



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

July 23, 2020

Mr. Ernest J. Kapopoulos Jr.
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 05000261/2020002, AND INDEPENDENT SPENT FUEL STORAGE
INSTALLATION INSPECTION (ISFSI) REPORT 0720060/2020001

Dear Mr. Kapopoulos:

On June 30, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at H. B. Robinson Steam Electric Plant. On July 15, 2020, 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,

/RA/

Randall A. Musser, Chief
Reactor Projects Branch 3
Division of Reactor Projects

Docket No. 05000261, 07200060
License No. DPR-23

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

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REPORT 05000261/2020002, AND INDEPENDENT SPENT FUEL STORAGE
INSTALLATION INSPECTION (ISFSI) REPORT 0720060/2020001 DATED
JULY 23, 2020

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number: 05000261, 07200060

License Number: DPR-23

Report Number: 05000261/2020002, 07200060/2020001

Enterprise Identifier: I-2020-002-0061, I-2020-001-0107

Licensee: Duke Energy Progress, LLC

Facility: H. B. Robinson Steam Electric Plant

Location: Hartsville, South Carolina

Inspection Dates: April 01, 2020 to June 30, 2020

Inspectors: A. Beasten, PhD, Resident Inspector
M. Fannon, Senior Resident Inspector
S. Sanchez, Senior Emergency Preparedness Inspector
J. Walker, Emergency Response Inspector

Approved By: Randall A. Musser, 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

None.

PLANT STATUS

Unit 2 began the inspection period at rated thermal power. On May 20, 2020, the unit was down powered to 54 percent for turbine valve testing. The unit was returned to rated thermal power on May 20, 2020 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 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 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 and during that time 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 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

71111.01 - Adverse Weather Protection

Seasonal Extreme Weather Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather on May 22, 2020.

External Flooding Sample (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated flood protection barriers, mitigation plans, procedures, and equipment are consistent with the licensee's design requirements and risk analysis assumptions for coping with external flooding. The inspectors evaluated readiness to cope with external flooding for the following areas on May 13, 2020:
 - Condensate storage tank area
 - Safety injection (SI) pump room

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

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

- (1) 'A' and 'B' station batteries on April 9, 2020
- (2) 'A' and 'B' emergency diesel generator (EDG) starting air systems while cross-connected for 'B' EDG starting air compressor maintenance on April 13, 2020
- (3) 'B' EDG following post maintenance testing on April 23, 2020
- (4) Steam driven auxiliary feedwater (SDAFW) pump while 'C' auxiliary feedwater pump out of service for planned maintenance on May 27, 2020

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 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 16, 'A' and 'B' battery room, on March 26, 2020
- (2) Fire Zone 1, 'B' EDG room, on April 2, 2020
- (3) Fire Zone 50, Switchgear building, on April 20, 2020
- (4) Fire Zone 5, Component cooling water (CCW) pump room, on June 30, 2020
- (5) Fire Zone 4, Charging pump room, on June 30, 2020

71111.07A - Heat Sink Performance

Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

- (1) The inspectors evaluated the readiness and performance of the 'A' and 'B' EDG jacket water heat exchanger.

71111.11Q - Licensed Operator Regualification 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 a planned downpower and turbine valve testing on May 20, 2020

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

- (1) The inspectors observed and evaluated an annual licensed operator training examination on June 23, 2020

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) Nuclear condition report (NCR) 2327596, 'B' service water (SW) pump failed to start on May 6, 2020

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) Engineering change (EC) 417412, Commercial grade dedication of replacement switch for 'B' EDG fuel oil transfer pump level switch

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) 'B' SI pump maintenance and testing activities on June 15, 2020
- (2) 'B' EDG day tank level switch replacement on June 17, 2020

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (5 Samples)

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

- (1) NCR 2315828, SDAFW calculation errors
- (2) NCR 2323914, 'A' EDG cubicle loose bolts
- (3) NCR 2326398, Hot spot on 52-9 Unit disconnect switch A-Phase
- (4) NCR 2327803, 'A' battery charger preventive maintenance (PM) could not be fully completed
- (5) NCR 2326615, High vibrations on 'B' EDG fuel oil transfer pump motor

