



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

January 25, 2022

EA-19-025

Ms. Nicole Flippin, Site Vice President  
H.B. Robinson Steam Electric Plant  
Duke Energy Progress, LLC  
3581 West Entrance Road, RNPA01  
Hartsville, SC 29550

SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT – INTEGRATED INSPECTION  
REPORT 05000261/2021004

Dear Ms. Flippin:

On December 16, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at H.B. Robinson Steam Electric Plant. On January 12, 2022, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

No findings or violations of more than minor significance were identified during this inspection.

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."

Sincerely,

A handwritten signature in black ink that reads "David E. Dumbacher".

Signed by Dumbacher, David  
on 01/24/22

David E. Dumbacher, Chief  
Reactor Projects Branch 3  
Division of Reactor Projects

Docket No. 05000261  
License No. DPR-23

Enclosure:  
As stated

cc w/ encl: Distribution via LISTSERV

SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT – INTEGRATED INSPECTION REPORT 05000261/2021004 DATED January 25, 2022

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DATE	1/19/22	1/19/22	1/25/22		

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

Docket Number: 05000261

License Number: DPR-23

Report Number: 05000261/2021004

Enterprise Identifier: I-2021-004-0024

Licensee: Duke Energy Progress, LLC

Facility: H.B. Robinson Steam Electric Plant

Location: Hartsville, SC

Inspection Dates: October 01, 2021 to December 31, 2021

Inspectors: M. Bates, Senior Operations Engineer  
B. Bishop, Senior Project Engineer  
M. Fannon, Senior Resident Inspector  
R. Mathis, Senior Construction Inspector  
W. Monk, Senior Reactor Inspector  
A. Nielsen, Senior Health Physicist  
W. Pursley, Health Physicist

Approved By: David E. Dumbacher, Chief  
Reactor Projects Branch 3  
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 H.B. Robinson Steam Electric 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

No findings or violations of more than minor significance were identified.

### Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
OR	05000261/2021004-01	Confirmatory Order EA-19-025	92702	Closed

## PLANT STATUS

Unit 2 began the inspection period at rated thermal power. On October 18, 2021, operators commenced a normal plant shutdown for repairs on the 'A' reactor coolant pump seal package. On November 2, 2021, operators commenced a normal plant startup following completion of repairs. The unit returned to rated thermal power on November 3, 2021 and remained at or near rated thermal power for 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 performed activities described in IMC 2515, Appendix D, "Plant Status," conducted routine reviews using IP 71152, "Problem Identification and Resolution," observed risk significant activities, and completed on-site portions of IPs. 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

### 71111.04 - 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) 'B' emergency diesel generator (EDG) on October 5, 2021
- (2) 'C' component cooling water (CCW) on October 7, 2021
- (3) Motor driven auxiliary feedwater (MDAFW) on October 13, 2021
- (4) Residual heat removal and safety Injection on October 22, 2021
- (5) 'A' EDG on November 4 and 5, 2021

### 71111.05 - Fire Protection

#### Fire Area Walkdown and Inspection Sample (IP Section 03.01) (4 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) Fire zone 1, 'B' EDG room on October 13, 2021
- (2) Fire zone 24, Containment on October 19, 2021
- (3) Fire zone 3, Safety injection pump room on November 3, 2021
- (4) Fire zone 16, 'A' and 'B' battery room on November 3, 2021

71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

Requalification Examination Results (IP Section 03.03) (1 Sample)

- (1) 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." During the week of November 22, 2021, the inspector performed an in-office review of the overall pass/fail results of the individual operating examinations, the crew simulator operating examinations, and the biennial written examinations in accordance with Inspection Procedure (IP) 71111.11, "Licensed Operator Requalification Program." These results were compared to the thresholds established in Section 3.03, "Requalification Examination Results," of IP 71111.11.

