



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

May 5, 2025

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
05000443/2025001

Dear Bob Coffey:

On March 31, 2025, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Seabrook Station. On April 8, 2025, the NRC inspectors discussed the results of this inspection with Chris Robinson, Site Operations Director, and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding did not involve a violation of NRC requirements.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; and the NRC Resident Inspector at Seabrook Station.

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,

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

Docket No. 05000443
License No. NPF-86

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV

SUBJECT: SEABROOK STATION – INTEGRATED INSPECTION REPORT
05000443/2025001 DATED MAY 5, 2025

DISTRIBUTION:

MYoung, DORS
NMentzer, DORS
AChristiano, DORS
TDaun, DORS, SRI
SFlanagan, DORS, RI
ACass, DORS, AA
TSteadham, RI OEDO
RidsNrrPMSeabrook Resource
RidsNrrDorlLpl1 Resource

DOCUMENT NAME: <https://usnrc.sharepoint.com/teams/Region-I-Branch-2/Shared Documents/Inspection Reports/Seabrook/2025/SB IR 2025-001.docx>

ADAMS ACCESSION NUMBER: ML25125A230

<input checked="" type="checkbox"/> SUNSI Review		<input checked="" type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input checked="" type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	
OFFICE	RI/DORS	RI/DORS	RI/DORS		
NAME	TDaun	NMentzer	MYoung		
DATE	5/5/2025	5/5/2025	5/5/2025		

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number: 05000443

License Number: NPF-86

Report Number: 05000443/2025001

Enterprise Identifier: I-2025-001-0055

Licensee: NextEra Energy Seabrook, LLC

Facility: Seabrook Station

Location: Seabrook, New Hampshire

Inspection Dates: January 1, 2025 to March 31, 2025

Inspectors: T. Daun, Senior Resident Inspector
S. Flanagan, Resident Inspector
N. Floyd, Senior Reactor Inspector
P. Koch, Civil Engineer
G. Thomas, Senior Civil Engineer

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

Enclosure

SUMMARY

The 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

Incorrect Work Activity Risk Management Leads to Loss of 'B' Feedwater Pump and Manual Reactor Trip			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000443/2025001-01 Open/Closed	[H.12] - Avoid Complacency	71153
A self-revealed Green Finding was identified for Seabrook's failure to adequately evaluate the impact of performing maintenance for the 'B' main feedwater pump turbine control system in accordance with WM-AA-100-1000, "Work Activity Risk Management," and MA-AA-100, "Conduct of Maintenance." During the maintenance, an incorrect setting in the turbine control system was selected resulting in the trip of the 'B' main feedwater pump resulting in partial loss of feedwater flow. Control room operators recognized that the loss would result in low steam generator water levels with the plant at full power so a manual reactor trip was inserted.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000443/2024-002-00	Licensee Event Report (LER) 2024-002-00 for Seabrook Station, Manual Reactor Trip Due to 'B' MFP Trip	71153	Closed

PLANT STATUS

Seabrook Station began the inspection period operating at or near 100 percent rated thermal power. On February 13, 2025, the plant commenced down power to 48 percent rated thermal power in preparation for replacement of a loop 4 reactor coolant system flow transmitter. Following the flow transmitter replacement on February 14, 2025, Seabrook Station returned to 100 percent rated thermal power on February 15, 2025, where it remained for the duration 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

71111.04 - 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' safety injection system during 'A' safety injection system valve maintenance and motor inspection on March 17, 2025
- (2) 'B' emergency diesel generator during 'A' emergency diesel generator maintenance on March 18, 2025

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) 'A' residual heat removal (RHR) vault (RHR-F-1B,1D,4B-Z) on February 24, 2025
- (2) 'B' RHR vault (RHR-F-1A,1C,4A-Z) on February 24, 2025
- (3) 'A' and 'B' electrical tunnels (ET-F-1A,1B,1C,1D) on March 11, 2025
- (4) Service water pump house (SW-F-1B,1C,1D,1E-Z) on March 27, 2025
- (5) Service water cooling tower (CT-F-1C,1D,2B-A) on March 27, 2025

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

- (1) The inspectors evaluated the on-site fire brigade training and performance during an unannounced fire drill on February 20, 2025.

