



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

May 15, 2017

EA 2016-238

Mr. Mano Nazar
President and Chief Nuclear Officer
Nuclear Division
NextEra Energy Seabrook, LLC
Mail Stop: EX/JB
700 Universe Blvd.
Juno Beach, FL 33408

SUBJECT: SEABROOK STATION, UNIT NO. 1 – INTEGRATED INSPECTION REPORT
05000443/2017001

Dear Mr. Nazar:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Seabrook Station, Unit No. 1 (Seabrook). On May 5, 2017, the NRC inspectors discussed the results of this inspection with Mr. Eric McCartney and members of his 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 the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Fred L. Bower III, Chief
Reactor Projects Branch 3
Division of Reactor Projects

Docket No. 50-443
License No. NPF-86

Enclosure:
Inspection Report 05000443/2017001
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

SUBJECT: SEABROOK STATION, UNIT NO. 1 – INTEGRATED INSPECTION REPORT
05000443/2017001 DATED MAY 15, 2017

DISTRIBUTION:

- DDorman, RA
- DLew, DRA
- MScott, DRP
- DPelton, DRP
- RLorson, DRS
- JYerokun, DRS
- FBower, DRP
- RBarkley, DRP
- MGray, DRS
- PCataldo, DRP, SRI
- LJames, NRR DLR
- SPindale, DRS
- PMeier, DRP, RI
- ACass, DRP, Resident AA
- JBowen, RI, OEDO
- RidsNrrPMSeabrook Resource
- RIDSNrrDRL Resource
- RidsNrrDorlLp1 Resource
- ROPreports Resource

DOCUMENT NAME: G:\DRP\BRANCH3\Inspection Reports\Seabrook\2017\17Q1\SB IR2017001_Final.docx
ADAMS ACCESSION NUMBER: ML17136A074

<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/DRP	RI/DRP	RI/ORA	RI/DRP	
NAME	PCataldo/RB	RBarkley	BBickett (Sect 4OA5)	FBower	
DATE	5/12/17	5/12/17	5/15/17	5/15/17	

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-443

License No: NPF-86

Report No: 05000443/2017001

Licensee: NextEra Energy Seabrook, LLC (NextEra)

Facility: Seabrook Station, Unit No. 1 (Seabrook)

Location: Seabrook, NH 03874

Dates: January 1, 2017 through March 31, 2017

Inspectors: P. Cataldo, Senior Resident Inspector
P. Meier, Resident Inspector
M. Modes, Senior Reactor Inspector

Approved By: Fred L. Bower III, Chief
Reactor Projects Branch 3
Division of Reactor Projects

TABLE OF CONTENTS

SUMMARY	3
1. REACTOR SAFETY	4
1R01 Adverse Weather Protection.....	4
1R04 Equipment Alignment	4
1R05 Fire Protection	5
1R06 Flood Protection Measures.....	6
1R11 Licensed Operator Requalification Program and Licensed Operator Performance ...	6
1R12 Maintenance Effectiveness.....	7
1R13 Maintenance Risk Assessments and Emergent Work Control	7
1R15 Operability Determinations and Functionality Assessments.....	8
1R18 Plant Modifications	9
1R19 Post-Maintenance Testing.....	9
1R22 Surveillance Testing	10
4. OTHER ACTIVITIES	11
4OA1 Performance Indicator Verification.....	11
4OA2 Problem Identification and Resolution	11
4OA5 Other Activities	13
4OA6 Meetings, Including Exit.....	16
SUPPLEMENTARY INFORMATION.....	A-1
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED	A-1
LIST OF DOCUMENTS REVIEWED.....	A-1
LIST OF ACRONYMS.....	A-7

SUMMARY

IR 05000443/2017001; 01/01/2017 – 03/31/2017; Seabrook; Routine Integrated Inspection Report.

This report covered a three-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

REPORT DETAILS

Summary of Plant Status

Seabrook operated at 100 percent rated thermal power (RTP) for the majority of the period. On March 31, 2017, Seabrook commenced a gradual reduction from 100% RTP for the upcoming refueling outage 18 (OR18). At midnight of March 31, Seabrook ended the inspection period at 8% RTP for subsequent shutdown and entry into OR18 on April 1. Documents reviewed for each section of this inspection report are listed in the Attachment.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed NextEra's preparations and response to a winter storm on February 8-9, 2017, and a second winter storm on March 14, 2017. The inspectors reviewed the implementation of adverse weather preparation procedures before the onset of, and during these adverse weather conditions. The inspectors walked down the essential switch gear and non-essential switch gear rooms, switch yard, cooling tower (CT) general area, supplemental emergency power system, demineralized water tank, service water (SW) pump house, primary auxiliary building (PAB), emergency diesel generators (EDGs), and FLEX equipment to ensure system availability. The inspectors verified that operator actions defined in NextEra's adverse weather procedure maintained the readiness of essential systems. The inspectors discussed readiness and staff availability for adverse weather response with operations and work control personnel.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- 'A' charging pump on January 4
- 'B' containment building spray pump on January 20
- 'A' and 'B' control building air ventilation (essential switch gear) during fire damper inspections on March 16
- 'B' emergency feedwater (EFW) during 'A' EFW pump surveillance on March 21

