



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

November 4, 2021

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 05000261/2021003

Dear Mr. Kapopoulos Jr.:

On September 30, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at H.B. Robinson Steam Electric Plant. On October 13, 2021, 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/

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

Docket No. 05000261
License No. DPR-23

Enclosure:
As stated

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SUBJECT: H.B. ROBINSON STEAM ELECTRIC PLANT – INTEGRATED INSPECTION
REPORT 05000261/2021003 – DATED November 4, 2021

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OFFICE	RII/DRP/PB3	RII/DRP/PB3	RII/DRP/PB3		
NAME	J. Hamman	M. Fannon	D. Dumbacher		
DATE	11/01/2021	11/01/2021	11/04/2021		

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

Docket Number: 05000261

License Number: DPR-23

Report Number: 05000261/2021003

Enterprise Identifier: I-2021-003-0005

Licensee: Duke Energy Progress, LLC

Facility: H.B. Robinson Steam Electric Plant

Location: Hartsville, SC

Inspection Dates: July 01, 2021 to September 30, 2021

Inspectors: B. Bishop, Sr. Project Engineer
A. Butcavage, Reactor Inspector
M. Fannon, Senior Resident Inspector
J. Hamman, Senior Project Engineer
A. Wilson, Senior Project Engineer

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

None.

PLANT STATUS

Unit 2 began the inspection period at rated thermal power. On July 10, 2021, the unit was down powered to 38 percent rated thermal power to replace the 'A' loop reactor coolant system flow transmitter. The unit was returned to rated thermal power on July 10, 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 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 on-site activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution," 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

71111.01 - Adverse Weather Protection

Impending Severe Weather Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the adequacy of the overall preparations to protect risk-significant systems from impending severe weather prior to the arrival of Tropical Storm Elsa on July 7, 2021.

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

- (1) The inspectors evaluated that 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 on August 17, 2021.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (3 Samples)

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

- (1) 'A' emergency diesel generator (EDG) on July 7, 2021
- (2) Safety injection (SI) system on July 20, 2021
- (3) Steam driven auxiliary feedwater system on September 22, 2021

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

- (1) The inspectors evaluated system configurations during a complete walkdown of the 4 kilovolt and 480 volt electrical distribution system on September 28, 2021.

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 2, 'A' EDG on July 7, 2021
- (2) Fire Zone 19, cable spreading room on July 7, 2021
- (3) Fire Zone 20, emergency switchgear room and electrical equipment area on July 7, 2021
- (4) Fire Zone 7, auxiliary building hallway on July 20, 2021
- (5) Fire Zone 21, rod control equipment area on September 23, 2021

Fire Brigade Drill Performance Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the onsite fire brigade training and performance during an announced fire drill on July 30, 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) SI and containment spray pump room on July 22, 2020

71111.07SIX - Heat Sink Performance

Ultimate Heat Sink Containment Device and Dam (IP Section 03.05) (1 Sample)

Verify that the UHS Containment Device or Dam remain capable of performing its intended safety functions.

- (1) Reviewed:
- Robinson Cooling Lake, 2019 5-Year Independent Consultant Dam Inspection Report
 - Plant Discharge Canal Engineering (EC) 290149 and PMID-RQ 45675-03
 - Sample of July 21, 2021 Dam Breast photographs
 - WO 20207761, Inspect Discharge Canal and Outfall
 - Commitment Item # 27 per Appendix A of NUREG-1785, "Safety Evaluation Report Related to the License Renewal of H.B. Robinson Steam Electric Plant, Unit 2"

71111.07T - Heat Sink Performance

In Accordance with IP guidance, verify that any potential heat exchanger deficiencies which could mask degraded performance are identified. Applies to all risk significant or safety-related heat exchangers directly or indirectly connected to service water systems or the UHS, including heat exchangers in closed cooling water systems.

