



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION I  
475 ALLENDALE RD, STE 102  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

May 7, 2024

David P. Rhoades  
Senior Vice President  
Constellation Energy Generation, LLC  
President and Chief Nuclear Officer (CNO)  
Constellation Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 – INTEGRATED  
INSPECTION REPORT 05000352/2024001 AND 05000353/2024001

Dear David Rhoades:

On March 31, 2024, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Limerick Generating Station, Units 1 and 2. On April 23, 2024, the NRC inspectors discussed the results of this inspection with Michael Gillin, 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,

Jonathan E. Greives, Chief  
Projects Branch 4  
Division of Operating Reactor Safety

Docket Nos. 05000352 and 05000353  
License Nos. NPF-39 and NPF-85

Enclosure:  
As stated

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SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 – INTEGRATED  
 INSPECTION REPORT 05000352/2024001 AND 05000353/2024001 DATED  
 MAY 7, 2024

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

Docket Numbers: 05000352 and 05000353

License Numbers: NPF-39 and NPF-85

Report Numbers: 05000352/2024001 and 05000353/2024001

Enterprise Identifier: I-2024-001-0029

Licensee: Constellation Energy Generation, LLC

Facility: Limerick Generating Station, Units 1 and 2

Location: Sanatoga, PA 19464

Inspection Dates: January 1, 2024, to March 31, 2024

Inspectors: A. Ziedonis, Senior Resident Inspector  
L. Grimes, Resident Inspector  
E. Miller, Acting Resident Inspector

Approved By: Jonathan E. Greives, Chief  
Projects Branch 4  
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 Limerick Generating Station, Units 1 and 2, 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 1 began the inspection period at rated thermal power. On January 1, 2024, operators performed a controlled shutdown to replace two leaking safety relief valves (SRV), 'D' and 'L'. The unit was returned to full power on January 6, 2024, and remained at or near rated thermal power for the remainder of the inspection period.

Unit 2 began the inspection period at rated thermal power. On March 2, 2024, operators lowered thermal power to approximately 65 percent for a control rod sequence exchange. The unit was returned to full power on March 3, 2024, 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," 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 (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 during the week of February 12, 2024

### 71111.04 - Equipment Alignment

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

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

- (1) Unit 1 'A' and 'C' residual heat removal (RHR) system on February 7 and 8, 2024
- (2) Unit 1 reactor core isolation cooling (RCIC) system following testing on February 15, 2024
- (3) Unit 2 RCIC system following testing on February 29, 2024

## 71111.05 - Fire Protection

### Fire Area Walkdown and Inspection (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) Unit common fire area 25 auxiliary equipment room on January 17, 2024
- (2) Unit common fire area 78 refuel floor on January 17, 2024
- (3) Unit 2 fire area 72 reactor vent supply fan area on January 31, 2024
- (4) Unit common fire area 27 control structure fan room, during continuous fire watch, on February 7, 2024
- (5) Unit 2 fire area 57 high-pressure coolant injection (HPCI) pump room on February 29, 2024

## 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 Unit 1 startup on January 4, 2024

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

- (1) The inspectors observed and evaluated licensed operator regualification training in the simulator on February 12, 2024

## 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 remain capable of performing their intended function:

- (1) Unit 2 reactor enclosure supply fan maintenance effectiveness following 'B' fan failure during the week of February 19, 2024
- (2) Unit 2 reactor enclosure system maintenance effectiveness following loss of system function during the weeks of March 4 and March 11, 2024

## 71111.13 - Maintenance Risk Assessments and Emergent Work Control

### Risk Assessment and Management (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) Unit 1 emergent work to replace 'D' SRV following discovery of base-to-body flange external steam leakage during the week of January 1, 2024

- (2) Unit 2 emergent work in response to the 'B' reactor enclosure supply fan following fan failure during the week of January 29, 2024
- (3) Unit common emergent work in response to the 'B' main control room chiller trip on February 1, 2024
- (4) Unit 2 emergent work in response to the 'C' reactor enclosure supply fan following fan failure during the week of March 4, 2024

