Noble Gas	Rev. 21
71124.07	Calibration Records	Sn: 1030580	LM-6 Radiological Environmental Monitoring Air Samples Gas Meter Calibration	07/16/2019
71124.07	Calibration Records	Sn: 1040145	PM-1 Radiological Environmental Monitoring Air Samples Gas Meter Calibration	08/22/2018
71124.07	Calibration Records	Sn: 1040145	PM-1A Radiological Environmental Monitoring Air Samples Gas Meter Calibration	07/09/2020
71124.07	Calibration Records	Sn: 14436698	LM-4 A Radiological Environmental Monitoring Air Samples Gas Meter Calibration	08/22/2018
71124.07	Calibration Records	Sn: 17074893	RM-6 Radiological Environmental Monitoring Air Samples Gas Meter Calibration	07/16/2019
71124.07	Calibration Records	Sn: 17074894	LM-7 Radiological Environmental Monitoring Air Samples Gas Meter Calibration	07/09/2020
71124.07	Calibration Records	Sn: 17074898	LM-3 Radiological Environmental Monitoring Air Samples Gas Meter Calibration	08/22/2018

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71124.07	Calibration Records	Sn: 205500, 205506 and 205514	Meteorological Monitoring Instrumentation Report of Calibration (Platinum RTD)	04/04/2019, 10/22/2019 and 08/31/2020
71124.07	Calibration Records	Sn: A0230001	Meteorological Monitoring Instrument Report of Calibration (Ultrasonic Wind Sensor)	11/11/2019 and 02/20/2020
71124.07	Calibration Records	Sn: A3430014	Meteorological Monitoring Instrument Report of Calibration (Ultrasonic Wind Sensor)	03/30/2021
71124.07	Calibration Records	Sn: B0620002	Meteorological Monitoring Instrument Report of Calibration (Ultrasonic Wind Sensor)	03/14/2019 and 10/04/2019
71124.07	Calibration Records	Sn: B1920001	Meteorological Monitoring Instrument Report of Calibration (Ultrasonic Wind Sensor)	09/21/2020 and 03/30/2021
71124.07	Calibration Records	Sn: B3720001	Meteorological Monitoring Instrument Report of Calibration (Ultrasonic Wind Sensor)	03/14/2019 and 10/04/2019
71124.07	Calibration Records	Sn: G1050005	Meteorological Monitoring Instrument Report of Calibration (Ultrasonic Wind Sensor)	03/19/2020 and 11/17/2020
71124.07	Corrective Action Documents	CRs #1378245, 1393911, 1461820, 1524131, 1524132, 1647776, 1654508, 1600415 and 1662094	Corrective Action Reports	
71124.07	Miscellaneous	160919-TNBFN-RPT-203	Site Groundwater Conceptual Model Update	November 23, 2016
71124.07	Miscellaneous	SSCs Risk Report	Risk Analysis of Systems, Structures and Components and Work Practices That Involve a Credible Mechanism for	03/23/2011



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			Licensed Material to Impact Groundwater	
71124.07	Miscellaneous	Stations LM-1, LM-2, LM-3, LM-4, LM-6, LM-7, RM-1, RM-6, PM-1, PM-2 and PM-3	REMP Air Sampling System Preventative Maintenance Record	03/16/2021
71124.07	Miscellaneous	Stations LM-1, LM-2, LM-3, LM-4, LM-6, LM-7, RM-1, RM-6, PM-1, PM-2 and PM-3	REMP Air Sampling System Preventative Maintenance Record	03/19/2020
71124.07	Miscellaneous	Stations LM-1, LM-2, LM-3, LM-4, LM-6, LM-7, RM-1, RM-6, PM-1, PM-2 and PM-3	REMP Air Sampling System Preventative Maintenance Record	06/08/2020
71124.07	Procedures	Brown Ferry Nuclear Plant Meteorological Facility Inspection Report	Brown Ferry Nuclear Plant Meteorological Facility Inspection Report	10/07/2020
71124.07	Procedures	CI-420	Collection of Radiological Environmental Monitoring Samples	Rev. 12
71124.07	Procedures	CI-421	WELL SAMPLING AND MAINTENANCE	Rev. 19
71124.07	Procedures	EPFS-12	Repair and Preventive Maintenance Procedure for Radiological Environmental Monitoring Air Sampling System	Rev. 2
71124.07	Procedures	EPFS-3	Servicing of Meteorological Equipment at Environmental Data Stations	Rev. 18
71124.07	Procedures	EPFS-4	Environmental Data Station Meteorological Sensor Exchange	Rev. 23
71124.07	Procedures	EPFS-6	Calibration of Environmental Data Station Data Logger and	Rev. 17

