



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE RD, STE 102  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

August 6, 2024

Bob Coffey  
Executive Vice President, Nuclear Division  
and Chief Nuclear Officer  
Florida Power & Light Company  
700 Universe Blvd.  
Mail Stop: EX/JB  
Juno Beach, FL 33408

SUBJECT: SEABROOK STATION – INTEGRATED INSPECTION REPORT  
05000443/2024002 AND INDEPENDENT SPENT FUEL STORAGE  
INSTALLATION INSPECTION REPORT 07200063/2024001

Dear Bob Coffey:

On June 30, 2024, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Seabrook Station. On July 29, 2024, the NRC inspectors discussed the results of this inspection with David Sluszka, 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* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Matt R. Young, Chief  
Projects Branch 2  
Division of Operating Reactor Safety

Docket Nos. 05000443 and 07200063  
License No. NPF-86

Enclosure:  
As stated

cc w/ encl: Distribution via LISTSERV

SUBJECT: SEABROOK STATION – INTEGRATED INSPECTION REPORT  
 05000443/2024002 AND INDEPENDENT SPENT FUEL STORAGE  
 INSTALLATION INSPECTION REPORT 07200063/2024001 DATED  
 AUGUST 6, 2024

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

Docket Numbers: 05000443 and 07200063

License Number: NPF-86

Report Numbers: 05000443/2024002 and 07200063/2024001

Enterprise Identifiers: I-2024-002-0043 and I-2024-001-00060

Licensee: NextEra Energy Seabrook, LLC

Facility: Seabrook Station

Location: Seabrook, New Hampshire

Inspection Dates: April 1, 2024 to June 30, 2024

Inspectors: T. Daun, Senior Resident Inspector  
E. Allen, Resident Inspector  
N. Eckhoff, Health Physicist  
C. Hargest, Health Physicist  
M. Henrion, Senior Health Physicist  
A. Kostick, Technical Assistant

Approved By: Matt R. Young, Chief  
Projects Branch 2  
Division of Operating Reactor Safety

Enclosure

## **SUMMARY**

The U.S. NRC continued monitoring the licensee's performance by conducting an integrated inspection at Seabrook 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**

Seabrook Station began the inspection period operating at 100 percent rated thermal power. On May 10, 2024, the plant performed a rapid load reduction to 58 percent rated thermal power in response to geomagnetically induced currents caused by a solar storm. Following the solar storm, the plant returned to 100 percent rated thermal power on May 12, 2024, and remained at or near full 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

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

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal high temperatures for the following systems: service water, primary component cooling water, and transformer cooling fans on June 12, 2024

### 71111.04 - Equipment Alignment

#### Partial Walkdown Sample (IP Section 03.01) (2 Samples)

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

- (1) 'B' emergency diesel generator and support systems during 'A' emergency diesel generator maintenance the week of June 10, 2024
- (2) Supplemental emergency power system diesel generators during 'A' emergency diesel generator maintenance the week of June 10, 2024

### 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) Main steam and feedwater pipe enclosure (MS-F-3B-Z) on April 29, 2024
- (2) 'A' emergency diesel generator room (DG-F-2A-A) on June 12, 2024
- (3) Supplemental emergency power system enclosures and switchgear (SEPS-F-1-0) on June 14, 2024
- (4) 'B' switchgear room (CB-F-1B-A) on June 21, 2024
- (5) Control room computer room (CB-F-3C-A) on June 25, 2024

#### 71111.07A - Heat Exchanger/Sink Performance

##### Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

- (1) 'A' emergency diesel generator jacket water heat exchanger on June 24, 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 the following:
  - Testing of the emergency feedwater system on April 24, 2024
  - Rapid power reduction following a geomagnetic disturbance of May 10, 2024

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

- (1) The inspectors observed and evaluated licensed operator annual requalification exams in the simulator on June 10, 2024

#### 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 remain capable of performing their intended function:

- (1) Containment air compressors on May 15, 2024

#### 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) Risk management actions associated with transferring 'B' 125 volt direct current (dc) battery power supply to dc bus 11B from dc bus 11D on April 1, 2024

- (2) Risk management actions associated with 'A' emergency diesel generator maintenance on June 14, 2024
- (3) Risk management actions associated with removal of flex equipment for annual maintenance on June 25, 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) Non-vital bus voltage drifting on June 1, 2024
- (2) Emergency switchgear 3B reserve auxiliary transformer differential relay on June 6, 2024
- (3) Emergency feedwater steam supply valve seat leakage increase on June 9, 2024
- (4) Primary component cooling water head tank level detector failure on June 18, 2024
- (5) 'A' emergency diesel generator jacket water heat exchanger service water flow indication on June 24, 2024

#### 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) 'A' steam pressure instrument tubing modifications on June 24, 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 (IP Section 03.01) (6 Samples)