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) EC 417357, Replace 'B' EDG day tank level control switches
- (2) EC 417010, Temporarily rewire direct current control power for 52/17, 52/19, 52/23, 52/24, 52/25, 52/26 & 52/28

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (3 Samples)

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

- (1) Work order (WO) 20392763, 'B' EDG standby lube oil pump replacement on April 22, 2020
- (2) WO 20389448, 'B' SI pump maintenance activities on June 15, 2020
- (3) WO 20400788, 'B' EDG day tank level switch replacement on June 17, 2020

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (4 Samples)

- (1) MST-015, Turbine first stage pressure protection channel testing on April 30, 2020
- (2) MST-I-RCS-FLW-CH-I, Reactor coolant system flow channel operational test on May 14, 2020
- (3) OST-409-1, 'A' EDG fast speed start testing on June 3, 2020
- (4) MST-016, Containment pressure protection channel testing, on June 22, 2020

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) OST-908-3, 'B' CCW pump test on April 27, 2020

71114.02 - Alert and Notification System Testing

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

- (1) The inspectors evaluated the maintenance and testing of the alert and notification system during the week of April 27, 2020.

71114.03 - Emergency Response Organization Staffing and Augmentation System

Inspection Review (IP Section 02.01-02.02)

The inspectors evaluated the readiness of the Emergency Response Organization (ERO) during the week of April 27, 2020. However, the inspectors were unable to complete this inspection procedure (IP) in its entirety. The aspect that remains to be inspected is the verification of a sample of key ERO personnel's training qualifications and response times from home to the site. The necessary documentation used by the inspectors to verify this information is considered personally identifiable information, which the inspectors chose not to handle while performing this inspection remotely. Completion of the remainder of this IP is to be determined at a later date.

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 April 27, 2020. This evaluation does not constitute NRC approval.

71114.05 - Maintenance of Emergency Preparedness

Inspection Review (IP Section 02.01 - 02.11)

The inspectors evaluated the maintenance of the emergency preparedness program during the week of April 27, 2020. However, the inspectors were unable to complete this IP in its entirety. The aspects that remains to be inspected are the verification of radiation monitors used in the emergency action levels to ensure proper scale readout of the instrumentation, emergency response facility's readiness, including field monitoring team vehicles and go-kits used for emergencies. Completion of the remainder of this IP will be determined at a later date.

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated the conduct of a routine emergency planning scenario on June 23, 2020. The scenario involved a startup transformer failure, loss of instrument air, stuck open pressurizer spray valve, and an anticipated transient without scram.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

EP01: Drill/Exercise Performance (IP Section 02.12)

EP01: Drill & Exercise Performance for the period April 1, 2019, through December 31, 2019. This inspection procedure was not completed. The completion of the remaining portion is to be determined at a later date.

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

- (1) EP02: Emergency Response Organization Drill Participation for the period April 1, 2019, through December 31, 2019.

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

- (1) EP03: Alert & Notification System Reliability for the period April 1, 2019, through December 31, 2019.

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (1 Sample)

- (1) Unplanned scrams with complications (IE04) from April 1, 2019 to March 31, 2020

MS05: Safety System Functional Failures (SSFFs) Sample (IP Section 02.04) (1 Sample)

- (1) Safety system functional failures (MS05) from April 1, 2019 to March 31, 2020

MS06: Emergency AC Power Systems (IP Section 02.05) (1 Sample)

- (1) Emergency AC power systems (MS06) from April 1, 2019 to March 31, 2020

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 that might be indicative of a more significant safety issue.

Annual Follow-up of Selected Issues (IP Section 02.03) (3 Samples)

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

- (1) NCR 2327596, 'B' SW pump failed to start following maintenance
- (2) NCR 2321523, 'B' EDG fuel oil day tank high level switch failure
- (3) NCR 2282000, 'B' Tainter gate did not operate electrically
NCR 2313626, Control to lower 'B' Tainter gate electronically not functional
NCR 2323048, 'B' Tainter gate B would not open or move
NCR 2327844, 'B' Tainter gate motor brake will not release

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

60855.1 - Operation of an Independent Spent Fuel Storage Installation at Operating Plants (1 sample)

- (1) The inspectors evaluated the licensee's activities related to long-term operation and monitoring of their independent spent fuel storage installation.