The inspectors reviewed and evaluated the licensed operator examination failure rates for the requalification annual operating exam completed on March 15, 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 the Control Room during reactor shutdown and cooldown on October 19, 2021.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (2 Samples)

- (1) The inspectors observed and evaluated a licensed operator requalification training scenario on October 6, 2021.
- (2) The inspectors observed and evaluated Just In Time Training in preparation for a potential reactor coolant system draindown evolution on October 26, 2021.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (3 Samples)

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

- (1) Nuclear Condition Report (NCR) 2396413, 'A' charging pump minimum speed operation failure
- (2) NCR 2404570, 'A' EDG fuel leak
- (3) NCR 2404733, instrument air compressor ruptured oil hose

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (3 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) Yellow risk for decay heat removal key safety function for to 'A' reactor coolant pump (RCP) seal replacement on October 21, 2021.
- (2) Yellow risk for decay heat removal key safety function for to the 'B' RCP boric acid leak repairs on October 27, 2021
- (3) 'B' containment spray pump maintenance activities on November 9, 2021

#### 71111.15 - Operability Determinations and Functionality Assessments

##### Operability Determination or Functionality Assessment (IP Section 03.01) (3 Samples)

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

- (1) NCR 2404233, 'C' CCW outboard seal leak
- (2) NCR 2404570, 'A' EDG fuel rack oil leak
- (3) NCR 2404733, primary instrument air compressor repair for ruptured hose and oil leak

#### 71111.18 - Plant Modifications

##### Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Engineering Change 420272, 'B' RCP stud protective sleeve installation

#### 71111.19 - Post-Maintenance Testing

##### Post-Maintenance Test Sample (IP Section 03.01) (4 Samples)

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

- (1) OST-201-2, 'B' MDAFW after maintenance activities on October 13, 2021
- (2) OP-604, 'A' EDG relief valve replacement on December 2, 2021
- (3) OST-202, steam driven auxiliary feedwater maintenance on December 7, 2021
- (4) Work order 20504778, primary instrument air compressor repairs on December 15, 2021

#### 71111.20 - Refueling and Other Outage Activities

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

- (1) The inspectors evaluated activities during the forced outage for the 'A' RCP seal leak from October 18, 2021 to November 2, 2021.

## 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

### Surveillance Tests (other) (IP Section 03.01) (3 Samples)

- (1) OST-401-2, 'B' EDG slow start on November 14, 2021
- (2) MST-021, 'B' reactor protection system testing on November 18, 2021
- (3) OST-401-1, 'A' EDG slow start on December 1, 2021

### RCS Leakage Detection Testing (IP Section 03.01) (1 Sample)

- (1) OST-051, reactor coolant system leakage evaluation on October 13, 2021

## **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)

- (1) The inspectors evaluated how the licensee instructs workers on plant-related radiological hazards and the radiation protection requirements intended to protect workers from those hazards.

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

The inspectors observed/evaluated the following licensee processes for monitoring and controlling contamination and radioactive material:

- (1) Licensee surveys of potentially contaminated material leaving the Radiologically Controlled Area.
- (2) Observed workers exiting the Radiologically Controlled Area at the Unit 2 Control Point

#### Radiological Hazards Control and Work Coverage (IP Section 03.04) (4 Samples)

The inspectors evaluated the licensee's control of radiological hazards for the following radiological work:

- (1) Work Order # 20464138-02. Calibration of R-30 (Fuel Handling Building Accident Monitor). Radiological Work Permit 21 Task 1, Instrumentation and Electrical Activities.
- (2) Work Order # 20457508. Mechanical Maintenance Repacking 'C' Charging Pump. Radiological Work Permit 41 Task 1, Mechanical Maintenance Activities.



- (3) Work Order # 20459374-04. Resin Changeout Activities on Waste Water Demineralizer System. Radiological Work Permit 2802 Task 1, Waste Water Demineralizer System Resin Activities in High Radiation Areas.
- (4) Work Order # 20490402-01. Residual Heat Removal Component Test Train 'A'. Radiological Work Permit 23 Task 8, Operations Activities in High Radiation Areas and Locked High Radiation Areas.

