



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

November 5, 2019

Mr. Don Moul  
Vice President, Nuclear Division and  
Chief Nuclear Officer  
Florida Power & Light Company  
Mail Stop: NT3/JW  
15430 Endeavor Drive  
Jupiter, FL 33478

SUBJECT: SEABROOK STATION, UNIT NO. 1 – INTEGRATED INSPECTION REPORT  
05000443/2019003

Dear Mr. Moul:

On September 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Seabrook Station, Unit No. 1. On October 17, 2019, the NRC inspectors discussed the results of this inspection with Mr. Eric McCartney, Site Vice President and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors did not identify any finding or violation of more than minor significance.

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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

**/RA/**

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

Docket No. 05000443  
License No. NPF-86

Enclosure:  
As stated

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SUBJECT: SEABROOK STATION, UNIT NO. 1 – INTEGRATED INSPECTION REPORT  
05000443/2019003 DATED NOVEMBER 5, 2019

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

Docket Number: 05000443

License Number: NPF-86

Report Number: 05000443/2019003

Enterprise Identifier: I-2019-003-0043

Licensee: NextEra Energy Seabrook, LLC

Facility: Seabrook Station, Unit No. 1

Location: Seabrook, NH

Inspection Dates: July 1, 2019 to September 30, 2019

Inspectors: P. Cataldo, Senior Resident Inspector  
T. Daun, Resident Inspector  
J. Furia, Senior Health Physicist  
S. Shaffer, Senior Health Physicist  
S. Wilson, Senior Health Physicist

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

## **SUMMARY**

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Seabrook Station, Unit No. 1 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. There were no operational power changes of regulatory significance for 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 plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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

#### External Flooding Sample (IP Section 03.04) (1 Sample)

- (1) The inspectors evaluated readiness to cope with external flooding.

### 71111.04Q - 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' residual heat removal pump return-to-service on July 17
- (2) 'A' and 'B' emergency diesel generators during fuel in transit system testing on July 22
- (3) Supplemental emergency power system following restoration from annual maintenance on August 23
- (4) 'B' residual heat removal system during 'A' residual heat removal maintenance window on September 11

### 71111.04S - Equipment Alignment

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

The inspectors evaluated system configurations during a complete walkdown of the following:

- (1) Emergency feedwater system on August 21-23

### 71111.05Q - Fire Protection

#### Quarterly Inspection (IP Section 03.01) (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Emergency feedwater pump house (EFP-F-1-A) on August 21
- (2) Main steam feedwater pipe enclosure - east (MS-F-1A-Z) on August 21
- (3) Main steam feedwater pipe enclosure - west (MS-F-1B-Z) on August 22
- (4) Primary auxiliary building - demin alley (PAB-F-1B-Z) on September 12
- (5) 'A' diesel generator (DG-F-ZA-A) on September 20

### 71111.06 - Flood Protection Measures

#### Inspection Activities - Internal Flooding (IP Section 02.02a.) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) East main steam feedwater pipe chase on August 21-22

### 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 the following performance activities in the control room:
  - Emergency diesel generator surveillance testing, technical specification entries and 3-way communication on July 16
  - Engineered safety features actuation system slave relay testing and electro-hydraulic control maintenance on July 31
  - Control rod operability checks, response to rod control urgent failure alarm and abnormal operating procedure entry on August 9

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

- (1) The inspectors observed and evaluated licensed-operator requalification training on rod control operability testing and simulator just-in-time training on August 9

### 71111.12 - Maintenance Effectiveness

#### Routine Maintenance Effectiveness Inspection (IP Section 02.01) (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) Maintenance of inverters following the failure of inverter 1D on August 2
- (2) Maintenance of fire-rated penetration seals on September 3

### 71111.13 - Maintenance Risk Assessments and Emergent Work Control

#### Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Transfer of 'B' train service water from ocean to emergency cooling tower on July 1
- (2) Emergent work control associated with loss of main generation breaker air supply pressure on July 12 and 14
- (3) Emergency diesel generator fuel oil system testing and switchyard activity on July 22
- (4) Emergent work control associated with the '1E' vital inverter on September 9