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the updated final safety analysis report (UFSAR), technical specifications (TSs), work orders, condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of its intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether NextEra staff had properly identified equipment issues and entered them into the corrective action program (CAP) for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 5 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that NextEra controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Fuel storage building on January 24
- Control building 50' on March 23
- Control building 75' on March 23
- Cable spreading room on March 23
- Control building – vital DC battery rooms on March 23

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to identify internal flooding susceptibilities for the site. The inspectors' review focused on the PAB 26' level to verify the adequacy of equipment seals located below the flood line, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers. The inspectors assessed the adequacy of operator actions that NextEra had identified as necessary to cope with flooding in this area and also reviewed the CAP to determine if NextEra was identifying and correcting problems associated with both flood mitigation features and site procedures for responding to flooding.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program and Licensed Operator Performance (71111.11Q – 2 samples)

.1 Quarterly Review of Licensed Operator Regualification Testing and Training

a. Inspection Scope

The inspectors observed licensed operator simulator training on January 27, 2017, which included a fast load reduction and a steam generator tube rupture. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

The inspectors observed infrequently performed test or evolution briefings, pre-shift briefings, and reactivity control briefings to verify that the briefings met the criteria specified in NextEra's Administrative Procedure OP-AA-100-1000, "Conduct of Operations," Revisions 19 and 20. In addition, the inspectors observed the transition from CT SW to ocean SW on January 6, 2017, main steam isolation valve testing on January 26, 2017, and 'B' EDG surveillance run on February 7, 2017. The inspectors

also observed alarm response to 'C' reactor coolant pump low level and subsequent standpipe refill, and 'A' CT SW pump pre-start checks on February 2, 2017. Additionally, on March 3, 2017, the inspectors observed a control rod surveillance, and on March 8, 2017, observed 'B' main feedwater pump vibration adjustments. The inspectors, as applicable, observed operator performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component (SSC) performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance work orders, and maintenance rule (MR) basis documents to ensure that NextEra was identifying and properly evaluating performance problems within the scope of the MR. For each sample selected, the inspectors verified that the SSC was properly scoped into the MR in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.65 and verified that the (a)(2) performance criteria established by NextEra staff was reasonable. As applicable, for SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs to (a)(2). Additionally, the inspectors ensured that NextEra staff was identifying and addressing common cause failures that occurred within and across MR system boundaries.

- SW/ultimate heat sink system health and maintenance effectiveness
- EDG system health and maintenance effectiveness

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that NextEra performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that NextEra personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When NextEra performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS

requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- 'B' EDG heat exchanger repair in January
- Swap from 'B' CT to 'B' ocean SW with increased fouling at the intake on January 6
- 'D' primary component cooling water (PCCW) pump motor replacement from January 30 through February 1
- 'D' PCCW pump motor bearing inspection concurrent with Distributed Control System (DCS) work on the feedwater pumps on February 9
- Spent fuel cooling valve (SF-V-11) replacement on February 23

b. Findings]

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions based on the risk significance of the associated components and systems:

- 'A' SW strainer high dP on January 1
- 'B' EDG heat exchanger leak on January 8
- 'A' SW CT piping leak on January 10
- Corrosion of EDG fuel oil storage tank drain line on January 25
- Through-wall leak on 'A' PCCW heat exchanger SW piping, identified on January 31
- Containment gaseous and particulate radiation monitor sample line containment isolation valve, CAH-FV-6572, on March 3

The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to NextEra's evaluations to determine whether the components or systems were operable. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by NextEra.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 3 samples).1 Temporary Modificationsa. Inspection Scope

The inspectors reviewed the temporary modifications listed below to determine whether the modifications affected the safety functions of systems that are important to safety. The inspectors reviewed 10 CFR 50.59 documentation and post-modification testing results, and conducted field walkdowns of the modifications to verify that the temporary modifications did not degrade the design bases, licensing bases, and performance capability of the affected systems.