- (1) Charging pump motor trip checks following the replacement of charging pump 2A 4160 kV breaker on April 24, 2024
- (2) Containment enclosure building cooling fan (EAH-FN-5A) surveillance following replacement of the fan motor on May 16, 2024
- (3) Valve stroke of component cooling water valve 1298 following the rebuild of the pneumatic actuator on May 20, 2024
- (4) 'A' emergency diesel generator lube oil heat exchanger temperature control valve following replacement of power pills on June 17, 2024
- (5) 'A' emergency diesel generator following major maintenance window on June 18, 2024
- (6) 'B' loop service water following maintenance on the 'D' service water pump on June 27, 2024

Surveillance Testing (IP Section 03.01) (3 Samples)

- (1) Diesel generator air start system valves quarterly surveillance test on April 10, 2024
- (2) 'A' residual heat removal 18-month emergency safeguards actuation system automatic start relay (K601) surveillance test on April 28, 2024
- (3) Primary air handling damper 35A timing relay surveillance test on June 21, 2024

71114.06 - Drill Evaluation

Additional Drill and/or Training Evolution (IP Section 03.02) (1 Sample)

The inspectors evaluated:

- (1) The inspectors evaluated the conduct of emergency planning classifications and notifications during licensed operator annual exams on June 10, 2024

**RADIATION SAFETY**

71124.07 - Radiological Environmental Monitoring Program

Environmental Monitoring Equipment and Sampling (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated environmental monitoring equipment and observed collection of environmental samples

Radiological Environmental Monitoring Program (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the implementation of the licensee's radiological environmental monitoring program

Groundwater Protection Initiative Implementation (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated the licensee's implementation of the groundwater protection initiative program to identify incomplete or discontinued program elements

**OTHER ACTIVITIES – BASELINE**

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

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

- (1) For the period April 1, 2023 through March 31, 2024

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

- (1) For the period April 1, 2023 through March 31, 2024



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

- (1) For the period April 1, 2023 through March 31, 2024

71152S - Semiannual Trend Problem Identification and Resolution

Semiannual Trend Review (IP Section 03.02) (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.

71153 - Follow Up of Events and Notices of Enforcement Discretion

Personnel Performance (IP Section 03.03) (1 Sample)

Inspectors responded to the control room and reviewed operator logs, computer data, recorder data, procedural requirements, and related training. Inspectors also interviewed staff involved and reviewed the licensee's transient assessment.

- (1) The inspectors evaluated a rapid load reduction and down power in response to a geomagnetic storm on May 10, 2024

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

60855 - Operation of an Independent Spent Fuel Storage Installation

Operation of an Independent Spent Fuel Storage Installation (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: Semiannual Trend Review	71152S
The inspectors reviewed Seabrook’s corrective action program for trends that might be indicative of more significant safety issues. The inspectors reviewed condition reports, level one assessments, system health reports, and control room/panel deficiencies. In particular, the inspectors evaluated the operator challenges program including an audit of control room deficiencies, control board notifications, and operator workarounds.	
Based on the overall results of the semiannual trend review, the inspectors determined that issues were appropriately evaluated by Seabrook staff for potential trends and resolved within the scope of the corrective action program and other requisite procedures.	
Minor Performance Deficiency	71153
<b>Operator Performance During Solar Magnetic Disturbance</b>	
Minor Performance Deficiency: Seabrook operating procedure ON1246.03, “Generator Step-up (GSU) Transformer Trouble,” provides response actions for a solar magnetic disturbance event which has the potential to result in elevated geomagnetically induced current (GIC). On	

May 10, 2024, Seabrook entered this procedure conservatively at 08:26 based upon forecasted solar magnetic disturbances. Various GIC pulses were observed throughout the day. The start of a GIC pulse is indicated by a control room alarm when GIC exceeds 60 amps and remains until GIC reduces to less than 60 amps. Step 9b of ON1246.03 directs operators to check if direct current neutral ground current is less than limits and if it is not, reduce load to less than 700 megawatt electric (Mwe) in 30 minutes. Step 9 also directs monitoring of GSU hot spot winding temperatures and GSU oil temperatures during the GIC pulse. If either of these limits are exceeded, operators are directed to trip the reactor and remove the GSUs from service. Attachment F of ON1246.03 is used to determine the GIC limit which is based on plant operating power, GIC pulse, and the number of GSU coolers that are in service. Attachment F defines the GIC pulse as the time GIC exceeds 60 amps until it reduces below 60 amps.

At 19:06, a GIC pulse started and a maximum GIC current of 232 amps was observed at approximately 19:11. The current limit for a 5-10 minute GIC pulse is 279 amps. The GIC pulse continued beyond the 10-minute period and the maximum allowable current for a 10-15 minute GIC pulse is 178 amps. This GIC pulse ended at 19:18. At 19:38, the control room entered their rapid down power procedure and commenced reducing load to less than 700 Mwe. At 20:07, a turbine load of less than 700 Mwe was achieved.