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			Sonic Channels	
71124.07	Procedures	NPG-SPP-22.000	Performance Improvement Program	Rev. 12
71124.07	Procedures	NPG-SPP-22.102	NPG Self-Assessment and Benchmarking Programs	Rev. 11
71124.07	Procedures	NPG-SPP-22.300	Corrective Action Program	Rev. 21
71124.07	Procedures	NPG-SPP-22.600	Issue Resolution	Rev. 12
71124.07	Radiation Surveys	December 02, 2020 Groundwater Monitoring Analytical Results Report	December 02, 2020 Groundwater Monitoring Analytical Results Report	12/28/2020
71124.07	Radiation Surveys	March 05, 2021 Groundwater Monitoring Analytical Results Report	March 05, 2021 Groundwater Monitoring Analytical Results Report	03/22/2021
71124.07	Self-Assessments	SSA1906	Chemistry, Effluent, and Environmental Monitoring BFN Site Audit Report	06/14/2019
71151	Corrective Action Documents	CR 1675848		
71152	Corrective Action Documents	1630481	INPO 2020 AFI	06/05/2021
71152	Corrective Action Documents	1682542, 1679053, 1677849, 1679729, 1697395, 1697386	Corrective Action documents associated with the FME program at BFN	06/15/2021
71152	Corrective Action Documents	CR 1447136, 1686211, 1686411, 1686428		
71152	Corrective Action Documents	CR 1489238, 1568861,		

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		1579775, 1683597, 1658909, 1648971, 1600956, 1664840, 1658684, 1682087		
71152	Engineering Evaluations	CR 1218923, 1463653, 1593013	Engineering evaluations for foreign material that was not retrieved	06/15/2021
71152	Miscellaneous	0-001-OWA-2019-0002, 0-001-OWA-2019-0003, 0-002-OWA-2018-0002, 0-027-OWA-2019-0006, 0-031-OWA-2020-0006, 0-067-OWA-2021-0009, 0-077-OWA-2020-0118, 0-077-OWA-2021-0066, 0-084-OWA-2020-0004, 0-360-OWA-2020-0005, 1-003-OWA-2019-0004, 1-024-OWA-2020-0003, 1-065-OWA-2021-0001, 1-068-OWA-2019-		

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		0004, 3-031-OWA-2018-0042, 3-031-OWA-2019-0004, 3-047-OWA-2020-0005, 3-068-OWA-2020-0004, 3-068-OWA-2020-0005		
71152	Procedures	MCI-0-073-PMP001	High Pressure Coolant Injection Pump-Byron Jackson 10X12X15 2 Stage DVMX Disassembly, Inspection, Rework and Reassembly	Revision 20
71152	Procedures	NPG-SPP-06.5	Foreign Material Control	17
71152	Procedures	NPG-SPP-22.300	Corrective Action Program	Revision 20
71152	Self-Assessments	1670967	BFN Foreign Material Exclusion Program Self Assessment	05/07/2021
71152	Work Orders	WO 118226524, 117302577, 117595780, 118875722, 121825184, 121471770, 121726202, 121726191, 121929132, 121812346, 121810328		
71152	Work Orders	WO 119874906		