### 71111.15 - Operability Determinations and Functionality Assessments

#### Operability Determination or Functionality Assessment (IP Section 02.02) (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) 'B' emergency diesel generator fuel oil storage tank ultrasonic testing results (AR02320371 and AR2317292)
- (2) 'B' charging pump minimum flow recirculation valve diagnostic failure (AR02323032)
- (3) Containment enclosure ventilation area doors impacted by design change (AR2325142)
- (4) 'B' charging pump outboard seal leak (AR2327060)
- (5) '1E' vital inverter alternating current input source failure (AR2327079)

### 71111.18 - Plant Modifications

#### Severe Accident Management Guidelines (SAMG) Update (IP Section 03.03) (1 Sample)

The inspectors verified that Seabrook's site-specific severe accident management guidelines have been updated consistent with the pressurized water reactor owners group revised severe accident technical guidelines.

- (1) Update to severe accident management guidelines

### 71111.19 - Post-Maintenance Testing

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

The inspectors evaluated the following post maintenance tests:

- (1) 'C' atmospheric steam dump valve maintenance on July 24
- (2) 'B' charging pump testing following maintenance on July 31 and August 1
- (3) Troubleshooting and replacement of rod control relay on August 9
- (4) Supplemental emergency power system following annual maintenance inspections on August 22-23

- (5) Maintenance activities on emergency air handling filter No. 9 on September 12 and 18
- (6) 'B' control building air heaters following replacement on September 25

#### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

#### Surveillance Tests (other) (IP Section 03.01) (5 Samples)

- (1) 'A' emergency diesel generator 24-hour load testing and hot restart on July 16
- (2) Emergency diesel generator fuel oil transfer system operational test on July 22
- (3) Loop 1 delta-T/Tave protection channel operational test on August 15
- (4) Control rod operability surveillance on August 27
- (5) Reactor coolant system dose-equivalent iodine sample on July 30

#### Inservice Testing (IP Section 03.01) (1 Sample)

- (1) Turbine-driven emergency feed water pump quarterly valve alignment

### **RADIATION SAFETY**

#### 71124.01 - Radiological Hazard Assessment and Exposure Controls

#### Instructions to Workers (IP Section 02.02) (1 Sample)

The inspectors evaluated instructions to workers including radiation work permits used to access high radiation areas.

- (1) The inspectors reviewed high radiation area work permit controls and use, observed containers of radioactive materials and assessed whether the containers were labeled and controlled in accordance with requirements.

#### Contamination and Radioactive Material Control (IP Section 02.03) (1 Sample)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material.

- (1) The inspectors observed the monitoring of potentially contaminated material leaving the radiological controlled area and inspected the methods and radiation monitoring instrumentation used for control, survey, and release of that material.

#### Radiological Hazards Control and Work Coverage (IP Section 02.04) (1 Sample)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities.

- (1) The inspectors examined the physical controls for selected high radiation areas, locked high radiation areas, and very high radiation areas to verify conformance with the occupational performance indicators.



High Radiation Area and Very High Radiation Area Controls (IP Section 02.05) (1 Sample)

- (1) The inspectors reviewed the procedures and controls for high radiation areas, very high radiation areas, and radiological transient areas in the plant.

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 02.06) (1 Sample)

- (1) The inspectors evaluated radiation worker performance with respect to radiation protection work requirements. The inspectors evaluated radiation protection technicians in performance of radiation surveys and in providing radiological job coverage.

71124.05 - Radiation Monitoring Instrumentation

Walk Downs and Observations (IP Section 02.01) (1 Sample)

The inspectors evaluated radiation monitoring instrumentation during plant walkdowns.

- (1) The inspectors conducted walkdowns of plant area radiation monitors and continuous air monitors. The inspectors assessed material condition of these instruments and that the monitor configurations aligned with the Updated Final Safety Analysis Report.

