



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

May 2, 2022

Mr. Eric Carr
President and Chief Nuclear Officer
PSEG Nuclear, LLC
P.O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: HOPE CREEK NUCLEAR GENERATING STATION – INTEGRATED
INSPECTION REPORT 05000354/2022001

Dear Mr. Carr:

On March 31, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Hope Creek Nuclear Generating Station. On April 13, 2022, the NRC inspectors discussed the results of this inspection with Mr. Edward Casulli, Site Vice President 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,

Brice A. Bickett, Chief
Projects Branch 3
Division of Operating Reactor Safety

Docket No. 05000354
License No. NPF-57

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

SUBJECT: HOPE CREEK NUCLEAR GENERATING STATION – INTEGRATED
INSPECTION REPORT 05000354/2022001 DATED MAY 2, 2022

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

Docket Number: 05000354

License Number: NPF-57

Report Number: 05000354/2022001

Enterprise Identifier: I-2022-001-0047

Licensee: PSEG Nuclear, LLC

Facility: Hope Creek Nuclear Generating Station

Location: Hancocks Bridge, NJ

Inspection Dates: January 1, 2022 to March 31, 2022

Inspectors: D. Beacon, Resident Inspector
B. Edwards, Health Physicist
J. Patel, Senior Resident Inspector
A. Turilin, Reactor Inspector
S. Wilson, Senior Health Physicist

Approved By: Brice A. Bickett, Chief
Projects Branch 3
Division of Operating Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Hope Creek Nuclear Generating Station, 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

The Hope Creek Generating Station (Hope Creek) began the inspection period at rated thermal power (RTP). On January 14, Hope Creek commenced a planned load reduction to approximately 74 percent RTP to perform turbine valve testing, control rod pattern exchange, and remove the 'B' reactor feedwater pump from service for maintenance. The unit was returned to RTP on January 16. On March 17, Hope Creek was down powered to approximately 82 percent RTP to support removing the 'C' reactor feedwater pump from service based on lube oil pressure lowering to the pre-briefed contingency limit. Following the corrective maintenance, the unit was returned to RTP on March 18. On March 19, Hope Creek commenced a load reduction to approximately 90 percent RTP for #4 turbine control valve electrohydraulic control oil leak repair and control rod pattern exchange. The unit was returned to RTP on March 20. Hope Creek remained at or near RTP 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

71111.01 - Adverse Weather Protection

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

- (1) The inspectors evaluated readiness for impending adverse weather conditions for the onset of heavy snow between January 28 and January 29

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) 'B' safety and turbine auxiliary cooling system on January 13
- (2) 'C' emergency diesel generator on February 14
- (3) Reactor core isolation cooling system on February 22

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) Inert gases compressor room; filtration, recirculation, and ventilation system unit area; and steam vent & equipment area in pre-fire plan FP-HC-3442 on January 5
- (2) Heating ventilation and air conditioning equipment rooms in pre-fire plan FP-HC-3521 on January 24
- (3) Lower control equipment room in pre-fire plan FP-HC-3532 on February 1
- (4) Cable spreading room in pre-fire plan FP-HC-3522 on February 28
- (5) High pressure coolant injection pump and turbine room in pre-fire plan FP-HC-3412 on March 1

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) 'B' residual heat removal pump and heat exchanger room on January 14

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 main control room during a downpower for turbine valve testing on January 15

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

- (1) The inspectors observed and evaluated a crew of licensed operators in the plant's simulator during a licensed operator requalification examination on January 31

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) 4.16kV emergency switchgear under-voltage relays following multiple out of tolerance occurrences on March 7
- (2) 'F' filtration recirculation and ventilation system following fan trips on March 22

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 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) Emergent risk following an electrical transient that caused inoperability of the safety-related 1DD481 inverter and 'B' residual heat removal heat exchanger on January 13
- (2) Unplanned unavailability of 'B' emergency diesel generator during 24-hour endurance run from January 20 through January 23
- (3) Planned unavailability of 'B' emergency diesel generator during week of February 14
- (4) Planned unavailability of the 'B' station service water loop on March 15

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (4 Samples)

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

- (1) Safety and turbine auxiliary cooling system following slow stroke time of the turbine auxiliary cooling system isolation valve (2522A) during surveillance testing on January 12
- (2) Control blade 18-27 following increased friction observed during exercising on February 10
- (3) Drywell pressure channel functional test slow response for automatic depressurization system actuation on March 4
- (4) 'B' and 'C' station service water pumps following identification of degradation of pump pedestals on March 14

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) Temporary modification to repair electrohydraulic control oil leak on pressure transmitter instrumentation tubing associated with the #4 turbine control valve accumulator on March 22

71111.19 - Post-Maintenance Testing

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

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

- (1) High pressure coolant injection steam line flow trip unit replacement on January 12

- (2) Safety-related 1DD481 inverter following circuit card replacement on January 13
- (3) 'B' emergency diesel generator following a fuel rack position adjustment on January 21
- (4) 'A' safety and turbine auxiliary cooling system heat exchanger inlet isolation valve following a limit switch replacement on March 1
- (5) 'C' station service water pump following a packing replacement on March 21
- (6) Reactor building ventilation system following exhaust isolation damper solenoid valve replacement on March 28