71111.06 - Flood Protection Measures

Flooding Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated internal flooding mitigation protections in the primary auxiliary building on March 26, 2025.

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 control room during a plant power reduction to 48 percent for replacement of a loop 4 reactor coolant system flow transmitter on February 14, 2025.

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

- (1) The inspectors observed and evaluated licensed operator training conducted in the plant reference simulator on February 10, 2025.

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) Main feedwater system action plan on March 27, 2025

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (2 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 emergent work on 'B' emergency diesel generator on January 30, 2025
- (2) Risk management actions associated with emergent work on 'A' emergency diesel generator on March 20, 2025

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) Loop 4 reactor coolant system flow transmitter drift (Action Request (AR)02505963) on January 20, 2025
- (2) 'B' emergency diesel generator scavenging air header o-ring leak (AR02506824) on January 30, 2025
- (3) 'A' service water pump (AR02507884) on February 15, 2025
- (4) Containment fire detection deficiencies (AR02509821) on March 14, 2025
- (5) RHR vault building rebar strain testing results and revised operability determination limits for alkali-silica reaction (ASR) expansion monitoring on March 25, 2025

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) 'B' emergency diesel generator post-maintenance testing following air intake manifold gasket repairs on February 4, 2025
- (2) Reactor coolant flow loop 4 protection channel III post-maintenance testing following replacement on February 14, 2025
- (3) Rod control post-maintenance testing following replacement of failed power supply to rod control cabinet on February 25, 2025
- (4) 'A' atmospheric steam dump valve post-maintenance testing following solenoid valve replacement on March 10, 2025
- (5) 'A' safety injection pump post-maintenance testing following valve maintenance and motor inspection on March 18, 2025
- (6) 'A' emergency diesel generator post-maintenance testing following repairs to address engine idle speed overshoot on March 21, 2025

Surveillance Testing (IP Section 03.01) (2 Samples)

- (1) Supplemental emergency power supply system monthly surveillance testing on February 5, 2025
- (2) 'B' emergency diesel generator operability demonstration (common mode) surveillance on March 19, 2025

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) 'A' RHR quarterly inservice testing and 18-month valve position verification on January 15, 2025

Diverse and Flexible Coping Strategies (FLEX) Testing (IP Section 03.02) (1 Sample)

- (1) Periodic testing of FLEX fuel transfer pump on January 17, 2025

71114.06 - Drill Evaluation

Required Emergency Preparedness Drill (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated the conduct of a routine full participation emergency planning drill on January 22, 2025.

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) For the period January 1, 2024 through December 31, 2024

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

- (1) For the period January 1, 2024 through December 31, 2024

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

- (1) For the period January 1, 2024 through December 31, 2024

71152A - Annual Follow-up Problem Identification and Resolution

Annual Follow-up of Selected Issues (IP Section 03.03) (3 Samples)

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

- (1) Review of NextEra's evaluations and corrective actions of safety-related structures affected by ASR and activities required by license conditions
- (2) Review of 'A' emergency diesel generator oil and glycol leaks from floating tube sheet on lube oil heat exchanger
- (3) Review of fire detection deficiencies inside primary containment building

71153 – Follow-up of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following LER:

- (1) LER 05000443/2024-002-00, Manual Reactor Trip Due to 'B' MFP Trip, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML25013A036). The inspection conclusions associated with this LER are documented in this report under Inspection Results Section 71153. This LER is Closed.