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (4 Samples)

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

- (1) Unit 2 Reactor Coolant Filter Access Room
- (2) Ladder lock in Unit 2 Radwaste Building
- (3) Temporary locked high radiation area at entrance to Radwaste Building on chain link gate following resin sluice
- (4) Unit 2 Waste Holdup Tank Room Door Locked High Rad

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 ALARA Planning and Controls

Radiological Work Planning (IP Section 03.01) (4 Samples)

The inspectors evaluated the licensee's radiological work planning for the following activities:

- (1) ALARA Plan 33-06, "B" reactor coolant pump main flange leak stud removal and replacement, revision 0
- (2) ALARA Plan 32-0101, refueling outage 32 (RO-32) refueling/reactor head, revision 2
- (3) ALARA Plan 32-0106, RO-32 in service inspections, revision 1
- (4) ALARA Plan 21-0111, top ALARA focused valve activities for RO-32, revision 1

Verification of Dose Estimates and Exposure Tracking Systems (IP Section 03.02) (3 Samples)

The inspectors evaluated dose estimates and exposure tracking for the following activities:

- (1) RO-32 ALARA Report, November 7, 2020 - December 9, 2020.
- (2) ALARA Critique, ALARA plan 32-101, refuel activities
- (3) In-progress review, ALARA plan 32-101, refuel activities

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 for the following activities:

- (1) ALARA Plan 32-103, steam generator primary activities, revision 2

- (2) Total Effective Dose Equivalent (TEDE) - ALARA Evaluation, RO-32 stud hole plug removal and cleaning
- (3) Temporary shielding request 20-18, RO-32 pressurizer spray line

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

- (1) The inspectors evaluated radiation worker and radiation protection technician performance during work activities.

**OTHER ACTIVITIES – BASELINE**

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS07: High Pressure Injection Systems (IP Section 02.06) (1 Sample)

- (1) October 1, 2020 through September 30, 2021

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

- (1) November 1, 2020 through November 30, 2021.

71152 - Problem Identification and Resolution (PI&R)

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

- (1) The inspectors reviewed the licensee's corrective action program for potential adverse trends that might be indicative of a more significant safety issue.

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) NCR 2396736, 'A' RCP seal leak
- (2) NCR 2402785, 'B' RCP boric acid leak

**OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL**

92702 - Follow-Up on Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, and Orders

The inspectors reviewed the licensee's response to an Alternative Dispute Resolution Confirmatory Order, EA-19-025.

Follow-Up on Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, and Orders (1 Sample)

- (1) During the inspection period the inspectors completed a review of Duke's completion of Confirmatory Order, EA-19-025 for Office of Investigation Report No.

05000261/2019012 (OI Case No. 2-2018-004), requirement item numbers 1 – 10. All individual corrective action items from the Alternative Dispute Resolution Confirmatory Order are considered complete and closed. In order to verify the completeness of the corrective actions, plant documentation such as procedure updates, training material, temporary standing orders, corrective action documents, and effectiveness review criteria and results were reviewed. Then a series of small group interviews were conducted, and activities in the field were monitored and assessed for procedural compliance.

**Interviews:** Six seminar sessions were conducted to interview small groups of operations and maintenance staff and supervisors to assess their level of knowledge of proper fire watch and operator equipment status round procedures. The staff were asked scenario-based questions to ascertain their response or next actions for procedural deficiencies. Additionally, the staff were asked about the importance of complete and accurate information reporting and the consequences for willful or deliberate misconduct. The inspectors discussed with the licensee staff the importance of a worker's signature, and the regulatory and legal significance of their signature on completed plant records. The supervisors provided their insights on how well the training was received and implemented throughout the site and that corrective measures had been completed to prevent future reoccurrence of fire watch and operator round performance deficiencies.