- 'B' EDG coolant system cleanup (chloride reduction) demineralizer skid during January/February 2017
- Temporary non-code repair to 'A' train CT SW piping on February 1

b. Findings

No findings were identified.

.2 Permanent Modificationsa. Inspection Scope

The inspectors evaluated the containment enclosure building shield block design configuration restoration implemented by engineering change (EC) 287308, "CEB Missile Shield Block Cutting to Restore Design Gap, Revision 0." The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the design change, including the in-process stress readings associated with the temporary struts, and impact on the containment enclosure building/containment enclosure ventilation area seal.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 samples)a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with the information in the applicable licensing basis and/or design basis documents, and that the test results were properly reviewed and accepted and problems were appropriately documented. The inspectors also walked down the affected job site, observed the pre-job brief and post-job critique where possible, confirmed work site cleanliness was maintained, and witnessed the test or

reviewed test data to verify quality control hold point were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

- 'B' EDG heat exchanger repair in January
- 'B' charging pump speed increaser inspection on January 4
- 'D' PCCW pump motor replacement on January 31
- Spent fuel cooling valve (SF-V-11) replacement on February 23
- Power operated relief valve setpoint change on February 27
- Vital Bus 6 Agastat relay inspection on March 7

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs to assess whether test results satisfied TSs, the UFSAR, and NextEra procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied.

Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- Startup feed pump quarterly surveillance on January 19
- 'A' containment spray pump comprehensive test on January 20 (IST)
- 'A' SW CT pump comprehensive test on January 23
- 'B' EDG operability surveillance on February 8
- 'A' EFW pump surveillance on March 21

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Unplanned Scrams, Unplanned Power Changes, and Unplanned Scrams with Complications (3 samples)

a. Inspection Scope

The inspectors reviewed NextEra's submittals for the following Initiating Events Cornerstone performance indicators for the period of January 1, 2016 through December 31, 2016.

- Unplanned scrams per 7000 critical hours (IE01)
- Unplanned power changes per 7000 critical hours (IE03)
- Unplanned scrams with complications (IE04)

To determine the accuracy of the performance indicator data reported during those periods, inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors reviewed NextEra's operator narrative logs, event reports, performance indicator submittals, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 1 sample)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify NextEra entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended CR screening meetings. The inspectors also confirmed, on a sampling basis, that, as applicable, for identified defects and non-conformances, NextEra performed an evaluation in accordance with 10 CFR Part 21.

b. Findings

No findings were identified.

.2 Annual Sample: Flow Accelerated Corrosion Program

a. Inspection Scope

The inspectors performed an in-depth review of the implementation and corrective actions associated with the Flow Accelerated Corrosion Program. The inspectors assessed the implementation of the program using the inspection guidance contained in NRC Inspection Procedure 49001, "Inspection of Erosion-Corrosion/ Flow-Accelerated-Corrosion Monitoring Programs," issued December 11, 1998. The inspectors assessed NextEra's problem identification threshold, problem analysis, extent of condition reviews, compensatory actions, and the prioritization and timeliness of corrective actions to determine whether NextEra was appropriately identifying, characterizing, and correcting problems associated with flow accelerated corrosion. The inspectors reviewed planned or completed corrective actions to determine if they were appropriate.

The inspectors compared the actions taken to the requirements of NextEra Energy Nuclear Fleet Program Description ER-AA-111, "Flow-Accelerated Corrosion (FAC) Program," Revision 0, October 21, 2013, and NextEra Energy Nuclear Fleet Administrative Procedure, "Flow-Accelerated Corrosion Activities," ER-AA-111-1000, November 14, 2013. The inspectors, in-turn, compared the NextEra Energy Nuclear Fleet Program Description and Administrative Procedure to the guidance contained in the Electric Power Institute report "Recommendations for an Effective Flow-Accelerated Corrosion Program (Nuclear Safety Analysis Center 202L-R4)," Technical Report 3002000563, November 2013. The inspectors noted that NRC NUREG-1801, "Generic Aging Lessons Learned," section XI.M17, documents the Nuclear Safety Analysis Center program as an acceptable basis for an aging management program. The inspectors interviewed the program owner, reviewed associated corrective actions, program documents, and a self-assessment of the fleet program as implemented at the Duane Arnold Energy Center, Report PDA 15-001, April 17, 2015.

b. Findings and Observations

No findings were identified.