INSPECTION RESULTS

Observation: Review of NextEra's Evaluations and Corrective Actions of Safety-Related Structures Affected by ASR and Activities Required by License Conditions	71152A
<p>An NRC inspector, accompanied by two civil engineers (structural) from the NRC Office of Nuclear Reactor Regulation, completed an on-site inspection at the Seabrook Station from March 24 to March 28, 2025 to review NextEra's performance to monitor reinforced concrete structures affected by ASR. Activities included addressing applicable license conditions and providing corrective actions for those structures in accordance with the structures monitoring program, NRC-approved license amendment methodology document, and corrective action program procedures. Specifically, the inspectors reviewed NextEra's evaluations and corrective actions associated with: (1) corroboration study for concrete modulus-expansion correlation to address ASR license condition, (2) results of reinforcement bar strain testing inside the RHR vaults to address ASR license condition, and (3) temperature data collected from the containment internals structure (CIS) reactor pit area during fall 2024 refueling outage to verify thermal load assumptions used in the CIS structural evaluations.</p> <p><u>Modulus-Expansion Correlation Corroboration Study</u></p> <p>NextEra completed the initial study required by ASR license condition (b) in the Seabrook Station operating license to corroborate the concrete modulus-expansion correlation used to determine pre-instrument through-thickness expansion of ASR-affected concrete. As required by the license condition, NextEra notified the NRC of completion of the study by letter dated March 14, 2025 (ML25073A082). The inspectors reviewed the corroboration study report and supporting documents, including ARs 02491393, 02510025, and 02510271, to verify the study was conducted in accordance with Appendix C of MPR-4273, Revision 1, and covered at least 20 percent of installed extensometer locations at the time frame of the study. The inspectors performed independent walkdowns of a sample of accessible portions of the 14 selected extensometer sampling locations for the study to assess consistency with the sampling plan and study results. The inspectors observed that except for one location, the normalized modulus of elasticity tested at the time of the study were within or above (i.e., conservative) the acceptance range defined using the approach in report MPR-4273. The inspectors noted that the overall scatter of the data from the corroboration study with respect to the correlation curves appeared generally consistent with the original data set from the large-scale testing program used to develop the modulus-expansion correlation. For the one location below the acceptance range (i.e., non-conservative), NextEra plans to install an additional extensometer near that location to supplement the existing through-wall expansion monitoring and to provide for trend comparison. The NRC inspectors determined that the corroboration study met ASR license condition (b) requirements for the initial study.</p> <p>In addition, to satisfy ASR license condition (f), NextEra performed petrographic examinations of cores removed from the vicinity of extensometer locations sampled in the corroboration study. NextEra performed the petrography in accordance with ASTM C856. The inspectors reviewed NextEra's report of the petrographic examination results to verify NextEra met the requirements of the license condition. The inspectors observed that the concrete specimens contained ASR and fine cracking typical of ASR-affected reinforced concrete. The inspectors also observed the petrographic examinations did not indicate formation of large mid-plane cracking or delamination resulting from ASR.</p>	

Reinforcing Bar Strain Testing in RHR Vaults

NextEra performed in-situ tests on a sample of horizontal and vertical reinforcing bars (i.e., “rebar”) inside the RHR vault concrete walls and completed an evaluation of the vertical rebar stress to increase the established operability limits in the prompt operability determination for the RHR vault structure. The inspectors reviewed NextEra’s prompt operability determination and supporting documents to verify that operability was justified and that the structure remains capable of performing its specified safety function.

The evaluation focused on the vertical reinforcing bars and concluded that these bars remain below the nominal yield stress of the material. As part of the evaluation, NextEra performed several tests on the reinforcing bars in the ‘B’ RHR vault using a hole-drilling method and a stress-relieving method to measure the strain and estimate the in-situ stress. NextEra established a new operability limit for vertical expansion based on the ASR loads estimated from the in-situ rebar stress. The inspectors noted the new operability limits for vertical expansion (as measured by the invar wires under the structures monitoring program) corresponded to the vertical reinforcement bars reaching their yield stress in the controlling load combination. NextEra did not re-evaluate the horizontal reinforcement bars since the measured expansions are lower than the established limits. The NRC inspectors determined that NextEra developed a monitoring program to detect potential rebar yield or failure due to ASR (along with other in-situ loads) as required by ASR license condition (d). The inspectors further determined the updated prompt operability determination for the RHR vault structure provided reasonable assurance that the structure remains capable of performing its intended function.