Calibration and Testing Program (IP Section 02.02) (1 Sample)

The inspectors evaluated the calibration and testing program implementation.

- (1) The inspectors reviewed current detector and electronic channel calibration, functional testing results alarm set-points and the use of scaling factors. The inspectors reviewed the calibration standards used for portable instrument calibrations and response checks to verify that instruments were calibrated by a facility that used National Institute of Science and Technology traceable sources.

71124.07 - Radiological Environmental Monitoring Program

Site Inspection (IP Section 02.01) (1 Sample)

The inspectors evaluated the radiological environmental monitoring program implementation.

- (1) The inspectors reviewed the following:

Walkdowns, Calibrations, and Maintenance Record Review

- The inspectors observed environmental air sampling stations and various thermoluminescent dosimeter locations near the Georgetown Utility Building (MA), Seabrook Station's General Office Building and the site West Boundary Plate Yard.
- Monitoring stations were located in accordance with the site Offsite Dose Calculation Manual.

- Maintenance and calibration of the monitoring equipment was completed in accordance with site procedures and the equipment was in good physical condition with no sample stations out-of-service.
- The inspectors toured the primary meteorological tower (met tower) and verified the local instrumentation readings were comparable to those displayed on the plant computer system.
- Met tower calibrations were performed in accordance with site procedures.
- The met tower equipment was in good physical condition.
- The site plans to install new ultrasonic sensors for wind speed and direction. The new sensors are expected to alleviate maintenance issues with the current equipment.

#### Environmental Sample Collections and Preparation Observation

- The inspectors observed Seabrook staff demonstrate air sample collection and preparation; vegetation sample collection and preparation; well water sampling and preparation; and sample preparation of goat milk and fish.

#### Licensee Actions in Response to Missed Sample, Inoperable Sampler, Lost Thermoluminescent Dosimeter or Anomalous Measurement

- No sample was obtained for air monitoring location AP/CF-03 for the period September 11, 2018 through September 26, 2018 due to equipment being out-of-service. A condition report was generated and the equipment was successfully repaired.
- Air monitoring location AP/CF-08 had limited sample collection for the period June 6, 2018 through June 20, 2018 due to the unit being found shut off. The out-of-service time did not impact the ability to collect sufficient sample volume over the collection cycle for this analysis. A condition report was generated and the equipment was successfully repaired.
- The sites' environmental air monitoring stations were equipped with remote monitoring systems (telemetry). With the telemetry in-service, responsible persons at the site are alerted when a station loses power or air sample flow stops. Staff took appropriate corrective actions when they received air sampler failure alerts.

#### Sampling Program for the Potential of Licensed Material Entering Groundwater

- The site had identified systems, structures and components with a credible pathway to subsurface and groundwater. The inspectors observed the physical condition of the some of those systems, structures and components such as the condensate storage tank, rad water storage building, primary auxiliary building and the waste process building.

#### Groundwater Protection Initiative (GPI) Implementation (IP Section 02.02) (1 Sample)

The inspectors reviewed NextEra's implementation of the Groudwater Protection Initiative:

##### (1) Implementation:

- NextEra developed a fleet procedure for the implementation of groundwater monitoring. The fleet procedure included methods and responsibilities for groundwater monitoring and responses to be taken should plant-originated radioactivity be identified in groundwater.

- Seabrook implemented the fleet procedure and a site-specific procedure for groundwater monitoring. The procedures were comparable to the Nuclear Energy Institute's Industry Groundwater Protection Initiative - Final Guidance Document (NEI 07-07).
- The inspectors observed groundwater monitoring wells onsite.
- The inspectors observed sampling of the offsite groundwater well at Brimmer's Lane.