**Field Observations:** During the onsite inspection an actual significant fire impairment arose that required hourly and continuous fire watches in seven different fire areas. The inspectors assessed whether this impromptu degradation would be covered correctly as emphasized in all the licensee's corrective action documents. Specifically, the fire watch pre job brief for a fire equipment impairment (fire alarm control panel out of service) was observed by the inspectors and then observed the staff while conducting the fire watches in their assigned fire areas. The watches were interviewed, and their fire watch logs reviewed. Additionally, two once per shift operator equipment status rounds were shadowed by the inspectors and no issues were noted.

No findings were identified.

The NRC inspectors reviewed the Confirmatory Order required corrective actions and enhancements for their Operating Nuclear Fleet and determined all were adequately completed. The licensee has implemented effective controls, conducted training, coached supervisors and staff, and updated program procedures to prevent reoccurrence of inadequate fire watch rounds and operator equipment status rounds and the deliberate falsification of plant records.

Although the NRC has completed its planned follow-up inspection, the subject Confirmatory Order and requirements remain in effect throughout the life of the subject licenses. Specifically, Confirmatory Order requirements C.i and C.ii to continue conducting quarterly fire watch and operator round performance audits will remain in effect.

## **INSPECTION RESULTS**

No findings were identified.

## **EXIT MEETINGS AND DEBRIEFS**

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

- On January 12, 2022, the inspectors presented the integrated inspection results to Nicole Flippin and other members of the licensee staff.
- On December 14, 2021, the inspectors presented the radiation protection inspection results to Ernie Kapopoulos and other members of the licensee staff.
- On December 16, 2021, the inspectors presented the Confirmatory Order Corrective Actions Review inspection results to Ernie Kapopoulos and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71124.01	Corrective Action Documents Resulting from Inspection	NCR 02409097		
	Procedures	AD-RP-ALL-0002	RADIATION AND CONTAMINATION SURVEYS	Revision 2
		AD-RP-ALL-0004	RADIOLOGICAL POSTING AND LABELING	Revision 5
		AD-RP-ALL-2014	Work In Alpha Environments	Revision 8
Radiation Surveys	RNP-M-20211209-4	RHR Pump Room/OST-252-1	12/09/2021	
71124.02	ALARA Plans	R2R32-0101	RO-32 Refueling Activities - ALARA Critique	02/15/2021
	Corrective Action Documents	NCR 02359451		
	Engineering Evaluations		Refueling Outage 32 ALARA Report	11/07/2020 - 12/09/2020
	Procedures	AD-CP-ALL-0012	Radiation Source Term	Revision 2
		AD-RP-ALL-2019	TEDE-ALARA Evaluations and DAC-Hour Tracking	Revision 4
	Radiation Surveys	RNP-M-20201125-8	Spent Fuel Pool increased dose rate survey	11/25/2020
RNP-M-20201127-15		Spent Fuel Pool post load	11/27/2020	
92702	Corrective Action Documents	AR 2351492	NOS Audit: Review of Fire Watch Activities	10/01/2020
		FCE 2298097	Cause Evaluation for Three Fire Watch and Operator Round Apparent Violations	9/19/2019
	Miscellaneous		Robinson Confirmatory Order Effectiveness Review Criteria and Results	10/07/2021
			Compensatory Fire Watch Documentation Form	11/18/2021
			Compensatory Fire Watch Documentation Form	11/22/2021
			Compensatory Fire Watch Documentation Form	12/02/2021
		CNO Email Communication	A Message from Preston Gillespie - Committing to High Operational Standards	3/11/2020
CNO Email	A Message from Kelvin Henderson - Committing to High	3/24/2021		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Communication	Operational Standards	
		EA-19-025	CONFIRMATORY ORDER MODIFYING LICENSE – H. B. ROBINSON STEAM ELECTRIC PLANT	3/11/2020
		RA-21-0311	Response to Confirmatory Order EA-19-025	11/17/2021
	Procedures	AD-EG-ALL-1522	DUTIES OF A COMPENSATORY FIRE WATCH	Rev. 12
		AD-OP-ALL-0109	Operator Rounds	Rev. 3
		AD-PI-ALL-0300	RNP CO Inspection Closeout Readiness Assessment	11/10/2021