CIS Reactor Pit Temperature Data

The inspectors reviewed NextEra’s evaluation associated with the temperature data collected from the CIS reactor pit area during the fall 2024 refueling outage (actual data captured from May 2023 – October 2024 operating cycle). The inspectors also reviewed NextEra’s field walkdowns of the reactor pit area in the fall 2024 refueling outage. This data was necessary to verify the thermal load assumptions used in the revised CIS structural evaluations. The inspectors noted that there were no significant changes observed in the recent fall 2024 refueling outage walkdowns compared to the previously documented distressed conditions from prior refueling outages. The recorded data for the measured ambient temperature in the reactor pit area was slightly lower than the temperature used in the structural evaluation. The inspectors observed that NextEra evaluated the lower recorded temperature using a higher and more realistic temperature boundary condition at the bedrock than was previously used, which indicated the overall thermal load is likely not reduced and the previous evaluation remains valid. The inspectors also observed that NextEra planned to monitor temperatures for an additional cycle and continue field walkdowns of the reactor pit area for the next two refueling outages to obtain additional trending data to confirm the causes of the observed distress and to confirm no additional ASR expansion needs to be evaluated. The NRC inspectors determined NextEra appropriately evaluated the recorded temperature data and planned further confirmatory actions to determine whether the revised CIS structural evaluations need to be updated.

Observation: Review of 'A' Emergency Diesel Generator Oil and Glycol Leaks from Floating Tube Sheet on Lube Oil Heat Exchanger	71152A
--------------------------------------------------------------------------------------------------------------------------------	--------

Inspectors completed a review of the licensee’s corrective actions associated with lube oil and glycol leaks from the floating tube sheet area of the lube oil heat exchanger on the 'A' emergency diesel generator. Recent industry operating experience was used to determine if Seabrook was susceptible to similar failure mechanisms. While Seabrook has the same

engines with essentially the same heat exchangers, inspectors reviewed packing ring replacement strategies, lube oil sampling methods, and vendor recommendations.

Inspectors reviewed the diesel engine crankcase and supply header oil sampling procedures (preventive maintenance work activity DG-SKD-A-L4) and noted appropriate sample locations and prerequisites to ensure representative samples as recommended by the vendor.

Inspectors reviewed the most recent 'A' emergency diesel generator lube oil sampling and noted normal parameters and no adverse trends (Work Order (WO)40988387-01).

Inspectors noted Seabrook engineering initiated corrective action program actions based on a recent industry operating experience failure (AR2508957-2) with a recommendation to proactively replace the packing rings and initiated actions to evaluate the preventive maintenance strategy for the packing rings (AR02509678-3).

Observation: Review of Fire Detection Deficiencies Inside Primary Containment Building	71152A
----------------------------------------------------------------------------------------	--------

Inspectors completed a review of the licensee's corrective actions associated with multiple zones of containment fire detection being disabled due to material issues with containment building ionization detectors.

Inspectors noted an increasing number of fire detection zone deficiencies following the fall 2024 refueling outage. All five zones on the lower level of containment building were out of service for a period of time and required extensive maintenance efforts to restore a single zone to service. The detection system replacement was scheduled for the fall 2021 refueling outage and has been deferred until the spring 2026 refueling outage.

Inspectors noted that while the station has maintained the requirements of their fire protection program by monitoring bulk average containment temperature as required by the technical requirements manual, this has placed a burdened on the control room operators with the large number of spurious alarms that have occurred on the containment building fire detection system.