Screening: The inspectors determined the performance deficiency was minor. Inspectors determined that failure to follow procedural guidance to commence load reduction once GIC current exceeded the allowable limit was a performance deficiency that was preventable. Specifically, the procedure required a rapid load reduction to reduce power to less than 700 Mwe within 30 minutes of exceeding GIC current, which occurred at 19:16, but the delay in the start of the power reduction resulted in exceeding the 30 minute requirement to be less than 700 Mwe by 21 minutes. While it is associated with protection against external factors attribute of the Initiating Events cornerstone, no increase in GSU hot spot winding temperatures or GSU oil temperatures were seen during the event.

The licensee captured these observations in their corrective action program as AR 02486671 and have completed training for all licensed operators on ON1246.03 as well as the details of this event.

## **EXIT MEETINGS AND DEBRIEFS**

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

- On July 2, 2024, the inspectors presented the radiation safety inspection results to David Sluszka, Site Vice President, and other members of the licensee staff.
- On July 10, 2024, the inspectors presented the independent spent fuel storage installation inspection results to David Sluszka, Site Vice President, and other members of the licensee staff.
- On July 29, 2024, the inspectors presented the integrated inspection results to David Sluszka, Site Vice President, and other members of the licensee staff.

**DOCUMENTS REVIEWED**

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Corrective Action Documents	02293797		
		02477413		
		02479407		
		02482376		
	Corrective Action Documents Resulting from Inspection	02489452		
71111.04	Corrective Action Documents	02488103		
		02488398		
		02488462		
		02488558		
71111.05	Corrective Action Documents	02276532		
		02488155		
		02488858		
		02489113		
	Corrective Action Documents Resulting from Inspection	02485212		
	Fire Plans	CMP-24-4886		
		CMP-24-4887		
	Work Orders	40618483		
		40855838		
		40861783		
40950574				
71111.07A	Corrective Action Documents	02488333		
		02488386		
		02488495		
	Work Orders	40894984		
71111.11Q	Procedures	PI-AA-103-1000	Human Performance Program Error Reduction Tools	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		TR-AA-220-1002	NRC Licensed Operator Exam Security	Revision 6
		TR-AA-220-1004	Licensed Operator Continuing Training Annual Operating and Biennial Written Exams	Revision 9
	Work Orders	40882498		
		40946792		
71111.12	Corrective Action Documents	02436296		
		02436388		
		02475049		
	Procedures	ECA-1.1	Loss of Emergency Coolant Recirculation	Revision 39
		ECA-2.1	Uncontrolled Depressurization of all Steam Generators	Revision 41
		ON1242.01	Loss of Instrument Air	Revision 17
		ON1242.02	Loss of Containment Instrument Air	Revision 13
71111.13	Procedures	OP-AA-102-1003	Guarded Equipment	Revision 47
		OS1048.14	Vital Bus 11B Operation	Revision 17
	Work Orders	4086917901		
		408698001		
71111.15	Corrective Action Documents	02447144		
		02456972		
		02459800		
		02462220		
		02487535		
		02488858		
		02489190		
	Work Orders	40948298		
		94260988		
71111.18	Corrective Action Documents	02462971		
		02464957		
		02466583		
71111.24	Corrective Action Documents	02483532		
		02485216		
		02486249		
		02486516		
		02488331		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		02488640		
	Corrective Action Documents Resulting from Inspection	02487885		
	Drawings	FP23830	Emergency Diesel Generator System Operation and Maintenance Manual	Revision 32
	Procedures	LS0550.09	Timing Relay Acceptance Testing and Maintenance Program	Revision 35
		LS0563.177	1-CS-P-2-A Trip Checks	Revision 2
		MA3.5	Post-Maintenance Testing	Revision 28
		OS1423.09	Containment Enclosure Cooling System 31 Day Surveillance	Revision 8
		OS1426.36	Diesel Generator Air Start System Valves Quarterly Surveillance	Revision 3
		OX1413.01	A Train RHR Quarterly Flow and Valve Stroke Test and 18 Month Valve Stroke Observation	Revision 32
		OX1426.26	DG 1A Semiannual Operability Surveillance	Revision 35
		OX1456.21	Train A ESFAS Slave Relay K601 Go Test	Revision 16
		OX1456.81	Operability Testing Of IST Valves	Revision 44
	Work Orders	40851802		
		40861796		
		40881748		
		40882420		
		40883379		
		40883380		
		40893514		
		40894944		
40906935				
40908060				
40976659				
71114.06	Miscellaneous	CFD 24-01	Seabrook Emergency Preparedness	01/31/2024
	Procedures	EPDP-03	Emergency Preparedness Performance Indicators	Revision 27
71124.07	Corrective Action Documents	02483791		
		02483872		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Resulting from Inspection	02483876		
71153	Corrective Action Documents	02486736		
	Corrective Action Documents Resulting from Inspection	02486671		
		02490369		
	Procedures	ON1246.03	GSU Trouble	Revision 23
ON1246.03		GSU Trouble	Revision 22	