INSPECTION RESULTS

Observation: 71152 Semiannual Trend Review	71152
From January 1, 2020, through June 30, 2020, the inspectors noticed a potential adverse trend in circuit breaker maintenance and operation. During this timeframe, NRC inspectors noted that seven NCRs had been initiated against breaker operation and/or maintenance: <ul style="list-style-type: none">On January 9, 2020, during planned cleaning/maintenance of the 'A' spent fuel pit (SFP) cooling pump breaker, the breaker was found with the manual closing roller return spring disconnected on one end. Binding was observed inside the operating mechanism when the breaker was manually closed. The breaker was able to be	

closed and opened both electrically and mechanically. The SFP cooling pump breaker was replaced and the old breaker has been sent to the vendor for further investigation. NCR 2309950 was initiated to track this issue.

- On January 20, 2020, NCR 2311714 was initiated for the 'B' circulating water pump when the pump breaker did not pass the PM criteria for the anti-pumping feature on the breaker due to a legacy wiring issue within the switchgear that was introduced when a portion of the 4 kilo-volt (kV) switchgear was replaced in 2010. There was no impact to the anti-pump feature until new breakers were installed in 2016. When an extent of condition was performed, the condition was found in other 4kV bus tie breakers. The licensee is correcting the wiring issue under EC 417010. There is no safety concern associated with this issue.
- On January 27, 2020, following completion of planned maintenance on the 'A' EDG, the 'A' EDG breaker failed to close while operators were attempting to parallel the 'A' EDG to the grid during post-maintenance test runs. The licensee determined that the secondary contacts in the breaker cubicle were damaged due to a misalignment of the breaker contacts while the breaker was being racked in. The licensee entered this issue into the corrective action program (CAP) as NCR 2239741.
- On January 30, 2020, during performance of planned maintenance on the 'A' CCW pump breaker, it was discovered that the undervoltage trip attachment (UVTA) did not consistently perform its intended function during maintenance testing. The first UVTA test was successful, and subsequent tests produced varied results. The licensee determined that reasonable assurance existed for the breaker to provide power to the 'A' CCW pump. The UVTA was replaced and the breaker tested satisfactory. The licensee entered this into the CAP under NCR 2313436.
- On April 28, 2020, following maintenance, the 'B' SW pump failed to start. When the switch was taken to start, there was no change in light indication, nor any change in pump status locally. Troubleshooting determined that the manual trip button on the breaker was found to be sticking due to bent breaker lockout tabs. The licensee determined that the breaker lockout tabs were damaged during the hanging of the clearance, when tie wraps were installed as a locking device and tightened to the point where the lockout tabs became slightly deformed. The breaker lockout tabs were adjusted to prevent them from binding and the 'B' SW pump was returned to service. The licensee entered this into their CAP as NCRs 2327596 and 2327630.
- On June 16, 2020, during performance of OST-101-3, while operators were energizing the pressurizer heaters, the light indication failed to work locally at the breaker and in the control room for back up group heater 'B.' It was determined that the control fuses for the breaker failed open. The fuses were replaced, and the breaker was returned to service. The fuses had functioned without issue since 2009, and the licensee determined that a component in the breaker is sporadically causing the control fuses to open. The licensee will replace the breaker with a spare and send the original to the vendor for refurbishment.

None of the breaker issues mentioned above resulted in a safety or operability concern, however most of the issues seem to stem from errors in operation or potential inadequate preventative maintenance.

EXIT MEETINGS AND DEBRIEFS

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

- On July 15, 2020, the inspectors presented the integrated inspection results to Mr. E. Kapopoulos Jr. and other members of the licensee staff.
- On May 20, 2020, the inspectors presented the Emergency Preparedness Program inspection results to Mr. E. Kapopoulos Jr. and other members of the licensee staff.