The Flow Accelerated Corrosion Program at Seabrook manages the effects of loss of material due to wall thinning on the internal surfaces of carbon or low alloy steel piping, elbows, reducer, tees, expanders, and valve bodies containing high energy fluid in both single phase and two phase flow. As a result of the license renewal application, the effects of erosion has been added to the scope of the flow accelerated corrosion program as described in Seabrook's license renewal document LR-ISG-2012-01, "Wall Thinning Due to Erosion Mechanisms." A license renewal commitment also requires the inspection of valve internal surfaces for flow accelerated corrosion or erosion when those valves are in-line with piping replaced as a consequence of wall thinning due to flow accelerated corrosion or erosion. In addition, the license renewal requirement to radiographically examine a sample of small-bore piping for flow accelerated corrosion was added to the flow accelerated corrosion program.

The inspectors reviewed a number of corrective actions that were implemented as a consequence of these new requirements. The inspectors reviewed the corrective actions taken when the ablation of magnetite and possible pitting was noted on the internal surfaces of feedwater regulator valves 'B' and 'D'. The utility examined the

valves because the valves were in line with a section of piping that was repaired due to flow accelerated wall thinning. Although the valves are categorized as non-safety, they are included within the scope of license renewal due to 10 CFR 54.4(a)(1) and subject to an aging management review. The inspectors also reviewed a number of corrective actions taken to implement the radiography of small bore piping. The inspectors noted the actions listed in Table 1, in NRC Inspection Procedure 71152, "Problem Identification and Resolution," Effective Date: January 01, 2015, for an annual sample, were satisfactory for the corrective action the inspectors reviewed.

4OA5 Other Activities

(Closed) Unresolved Item (URI) 05000443/2016007-02: Potential Missed Evaluation and Reporting of an Adverse Condition to the NRC

a. Inspection Scope

During a component design basis inspection (CDBI) documented in NRC Inspection Report (IR) 050000443/2016-007, the team identified an unresolved item (URI) which required further NRC evaluation regarding whether NextEra had complied with NRC reporting requirements, following the failure of several motors associated with the PCCW system between 2008 and 2015. In particular, the inspectors evaluated Seabrook's actions following four discreet events: (1) the failure of two different PCCW pump motors in July and November of 2008, (2) receipt of a third-party failure analysis report in 2009, which concluded the two failures were the result of a manufacturing defect, (3) the failure of a third PCCW motor in June 2015, and (4) a 2016 evaluation by the original equipment manufacturer (OEM) vendor of this third motor that identified a manufacturing defect similar to the two motors from 2008.

The CDBI team identified a potential issue of concern regarding compliance with 10 CFR 21.21(a)(2), 'Reporting of Defects and Noncompliance,' for failure to submit a report to the Commission of an identified deviation potentially associated with a substantial safety hazard. Specifically, the 'D' and 'C' PCCW pump motors experienced electrical faults in July and November 2008, respectively, and a resultant January 2009 third-party vendor failure analysis documented the cause of the failures as a manufacturing defect. In June 2015, the 'B' PCCW pump motor experienced a similar electrical fault, and an OEM failure analysis from September 2016, identified a defect similar to the motor fault from 2008.

During this inspection, the inspectors evaluated Seabrook's response to these four discreet events, as previously discussed, as well as any applicable reportability requirements. While it was identified by the CDBI team that Seabrook may not have assessed or reported any of these discreet events under Part 21, the inspectors evaluated if other regulatory reportability requirements were assessed and utilized by Seabrook to fulfill their obligations under all regulatory scenarios.

Regulatory History

On June 6, 1977, the NRC published the final rule concerning the establishment of 10 CFR Part 21, 'Reporting Defects and Non-compliance,' consistent with Section 206 of the Energy Reorganization Act of 1974, as amended. The preamble of this final rule stated in part, that if a basic component that contains a defect, which could create a

substantial safety hazard, as defined by the regulation (emphasis added), licensee's shall immediately notify the Commission, unless it has been adequately informed. Additionally, the Part 21 language specifically required licensee's to inform the Commission if they obtain information reasonably indicating that the facility or a basic component did not comply with the regulatory requirements relating to substantial safety hazards (SSH). Equally important to the new regulation was the establishment of the threshold for reportability tied to the existence of this SSH. The relevant criteria of note, involves the existence of a major degradation of essential safety-related equipment that would represent a loss of safety function.

On July 31, 1991, the NRC updated regulations associated with 10 CFR Parts 21 and 50, and clarified existing regulations, primarily due to the existence of multiple safety deficiency reporting requirements. The information intended to address the inefficiencies in duplicate reporting requirements affecting operating nuclear power plants, and provided other improvements across these parallel reportability requirements.