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) Unit 1 'D' SRV following discovery of base-to-body flange external steam leakage during the week of January 1, 2024
- (2) Unit 1 HPCI system following pre-outage scaffold erection in the pump room during the week of February 12, 2024
- (3) Unit 2 RCIC system division 3 logic following steam supply low pressure trip unit gross fail indication light not illuminating during surveillance testing during the week of February 12, 2024
- (4) Unit 1 'B' train of RHR following discovery of an overdue preventive maintenance activity on the motor-operated injection valve 17B during the week of February 19, 2024
- (5) Unit 1 and 2 emergency diesel generators (EDGs) following the receipt of part 21 notifications associated with event notifications 56992 and 56993 during the week of February 26, 2024

71111.20 - Refueling and Other Outage Activities

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

- (1) The inspectors evaluated Unit 1 forced outage (1F60) activities from January 1, 2024, through January 5, 2024

71111.24 - Testing and Maintenance of Equipment Important to Risk

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

Post-Maintenance Testing (PMT) (IP Section 03.01) (4 Samples)

- (1) Unit 2 HPCI system testing following planned maintenance during the week of January 8, 2024
- (2) Unit 2 'D' RHR system testing following planned maintenance on February 9, 2024
- (3) Unit 2 remote shutdown panel suppression pool temperature indication selector switch during the week of February 26, 2024
- (4) Unit 2 reactor enclosure system 'A' exhaust fan inlet damper following replacement of failed solenoid valve during the weeks of March 11 and 18, 2024

Surveillance Testing (IP Section 03.01) (3 Samples)

- (1) Unit 2 ST-6-092-314-2, D24 EDG slow start surveillance test on January 23, 2024
- (2) Unit common ST-4-078-490-2, 'A' control room emergency filtration / 'A' main control room heating, ventilation, air conditioning – control room envelope unfiltered in-leakage test in radiation isolation during the week of February 5, 2024
- (3) Unit 1 ST-6-043-320-1, daily jet pump operability verification for two recirculation loop operation during the week of February 12, 2024

71114.06 - Drill Evaluation

Additional Drill and/or Training Evolution (1 Sample)

The inspectors evaluated:

- (1) The inspectors observed and evaluated a training evolution involving licensed operator requalification, with associated emergency action level entry, in the simulator on February 12, 2024

**OTHER ACTIVITIES – BASELINE**

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE03: Unplanned Power Changes per 7000 Critical Hours (IP Section 02.02) (2 Samples)

- (1) Unit 1 for the period of January 1, 2023, through December 31, 2023
- (2) Unit 2 for the period of January 1, 2023, through December 31, 2023

MS07: High-Pressure Injection Systems (IP Section 02.06) (2 Samples)

- (1) Unit 1 for the period of January 1, 2023, through December 31, 2023
- (2) Unit 2 for the period of January 1, 2023, through December 31, 2023

MS08: Heat Removal Systems (IP Section 02.07) (2 Samples)

- (1) Unit 1 for the period of January 1, 2023, through December 31, 2023
- (2) Unit 2 for the period of January 1, 2023, through December 31, 2023

**INSPECTION RESULTS**

No findings were identified.

**EXIT MEETINGS AND DEBRIEFS**

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

- On April 23, 2024, the inspectors presented the integrated inspection results to Michael Gillin, Site Vice President, and other members of the licensee staff.



**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.13	Corrective Action Documents	IR 4727659	1D SRV Tailpipe temperature prompt jump	01/01/2024
		IR 4731070	2B RE supply fan failure	01/15/2024
		IR 4740863	B Control Enclosure Chiller trip	02/01/2024
		IR 4755684	2C RE supply fan failure	03/05/2024
		IR 4755796	EOC for U2 RE HVAC Supply Fan Failures	03/05/2024
		IR 4756444	Replace 2C RE Supply Fan Screen and Repair Stationary Vanes	03/08/2024
		IR 4756448	Replace 2B RE Supply Fan Screen and Repair Stationary Vanes	03/08/2024
		IR 4756647	2A(B)-E252 and 20-E270 Coil Cleaning	03/08/2024
		IR 4756901	2B RE Supply Fan High Vibrations During PMT	03/09/2024
		IR 4758544	Unit 1 Reactor Enclosure HVAC Total Flow Degraded	03/20/2024
71111.15	Corrective Action Documents	IR 4753297	Part 21 EN 56992 (Air start solenoid valves)	02/26/2024
		IR 4753300	Part 21 EN 56993 (Woodward signal generators)	02/26/2024
		IR 4756589	Part 21: Action to Walkdown LGS EDGs	03/08/2024
71111.24	Corrective Action Documents	IR 4757656	NRC leak identified on SV-076-255A(AS)	03/13/2024