Heat Exchanger (Service Water Cooled) (IP Section 03.02) (1 Sample)

- (1)
- CCW Heat Exchanger "A"
 - CCW Heat Exchanger "B"

Heat Exchanger (Closed Loop) (IP Section 03.03)

- CCW to Reactor Coolant Pump Thermal Barrier and Oil Cooler

Ultimate Heat Sink (IP Section 03.04)

- Service Water Pump "A" & "B"
- Service Water Pump "C" & "D"
- 2 - 30 inch Underground Piping Segments, SW Pumps to Plant, Inspection and Maintenance

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 and evaluated licensed operator performance in the Control Room during pressurizer level indicator replacement and calibrations and average coolant temperature protection channel testing on August 25, 2021 and September 14, 2021.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (2 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) 2391852, maintenance rule changes results in multiple performance monitoring groups exceeding performance monitoring criteria
- (2) Maintenance rule (a)(3) periodic evaluation from June 1, 2019 to May 31, 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) Dedicated shutdown diesel generator radiator motor, fan, and belt replacements during twenty four month overhaul from August 2 through 6, 2021

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (5 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' motor driven auxiliary feedwater pump maintenance on July 13, 2020
- (2) Autotransformer maintenance and testing activities on July 20, 2021
- (3) Dedicated shutdown diesel generator overhaul on August 3, 2021
- (4) 'C' auxiliary feedwater pump diesel generator maintenance on August 23, 2021
- (5) 'A' EDG frequency meter replacement on September 2, 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 2388998, anticipated transient without scram mitigation system alarm circuitry trouble alarm locked in on July 27, 2021
- (2) NCR 2389771, 'B' SI pump casing leak on August 1, 2021
- (3) NCR 2392823, offsite power excursion impacting pressurizer heaters on August 18, 2021

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) (EC) 419857, pressure effect on pressurizer level transmitter calibration

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' motor driven auxiliary feedwater pump surveillance test following flow transmitter calibration on July 13, 2021
- (2) OST-910, dedicated shutdown diesel generator surveillance testing following a 24 month overhaul on August 4, 2021
- (3) OP-402, 'C' auxiliary feedwater pump diesel generator run following maintenance on August 23, 2021
- (4) OP-604, 'A' EDG run following frequency meter replacement on September 2, 2021

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (2 Samples)

- (1) OST-151-1, 'A' SI component testing on July 27, 2021
- (2) MST-030, 4 kilovolt undervoltage to reactor protection testing on September 22, 2021

71114.06 - Drill Evaluation

Drill/Training Evolution Observation (IP Section 03.02) (2 Samples)

The inspectors evaluated:

- (1) An emergency planning drill on July 14, 2021. The drill involved a loss of all core exit thermocouples, main feed pump trip requiring a reactor trip, a small break loss of coolant accident, and a large break loss of coolant accident with loss of all containment spray capability.
- (2) An emergency planning training evolution on September 27, 2021. The evolution involved a ruptured and faulted steam generator with failed pilot operated relief valves.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (1 Sample)

- (1) July 1, 2020 through June 30, 2021

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (1 Sample)

- (1) July 1, 2020 through June 30, 2021

MS08: Heat Removal Systems (IP Section 02.07) (1 Sample)

- (1) July 1, 2020 through June 30, 2021

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (1 Sample)

- (1) July 1, 2020 through June 30, 2021

71152 - Problem Identification and Resolution

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 2378753, 'B' EDG oil pressure sensing line leak
- (2) NCR 2394539, lightning strikes impacting plant equipment

INSPECTION RESULTS

No findings were identified.