In this 1991 update, Section 1B contained information to eliminate parallel reporting under Parts 21 and 50.72/73. This information also clarified the criteria for determining the existence of an SSH due to a defect in a basic component. Moreover, the existence of an SSH is one of the primary attributes of reportability under Part 21, and was referred to extensively in NUREG 0302, Revision 1, 'Remarks Presented (Questions/Answers Discussed) at Public Regional Meetings to Discuss Regulations (10 CFR Part 21) for Reporting of Defects and Non-conformances, July 12 – 26, 1977.' The first relevant criterion for an SSH, "a major degradation of essential safety-related equipment," was further defined to represent a loss of redundancy if a required safety function could not be performed in conjunction with a single failure. The second relevant criterion for an SSH is "major deficiencies," which involves design or construction issues that would cause an exceedance of a safety limit, or cause a loss of safety function for components or equipment used to mitigate the consequence of an accident under all conditions.

Reportability Guidance

For Part 21, discreet regulatory guidance to assist in determining reportability was contained in the final rule and subsequent amendments, as well as non-regulatory (non-binding) guidance in NUREG-0302. For Parts 50.72/73, non-regulatory (non-binding) guidance regarding these regulations are contained in NUREG-1022, 'Event Reporting Guidelines 10 CFR 50.72 and 50.73.' This NUREG presented scenarios and regulation-specific guidance for issues to be considered reportable. In all three cases, evaluations associated with SSH shared similar requirements for determination of reportability, as detailed in 10 CFR 21.21(c), and 10 CFR 50.72 (b)(2)(iii) and 50.73(a)(2)(v), (vi) and (vii).

The inspectors determined that relevant guidance in the available body of non-regulatory (non-binding) sources (i.e., NUREG-0302 and NUREG-1022), regarding the presence of SSH and subsequent reportability, conflict with the existing text of the actual reportability regulations in the CFR. Specifically, the parallel 50.72/73 regulatory language states that individual component failures "...need not be reported...if redundant equipment in the same system was operable and available to perform the required safety function." Additionally, the particular regulatory text cited above regarding individual component failures from 50.72/73, also conflicts with Part 21 regulatory text in that it required

licensee's to consider "potential failures in functionally redundant components," not actual failures.

NextEra Actions Taken

The inspectors determined that following the second of two electrical faults that occurred in the PCCW pump motors in 2008, Seabrook entered the events into the CAP, and performed a 50.73 reportability evaluation that complied with these regulatory requirements and was determined to be not reportable. However, the inspectors determined that this conclusion conflicted with the guidance contained in NUREG-1022, Revision 2. Specifically, Seabrook's evaluation cited the relevant regulatory language (50.73(a)(2)(vii)) regarding "...individual component failures need not be reported...if redundant equipment in the same system was operable and available to perform the required safety function." However, this evaluation did not fully consider the intent of reporting defects as described in NUREG-1022, Revisions 2 and 3, Section 3.2.7, example 11, which further stated that when defects had generic implications, then "an LER [licensee event report] is to be submitted."

Following the receipt in 2009 of an third-party vendor failure analysis for the two motor faults from 2008, Seabrook recognized the existence of a common manufacturing defect and entered the issue into the CAP. The inspectors determined that reasonable corrective actions were identified to address the existing commonalities for remaining in-service motors, and similar vintage spare motors that were being utilized from the abandoned Unit 2 plant. However, similar to the two failures in 2008, Seabrook did not adequately address reportability requirements when in receipt of information that specifically identified the existence of a common manufacturing defect (i.e., an issue with generic implications that should have resulted in an LER), based on the guidance contained in NUREG-1022, Revision 2 that was applicable at the time.

In June 2015, an additional electrical fault occurred in a similar vintage motor as the motors from 2008, which was recognized to be a repeat event by Seabrook. Subsequently, a reportability evaluation was performed under 50.72 that complied with these regulatory requirements and was determined to be not reportable. The inspectors determined that in general, reasonable corrective actions were identified following performance of an apparent cause evaluation, but the evaluation concluded that reportability was not required. As in the previous occurrences, the inspectors determined that while the applicable 50.72 language was followed, the current NUREG-1022, Revision 3, guidance regarding generic implications and the need to report via an LER was not followed.