Incorrect Work Activity Risk Management Leads to Loss of 'B' Feedwater Pump and Manual Reactor Trip			
-----------------------------------------------------------------------------------------------------	--	--	--

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000443/2025001-01 Open/Closed	[H.12] - Avoid Complacency	71153

A self-revealed Green Finding was identified for Seabrook's failure to adequately evaluate the impact of performing maintenance for the 'B' main feedwater pump turbine control system in accordance with WM-AA-100-1000, "Work Activity Risk Management," and MA-AA-100, "Conduct of Maintenance." During the maintenance, an incorrect setting in the turbine control system was selected resulting in the trip of the 'B' main feedwater pump resulting in partial loss of feedwater flow. Control room operators recognized that the loss would result in low steam generator water levels with the plant at full power so a manual reactor trip was inserted.

Description: On November 19, 2024, at approximately 1:50 p.m., Seabrook operators inserted a manual reactor trip from 100 percent rated thermal power in response to a loss of

the 'B' main feedwater pump turbine. Prior to the trip of the 'B' main feedwater pump, maintenance technicians were performing a replacement of one of the turbine specific primary trip packs associated with the 'B' main feedwater pump to address alarms that had occurred on the turbine control system the previous shift. There are three turbine specific primary trip packs with a trip logic of two out of three required for a turbine trip. Above 45 percent rated thermal power, typically two main feedwater pumps are in operation to maintain steam generator water level. On a low steam generator water level in any steam generator an automatic reactor trip will occur.

On the morning of November 19, 2024, the control room received main feedwater pump 'B' major alarms from the turbine control system multiple times. After initial troubleshooting by maintenance and engineering personnel, a failed turbine specific primary pack and emergency turbine protection pack was suspected. WO41000171 was generated for maintenance technicians to replace the failed packs for the 'B' main feedwater pump. WM-AA-100-1000, "Work Activity Risk Management," Section 3.8 requires the work activity owner, who is generally a department first line supervisor, to complete the risk classification and complete the mandatory actions to manage the risk associated with the work activity. Section 4.0 provides the instructions for the risk classification and specifies all aspects of the work activities shall be evaluated for risk. Attachment 1, Work Activity Risk Classification, provides a list of activities that shall be high risk which includes: 1) single point vulnerability that can cause a trip or plant transient; and 2) online work resulting in loss of component redundancy such that failure of an additional component would result in a unit trip. For each adverse consequence, Attachment 2, Risk Severity, Attachment 3, Probability of Occurrence, and Attachment 4, Risk Level Determination, are used to classify the activity risk. Based on the activity risk classification, WM-AA-100-1000 then directs actions to manage work activity risk.

MA-AA-100, "Conduct of Maintenance," provides consistent standards and expectations on the conduct of maintenance across the NextEra nuclear fleet and applies to all maintenance at all NextEra nuclear fleet sites. Section 5.5, "Field Work Preparation," states planners and/or supervisors shall determine whether an activity is a single-person task in accordance with Attachment 1. Attachment 1 states "Examples of Task that MAY NOT qualify as Single-Person-Tasks: Procedure steps that have the potential to impact plant reliability."

WO41000171 was classified as low risk because it was not recognized by Seabrook that a technician would have the capability to select the active modules in the turbine control system. It was assumed by the organization that only the replaced pack module would be able to be selected and the two inservice redundant modules would be unaffected. The first precaution in Section 3 of WO41000171 states "TRIP AVOIDANCE."

Maintenance technicians replaced the turbine specific primary trip pack using performer-verifier practices as directed by WO section 4.15. Following replacement of the turbine specific primary trip pack, a single maintenance technician continued performing the software download to the replaced pack from the turbine control system, as directed by the WO. This maintenance technician was the only technician involved with the WO that was qualified to perform actions on the turbine control system. When the maintenance technician went to download the backup file, an error message was received stating the pack required rebooting. The technician then selected the options to reboot the pack believing that only the replaced pack was selected. When the technician executed the reboot, a status window appeared showing that all three packs were being rebooted. When the three packs rebooted, a trip of the 'B' main feedwater pump turbine occurred. The control room received multiple alarms indicating the trip of the 'B' main feedwater pump and an automatic main turbine

runback to 55 percent. With the unit at 100 percent power, the unit supervisor directed the reactor operator to manually trip the reactor.