EXIT MEETINGS AND DEBRIEFS

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

- On October 13, 2021, the inspectors presented the integrated inspection results to Ernest J. Kapopoulos Jr. and other members of the licensee staff.
- On July 29, 2021, the inspectors presented the H.B. Robinson Tri-Annual Heat Sink Inspection with Dam Inspection (IP-71111.07 T and SIX) results to Ernest J. Kapopoulos Jr. and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
71111.07SIX	Corrective Action Documents	CR-02323048	During the monthly PM of the Tainter gates, DR-ISV-4 (Tainter Gate 'B') would not operate	3/30/20	
	Miscellaneous	Commitment Item # 27 per Appendix A of NUREG-1785, "Safety Evaluation Report Related to the License Renewal of H.B. Robinson Steam Electric Plant, Unit 2"	Enhance the Dam Inspection Program	March, 2004	
		PMID-45675-03	Engineering to periodically visually inspect the Discharge Canal and Out-Fall North of the WEIR	4/30/19	
		Robinson Unit 2, TS 3.7.8	Ultimate Heat Sink (UHS)	TS Amendment 265	
	Procedures	AD-EG-ALL-1214	Condition Monitoring of Structures	Rev.1	
		EST-160	Technical Procedure (Maintenance), Ash Pond and Main Dam Inspection	Rev. 0	
	Work Orders	WO 20207761	Inspect Discharge Canal and Outfall	9/4/19	
		WO-20357805 (PM-569)	Robinson Cooling Lake Dam, 2019, 5 Year Independent Consultant Dam Inspection Report, by Wood Environment & Infrastructure Solutions, Inc	3/20/20	
	71111.07T	Calculations	BNP-MLMECH-1 DZ4	Effect of Tube Plugging on CCW Heat Exchanger and System Performance	10/30/02
			RNP-M/MECH-1646	Impact of 99°F SW on CCW System	1/5/09
RNP-M/MECH-1653			Service Water System Hydraulic Evaluation	Rev. 4	
Corrective Action		Action Request -	SW-PMP-A , Has Minor Oil Leak From Top Flange	9/19/2019	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents	02292838		
		Action Request - 02377158	Sample and Change Oil on "C" SW Pump	4/6/21
		AR - 02358969	5 Tube Plugs Found Mispositioned in CCW-HTX-A	11/20/20
		AR - 2365013	Operating Experience 485140R20210112 Service Water Control Valve Failed to Open	7/27/20
	Drawings	G-190199, Sht. 1	Service and Cooling Water System Flow Diagram	Rev. 87
	Engineering Evaluations	PI 2365044-07	Perform an EREV or self-assessment of SOER 07-02 Recommendation 1 to ensure actions previously implemented remain effective	4 /7/ 21
	Miscellaneous	AD-PI-ALL-0300	2021 NRC Triennial Heat Sink Inspection Self-Assessment	5/20/21
		DBD/R87038/SD04	Service Water System Design Basis Document	Rev. 15
		DBD/R87038/SD13	Component Cooling Water System Design Basis Document	Rev. 13
		EST-116	Service Water Piping Inspection	1/11/21
		OST-302-1	Service Water Pumps A& B, Inservice Test	5/2/21
		OST-302-2	Service Water Pumps "C" and "D" Inservice Test	4/22/21
		Q1-2021, RNP, Unit 2, 4060 - Service Water	Robinson Unit-2, First Quarter, System Health Report, Service Water	6/3/21
		Robinson Unit 2 TS Basis	TS B 3.7.8	Rev. 83, 84
		SP-1479	Service Water Pipe Replacement for the CCW HX Return Piping. Project Coordination for RO-20	4/18/2001
		TR-RES-12-16	As-Found Condition Assessment of H. B. Robinson 2 Reactor Coolant Pump	November 2012
	Procedures	AOP-014	Component Cooling Water System Malfunction	Rev.41
		CM -201	Safety Related and Non-Safety Related Heat Exchanger Maintenance	Rev. 58
		CP-001	Chemistry Monitoring Program	Rev.135
		EPP-28	Loss of Ultimate Heat Sink	Rev. 22
		EST-116	Service Water Piping Inspection	Rev. 8

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		RNP-M/MECH-1645	Availability Of Lake Robinson to Provide Ultimate Heat Sink Cooling	7/29/98
		TMM-044	H. B. Robinson, Unit 2, Plant Operating Manual, Volume 6, Part 1, Heat Exchanger NDE Inspection Process	Rev. 2
	Work Orders	TR-RES-12-16	Reactor Coolant Pump removed from H. B. Robinson Unit 2, Loop 3, during the spring 2010 refueling outage, As-Found Condition Assessment (Thermal Barrier)	November 2012
		WO-01127879	Perform Underground Pipe Inspection, South Service Water Header	10/7/13
		WO-02037023	Perform Pipe Inspection CW-11-30, North Service Water Header	6/29/15
		WO-2001671	CCW-HTX-B, Cleaning & Inspection of "B" HTX	10/13/18
		WO-20170232	Perform Extent of Condition For DR-ISV-3 In Response to Work Request 20170124.	4/1/20
		WO-20343760	Perform M-35 and M-36 Cable Inspection	12/16/19
		WO-20370894	CCW-HTX-A, Perform Cleaning & Inspections of HTX	12/20/20
		WO-20426035	CCW-A-MTR, Perform Offline Motor Testing	9/29/20
		WO-20461407	SW-PMP-C, Sample and Change Oil	4/7/21