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance testing activities to verify system operability and/or functionality:

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

- (1) HC.OP-ST.KJ-0015, 'B' emergency diesel generator 24-hour operability run and hot restart test on January 18
- (2) HC.OP-IS.BJ-0001, High pressure coolant injection main and booster pump quarterly test on March 8
- (3) HC.OP-IS.BC-0004, 'D' residual heat removal pump test on March 25

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) HC.OP-IS.BC-0001, 'A' residual heat removal pump in-service test on January 4

RADIATION SAFETY

71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

Walkdowns and Observations (IP Section 03.01) (4 Samples)

The inspectors evaluated the following radioactive effluent systems during walkdowns:

- (1) South plant vent gaseous effluent sample system and discharge ventilation
- (2) North plant vent gaseous effluent sample system
- (3) Station service water liquid effluent sample system
- (4) Turbine building circulating water dewatering sump liquid effluent sample system

Sampling and Analysis (IP Section 03.02) (4 Samples)

Inspectors evaluated the following effluent samples, sampling processes and compensatory samples:

- (1) South plant vent radioactive iodine effluent sample and analysis
- (2) South plant vent radioactive noble gas effluent sample and analysis
- (3) South plant vent tritium effluent sample and analysis
- (4) Waste sample tank 'B' liquid effluent permit. Permit Number: L-20211018-934-B

Dose Calculations (IP Section 03.03) (3 Samples)

The inspectors evaluated the following dose calculations:

- (1) Liquid release permit number: L-20211018-934-B; October 18, 2021 at 16:12 hours
- (2) Gaseous release permit number: G-20190827-342-C; South Plant Vent; August 27, 2019 - September 3, 2019
- (3) 2020 Salem and Hope Creek 10 CFR Part 61 Analysis Report.

Abnormal Discharges (IP Section 03.04) (1 Sample)

The inspectors evaluated the following abnormal discharges:

- (1) Liquid Release Permit number L-20200721-563-C; July 21, 2021; cooling tower blow down radiation monitoring stilling well.

There were no additional abnormal or unplanned discharges available for evaluation during the inspection period.

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) January 1, 2021 through December 31, 2021

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

- (1) January 1, 2021 through December 31, 2021

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

- (1) January 1, 2021 through December 31, 2021

71152A - Annual Follow-up Problem Identification and Resolution

Annual Follow-up of Selected Issues (Section 03.03) (1 Sample)

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

- (1) Corrective actions taken and planned in response to issues identified during the 2021 problem identification and resolution biennial inspection on February 11

INSPECTION RESULTS

Observation: Corrective actions taken and planned in response to issues identified during the 2021 problem identification and resolution biennial inspection	71152A
<p>Inspectors reviewed corrective actions taken and planned in response to two issues identified during the biennial NRC problem identification and resolution inspection (NRC Inspection Reports 05000354/2021012 and 05000354/2021403) that was completed on September 17, 2021. Specifically, the inspectors focused on corrective actions associated with 1) Green FIN 05000354/2021012-01, “High Pressure Coolant Injection Trip Pressure Control Valve Exceeded Service Life,” and 2) Green NCV 05000354/2021403-01 (security-related).</p> <p>In response to the high pressure coolant injection system pressure control valve (PCV) service life issue, PSEG performed an evaluation under the procedure CC-AA-11, “Nonconforming Materials, Parts, or Components,” Revision 6. The PCV that exceeded its service life was scheduled for replacement at the next available opportunity (refueling outage) and a preventive maintenance (PM) plan was established under PM change request 70217855 to align with applicable vendor guidance, operating experience, and station maintenance practices. Additionally, a revision to CC-AA-11 (70219603) has been initiated to clarify aspects of the procedure regarding service life-related issues to enhance the use of the procedure in the future. The inspectors reviewed these corrective actions and did not identify any performance deficiencies or violations of NRC requirements.</p> <p>In response to Green NCV 05000354/2021403-01 (security-related), PSEG performed multiple evaluations, including a work-group evaluation, an apparent cause evaluation, and a subsequent revision to the apparent cause evaluation. The inspectors reviewed these evaluation products and the corrective actions implemented or planned to result from those evaluations.</p> <p>The inspectors did not identify any findings of more than minor significance as part of this review.</p>	

EXIT MEETINGS AND DEBRIEFS

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

- On January 27, 2022, the inspectors presented the inspection debrief for Radioactive Gaseous and Liquid Effluent Treatment inspection results to Mr. Steve Poorman, Hope Creek Plant Manager, and other members of the licensee staff.
- On April 13, 2022, the inspectors presented the integrated inspection results to Mr. Edward Casulli, Site Vice President and other members of the licensee staff.
- On April 13, 2022, the inspectors presented the Radioactive Gaseous and Liquid Effluent Treatment inspection results to Mr. Edward Casulli, Site Vice President and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71124.06	Corrective Action Documents	04440887	Action Request Report	08/16/2021