Corrective Actions: With the plant shutdown, all three turbine specific primary packs and all three emergency turbine protection packs were replaced. An issue investigation was performed in accordance with Seabrook's corrective action program which resulted in modifications to the maintenance simulator to allow for technicians to gain proficiency with the turbine control system with the plant in an online status.

Corrective Action References: 2502022, 2501328, 2501443, 2501968, 2502587, 2502944

Performance Assessment:

Performance Deficiency: Inspectors determined that not performing an adequate work activity risk classification for replacement of the 'B' main feedwater pump turbine control system components was a performance deficiency. Specifically, Seabrook screened the work activity as low risk and allowed for a single-person task to perform the software download, which did not follow the requirements outlined in WM-AA-100-1000 or MA-AA-100.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, by not implementing appropriate risk reviews for the work, a single technician made a critical error that caused the trip of the 'B' main feedwater pump resulting in an unplanned manual reactor trip.

Significance: The inspectors assessed the significance of the finding using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors assessed significance using Question B, "Transient Initiators," of Exhibit 1, "Initiating Events Screening Questions," and determined that while the finding did contribute to a reactor trip, there was not a loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. Therefore, the inspectors determined the finding to be of very low safety significance (Green).

Cross-Cutting Aspect: H.12 - Avoid Complacency: Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Individuals implement appropriate error reduction tools. Specifically, based on the recent successful performance of similar tasks on the feedwater pump turbine control system, a risk assessment was not fully vetted through the organization to understand the potential consequences or inherent risk of performing this work as would be expected for emergent maintenance that can cause a trip or plant transient.

Enforcement: Inspectors did not identify a violation of regulatory requirements associated with this finding.

EXIT MEETINGS AND DEBRIEFS

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

- On March 28, 2025, the inspectors presented the ASR inspection results to David Sluszk, Site Vice President, and other members of the licensee staff.

- On April 8, 2025, the inspectors presented the integrated inspection results to Chris Robinson, Site Operations Director, and other members of the licensee staff.