Finally, following the 2016 CDBI and observations from that inspection, Seabrook performed an evaluation of reportability after entry of the issue into the CAP that coincided with the performance of an OEM vendor failure analysis for the 2015 faulted motor. The results of this evaluation resulted in a determination of the existence of an SSH, and submittal of a Part 21 report cited against 21.21(d)(3)(i), for a deviation in the expected quality of construction and the potential impact to the performance of an important safety function.

b. Findings

As stated in the Introduction above, the inspectors evaluated four discreet events. The inspectors identified issues of concern related to inadequate evaluations and determinations of reportability that were contrary to non-binding regulatory guidance contained in NUREG-1022, Revisions 2 and 3. In particular, the inspectors noted that Seabrook did not correlate the existence of commonalities of a manufacturing defect among the three motor faults from 2008 and 2015, and the two failure analyses from 2009 and 2016, with the applicable NUREG guidance for reporting generic implications by the submission of an LER.

The inspectors determined that the overriding issue of concern was the failure to identify the existence of generic implications among the four discreet events, and the associated reportability guidance (consistent with NUREG-1022) with all the available information any reasonable person could have discovered within the Seabrook CAP, both from a trending/repeat occurrence and problem identification perspective. Moreover, the fundamental performance deficiency relative to this problem identification and resolution issue was appropriately assessed and dispositioned as non-cited violation NCV 05000443/2016-007-001, for inadequate corrective actions to preclude repetition of a significant condition adverse to quality, in NRC Inspection Report 05000443/2016007. As the issue of premature PCCW motor failures due to a manufacturing defect was promptly reported to the NRC once the above problem identification and resolution performance deficiency was identified, the inspectors determined there was no additional violation of NRC requirements beyond that originally cited, therefore, this URI is closed.

4OA6 Meetings, Including Exit

On May 5, 2017, the inspectors presented the inspection results to Mr. Eric McCartney, Site Vice President, and other members of the Seabrook Station staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

E. McCartney, Site Vice President
C. Domingos, Plant General Manager
V. Brown, Senior Licensing Engineer
K. Browne, Licensing Manager
S. Folsom, Acting Maintenance Director
D. Ritter, Site Operations Director
D. Robinson, Chemistry Manager
D. Strand, Radiation Protection Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

None

Opened

None

Closed

0505000443/2016007-02	URI	Potential Missed Evaluation and Reporting of an Adverse Condition to the NRC (Section 40A5)
-----------------------	-----	---

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

NM11800, Hazardous Condition Response and Recovery Plan, Revision 30
ON1090.13, Response to Natural Phenomena Affecting Plant Operators, Revision 12
OS1200.03, Severe Weather Conditions, Revision 28
OS1090.09, Station Cold Weather Operations, Revision 3

Section 1R04: Equipment Alignment

Procedures

OS1023.57, Cable Spreading Area, Essential Switchgear Area and Electrical Tunnel Area Ventilation System Operation, Revision 13
OS1023.74, Maintenance of Safety Related HVAC Systems – Compensatory Ventilation Procedure, Revision 18
OS1006.4, Operation of Containment Spray System, Revision 26

OX1456.01, Charging Pump A&B Quarterly Flow & Valve Stroke Test and 18 Month Remote Position Indication Verification, Revision 23

Condition Reports

175865

Maintenance Orders/Work Orders

40418465 40418466

Drawings

1-CBA-B20302, Control Building Air Handling Emergency Switchgear Area Detail, Revision 4
1-CBA-B20303, Control Building Air Handling Detail, Revision 23
1-CBS-B20233, Containment Spray System, Revision 38
1-CC-B20213, Primary Component Cooling Loop B Detail, Revision 14
1-CO-B20426, Condensate System Detail, Revision 31
1-CS-B20725, Chemical & Volume Control Charging System Detail, Revision 32
1-FW-B20688, Emergency Feedwater System Details, Revision 21
1-FW-B20686, Feedwater System Details, Revision 13
1-SI-B20445, Safety Injection System Overview, Revision 4
1-SI-B20447, High Head Injection System Safety Injection System Detail, Revision 19

Section 1R05: Fire Protection

Miscellaneous

Seabrook Station Fire Protection Pre-Fire Strategies, Volume II, CB-F-3A-A
Seabrook Station Fire Protection Pre-Fire Strategies, Volume II, CB-F-2A-A
Seabrook Station Fire Protection Pre-Fire Strategies, Volume II, CB-F-2B-A
Seabrook Station Fire Protection Pre-Fire Strategies, Volume II, CB-F-2C-A
Seabrook Station Fire Protection Pre-Fire Strategies, Volume II, CB-F-1D-A
Seabrook Station Fire Protection Pre-Fire Strategies, Volume II, FSB-F-1-A