## **OTHER ACTIVITIES – BASELINE**

### 71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

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

- (1) For the period July 1, 2018 through June 30, 2019

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

- (1) For the period July 1, 2018 through June 30, 2019

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

- (1) For the period July 1, 2018 through June 30, 2019

#### OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

- (1) For the period July 1, 2018 through June 30, 2019

#### PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample. (IP Section 02.16) (1 Sample)

- (1) For the period July 1, 2018 through June 30, 2019

### 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) Design change implementation deficiencies
- (2) Recurrent seal table leaks

## INSPECTION RESULTS

Observation: Design Change Implementation Deficiencies	71152
<p>The inspectors performed an in-depth review of design change implementation deficiencies associated with Seabrook's evaluations and corrective actions associated with AR-2245968, AR-2289085, AR-2295134 and AR-2325142.</p> <p>The inspectors performed a review of Seabrook's evaluations related to various engineering changes performed on systems important to safety. The inspectors verified that Seabrook properly evaluated the issues and implemented appropriate corrective actions.</p> <p>Inspectors agreed with Seabrook's evaluations that in the cases reviewed, the implementation of the engineering change, and not the process itself, resulted in the deficiencies identified.</p>	

Observation: Recurrent Seal Table Leaks	71152
<p>The inspectors performed a review of recurrent seal table leaks that have been identified over the past several operating cycles. The inspectors reviewed (1) refueling outage maintenance activities associated with the in-core detector assemblies located at the seal table, (2) several action request/condition reports and associated corrective actions associated with identified fitting leaks at the seal table, leaks during post-outage reactor coolant system heatup and pressurization, (3) operational decision-making associated with leaks identified at the seal table following refueling outage No. 19, in the Fall of 2018, and (4) boric acid corrosion control program evaluations for several identified leaks.</p> <p>The inspectors determined that the NextEra's actions to address the significance of the reactor coolant system leaks located at the in-core detector fittings at the seal table, inside containment, and their subsequent evaluations and actions to address those leaks have been appropriate. The inspectors also noted the inherent corrosion-resistant nature of the materials located at the seal table, the required monitoring currently in place to track identified and unidentified reactor coolant system leakage, as well as the nature of the corrective actions currently in place to mitigate the small leaks identified at the seal table, have been appropriate for the circumstances and reasonable.</p>	

## EXIT MEETINGS AND DEBRIEFS

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

- On October 17, 2019, the inspectors presented the integrated inspection results to Mr. Eric McCartney, Site Vice President and other members of the licensee staff.
- On September 13, 2019, the inspectors presented the Radiological Environmental Monitoring Program (IP 71124.07) and HP Performance Indicator Verifications (IP 71151) inspection results to Mr. Shawn Miller, Operations Assistant Manager and Mr. David Robinson, Chemistry Manager and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.15	Drawings	1-NHY-310041	125VDC and 120VAC Instrument Buses Key One Line Diagram	Revision 21
	Miscellaneous		Technical Specifications, Seabrook Station, Unit 1	Amendment 14-05
	Procedures	DBD-ED-04	120VAC Vital & Non-Vital Instrument Power Systems	Revision 05
71124.07	Calibration Records	HD0957.01	Environmental Air Sampler Calibration Records for DGM dated October 7, 2018	Revision 9
	Corrective Action Documents		02327681, 02327872, 02327874, 02327877, 02327881	
	Miscellaneous	HPSTID 19-006	Historical Site Radiological Assessment 01/01/2018 through 12/31/2018	
		January-December 2018	Seabrook Station Annual Radiological Environmental Operating Report For The Period January-December 2018	
	Procedures	CDI-015	Sampling of Groundwater Monitoring Wells	Revision 07
		HX0956.04	Radiological Environmental Sampling of Food Crops and Vegetation	Revision 12
		IN0654.525	Met System Calibration Non Tech Req.	Revision 8
		IX0654.500	Met System Calibration	Revision 18
Self-Assessments	AR02130616	Groundwater Protection and NEI 07-07	June 15, 2016	
71152	Corrective Action Documents		2281132, 2284565, 2285809, 2288081, 2288739, 2287881	