THIRD PARTY REVIEWS

Inspectors reviewed the June 2024 Institute of Nuclear Power Operations evaluation report that that was issued during the inspection period.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Drawings	1-SI-B20446	Safety Injection System Intermediate Head Injection System Detail	Revision 18
	Procedures	ON1090.12	Equipment Long Term Layup	Revision 5
	Work Orders	40894278		
71111.05	Miscellaneous		Fire Protection Pre-Fire Strategies	Revision 21
		CMP-25-5051	Transient Combustible Permit	
			Fire Protection Pre-Fire Strategies	Revision 31
	Procedures	FP 2.2	Control of Combustible Materials	Revision 24
		FP 6.1	Fire Protection Inspections and Logs	Revision 4
		FP-AA-104-1003	Fire Response	Revision 3
		MX0599.06	6-month Surveillance and Post-Maintenance Inspection of Technical Requirements Fire-Rated Doors	Revision 13
		OA1200.00	Response to Fire or Fire Alarm Actuation	Revision 28
		OS0443.61	Fire Prevention Weekly Inspection Safety-Related Areas	Revision 10
	Work Orders	40975472		
		40976282		
		40996812		
		40996968		
71111.06	Miscellaneous	Report TP-7	Moderate Energy Line Break Study	Revision 5
	Procedures	MA5.7	Station Barriers, Penetration Seals, and Fire Barrier Wrap	Revision 20
71111.11Q	Procedures	OP-AA-100-1000	Conduct of Operations	Revision 42
		OS1000.05	Power Increase	Revision 44
		OS1000.06	Power Decrease	Revision 30
		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
		TR-AA-230-1007	Conduct of Simulator Training and Evaluation	Revision 19
71111.12	Corrective Action Documents	02502022		
	Procedures	ER-AA-100-2002	Maintenance Rule Program Administration	Revision 16
71111.13	Corrective Action	02506824		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents	02507195		
		02508215		
	Work Orders	41002958		
71111.15	Corrective Action Documents	02497807		
		02498041		
		02499803		
		02500387		
		02500543		
		02505963		
		02506060		
		02507056		
		02507178		
		02507195		
		02507884		
		02508215		
		02508473		
		02508930		
		02508933		
		02509051		
		02509324		
		02509525		
		02509592		
		02510256		
	Work Orders	40081732		
		40997106		
		41002958		
		94270257		
71111.24	Corrective Action Documents	02506824		
		02506934		
		02507178		
		02507195		
		02507404		
		02507432		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		02508100		
		02508750		
	Drawings	1-NHY-310944	Rod Control System Schematic Diagram	
		1-NHY-505231	Flow Instrument with Test Tee	Revision 3
		1-NHY-509004	Reactor Coolant Flow Protection Set III Process Control Block Diagram	Revision 2
		9763-F-500163	Instrument Piping Containment Loop 4	Revision 13
		FP58440	Rod Control System Corrective Maintenance Guide	
	Procedures	IS0603.005	Equipment Qualification For ASCO Solenoid Valves	Revision 15
		IS0603.902	Installation/Repair of Instrument Tubing/Fittings/Clamps	Revision 8
		IX1605.073	RC-F-446 Reactor Coolant Flow Loop 4 Protection Channel III Time Response Test	Revision 6
		IX1662.143	RC-F-446 Reactor Coolant Flow Loop 4 Protection Channel III Calibration	Revision 11
		LS0565.01	Fuse Control	Revision 5
		OX1405.07	Safety Injection Quarterly and 18 Month Pump Flow and Valve Test	Revision 15
		OX1413.01	'A' RHR quarterly flow and 18 month valve test	Revision 33
		OX1426.17	DG 1B Tech Spec Action Statement Surveillance	Revision 19
		OX1461.04	SEPS Monthly availability surveillance	Revision 17
		OX1462.05	FLEX Fuel Transfer Pump Periodic Testing	Revision 6
	Work Orders	40081732		
		40756050		
		40812230		
		40858172		
		40881765		
		40889707		
		40894027		
		40894278		
		40894333		
		40971735		
		41002591		
		41002958		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		41003681		
		41003966		
		41003997		
		41012159		
		94271078		
71114.06	Miscellaneous	CFD 24-01	Seabrook Emergency Preparedness	01/31/2024
	Procedures	EPDP-03	Emergency Preparedness Performance Indicators	Revision 27
71152A	Corrective Action Documents	02497807		
		02498041		
		02499803		
		02500387		
		02500543		
		02508930		
		02508933		
		02508957		
		02509051		
		02509324		
		02509525		
		02509592		
		02509678		
		02276197		
	Corrective Action Documents Resulting from Inspection	02511473		
	Miscellaneous	0326-0120-RPT-001	ASR Corroboration Study Plan at Seabrook Station	03/19/2024
		FP101510	Re-evaluation of Residual Heat Removal Equipment Vault (RHR) Vertical Rebar Stress at East Interior Wall at EL (-) 45 ft	12/04/2024
		FP101568	Summary and Interpretations of CIS Reactor Pit Temperature and Field Inspection Findings	01/31/2025
		FP101569	Corroboration Study for Correlation of Concrete Elastic	02/04/2025

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Modulus to ASR Expansion	
		FP101570	Transmittal of Petrography Examination Reports for Cores from Seabrook Station	02/04/2025
		SMPM	Seabrook Station Structures Monitoring Program Manual	Revision 18
	Work Orders	00W002423		
		40962014		
		40988387		
		94271162		