Section 1R06: Flood Protection Measures

Miscellaneous

Report TP-7, Seabrook Station Moderate Line Break Study, Revision 5
UFSAR Section 3.6B, Revision 8; Section 9.2, Revision 14

Drawings

1-DR-B20633, Roof Drain System Overview, Revision 9
1-NHY-650022, PAB, RHR Equipment Vault, and Fuel Storage Building Drains, Revision 0

Section 1R11: Licensed Operator Regualification Program

Procedures

OP 9.2, Transient Response Procedure User's Guide, Revision 17
TR-AA-230-1007, Conduct of Simulator Training and Evaluation, Revision 4

Section 1R12: Maintenance Effectiveness

Procedures

ER-AA-100-2002, Maintenance Rule Program Guidance, Revision 4

NUMARC 93-01, Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 4A

Condition Reports

2003027	2030236	2039481	2052949	2052949	2055324
2077898	2087225	2139362	2159224	2159236	2159845
2162696	2164482	2164907	2167066	2170555	2178510
2180251	2182856	2183154	2184481		

Maintenance Orders/Work Orders

40235750	40312333	40471233	40493072	40494687	40494687
40496789	40496790	40496791	40497045	40497047	40513092
40514565	40514565	40516918			

Miscellaneous

ECs 287731, 286890, 287688
 SBK-PRAE-15-003, Revision 0
 SBK-PRAE-16-001, Revision 0

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

OS1014.02, Operation of Spent Fuel Pool Cooling and Purification, Revision 26
 OS1016.05, Service Cooling Tower Operation, Revision 33
 OS1215.07, Loss of Spent Fuel Pool Cooling or Level, Revision 17
 OX1461.03, SEPs Operational Readiness Status Surveillance, Revision 03
 WM-AA-100, Risk Management Program, Revision 0
 WM-AA-100-1000, Work Activity Risk Management, Revision 8

Condition Reports

0569156	2003112	2177443	2177483	2180433	2184537
---------	---------	---------	---------	---------	---------

Maintenance Orders/Work Orders

01209317	40042688	40447752	40518467		
----------	----------	----------	----------	--	--

Miscellaneous

UFSAR Section 9, Revision 14

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

EN-AA-203-1001, Operability Determinations / Functionality Assessments, Revision 23
 ES1807.049, Ultrasonic Phased Array, Revision 1
 PI-AA-01, CAP on Condition Reporting, Revision 4
 PI-AA-100, Condition Assessment and Response, Revision 9
 PI-AA-100-1008, Condition Evaluation, Revision 9
 PI-AA-104-1000, Condition Reporting, Revision 12

Condition Reports

1928413	1946847	2013369	2021988	2142746	2162696
2169614	2173504	2177443	2177483	2178517	2178962

2181193 2182059 2182856 2182942 2183060 2183309
 2184038 2189796

Maintenance Orders/Work Orders

40359109 40465862 40516918 40520765 40522748

Miscellaneous

Calculation C-S-45928-CALC, Code Case N-513-3 Pipe Wall Flaw Evaluation for SW-1827-001 Spool, Revision 0

Code Minimum Wall Thickness Determination – Safety Class 2 or 3 Component, dated 2/1

Phased Array Exam Report Form, under WO 40359109

Phased Array Exam Report Form, under WR 94150394

UFSAR Chapter 5.2, Revision 14

Drawings

1-DG-D20464, Diesel Generator Fuel Oil System Train 'B' Detail, Revision 17

1-NHY-310931 Sheet E3E/10a, CAH System Radiation Monitor Containment Isolation Valves FV-6572 & 6574 Schematic Diagram, Revision 4

1-SW-B20794, Service Water System Nuclear Detail, Revision 37

1-SW-B20795, Service Water System Nuclear Detail, Revision 43

Section 1R18: Plant Modifications

Procedures

CP 3.3, Miscellaneous Systems / Closed Cooling Water Systems Chemistry Control Program, Revision 29

EN-AA-202-1001, Engineering and Change Scope Screening, Revision 7

EN-AA-203-1201, 10 CFR Applicability and 10CFR50.59 Screening, Revision 8

EN-AA-203-1202, 10 CFR 50.50 Evaluation, Revision 1

EN-AA-205-1102, Temporary Configuration Changes, Revision 8

ES1807.003, Magnetic Particle Examination, Revision 9

ES1807.025, Form B: VT-2 Visual Examination Form dated 2/2, Revision 6

ES0815.004, Welding of Carbon Steel Materials (P-1 to P-1), Revision 2

ES0815.029 Form A: Weld Traveler, Revision 4, dated 1/31

MA 3.5, Post Maintenance Testing Guide, Revision 3.5

MA 4.5A, Configuration Change, Revision 16

MA 6.2A ASME Section XI Repair/Replacement Plan Traveler, dated 1/31, Revision 7

Condition Reports

2172581

Maintenance Orders/Work Orders

40475286 40494687 40505093

Miscellaneous

ECs 287308, 288147, 288310

General Engineering Examination Report, dated 2/1 (Ultrasonic Thickness Measurement)

NRC Office of Nuclear Reactor Regulation, Verbal Authorization, Relief Request RA-17-001, dated 1/30

Sketch SW-1818-06-EC288230, Service Water Piping Repair Line No. 1-SW-1818-001, Revision 0

Section 1R19: Post-Maintenance TestingProcedures

ES1807.021, Vibration Analysis, Revision 1
 ES1807.025, In-service Inspection Visual Examination Procedure, Revision 6
 IX1662.415, RC-T-413B Wide Range RCS Cold Leg Temperature Calibration, Revision 9
 LS0564.34, 4160 Volt Static Motor Testing, Revision 9
 LS0564.38, 4160 Volt Dynamic Motor Monitoring, Revision 7
 LS0563.11, Testing of Agastat 125 VDC (7000 Series) TDPU Timing Relays, Revision 10
 LS0563.178, 1-CS-P-2-B Trip Checks, Revision 0
 LS0567.02, Termination of 4.16kv and 13.8kv Motor Leads, Revision 17
 MA 3.5, Post Maintenance Testing, Revision 19
 MA-AA-203-1000, Maintenance Testing, Revision 7
 MS0523.29, Inspection and Repair of Lube Oil Pump Coupling, Revision 3
 OX1412.02, PCCW Train B Quarterly Operability, 18 Month Position Indication, and
 Comprehensive Pump Testing, Revision 21
 OX1426.05, DG 1B Monthly Operability Surveillance, Revision 44
 OX1456.01, Charging Pump A&B Quarterly Flow & Valve Stroke Test and 18 Month Remote
 Position Indication Verification, Revision 23
 OX1456.86, Operability Testing of IST Pumps, Revision 11

Condition Reports

0569156	2003112	2021772	2105790	2169614	2178517
2180433	2182942	2189912			

Maintenance Orders/Work Orders

01209317	40042688	40438932	40438949	40439740	40447752
40457391	40465621	40490278	40497885	40506961	40513092
40513253	40513327				

Miscellaneous

ECs 286884, 288381, 287937
 Position Indication Verification, Revision 23

Drawings

1-SF-D20482, Spent Fuel Cooling and Clean-up System Detail, Revision 13

Section 1R22: Surveillance TestingProcedures

OX1406.02, Containment Spray Pump and Valve Quarterly Operability, 18 Month Position
 Indication, and Comprehensive Pump Testing, Revision 19
 OX1416.05, Service Water Cooling Tower Pump Operability and 2 Year Comprehensive Test,
 Revision 25
 OX1426.05, DG 1B Monthly Operability Surveillance, Revision 44
 OX1436.02, Turbine Driven Emergency Feedwater Pump Quarterly and Monthly Valve
 Alignment, Revision 27
 OX1436.08, Startup Feed Pump Quarterly Surveillance, Revision 13
 OX1456.86, Operability Testing of IST Pumps, Revision 12

Condition Reports

1973578	2114669	2180552	2181106	
<u>Maintenance Orders/Work Orders</u>				
40453257	40454600	40455193	40456018	40456537
40458088	40468496	40515772		

Drawings

1-CO-B20426, Condensate System Detail, Revision 31
 1-FW-B20687, Feedwater System Details, Revision 29
 1-FW-B20688, Emergency Feedwater System Details, Revision 21

Section 40A1: Performance Indicator VerificationProcedures

CP3.2, Secondary Chemistry Control Program, Revision 43
 OS1234.02, Condenser Tube or Tube Sheet Leak, Revision 17
 SM7.21, Condenser Waterbox Leak Response, Revision 02

Condition Reports

2103010	2103029
---------	---------

Miscellaneous

NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 7
 LIC-17002, Seabrook Station NRC 4th Quarter 2016 Performance Indicator Submittal

Section 40A2: Problem Identification and ResolutionCondition Reports

2079320	2080495	2130688	2137144	2137291	2137295
2155717	2155847	2160733	2160735	2160736	2168188

Miscellaneous

2015 State-of-the-Fleet Assessment of Flow Accelerated Corrosion Program Effectiveness, May 10, 2016
 Altran Report 16-0235-TR-001, Revision 0, November 2016, Seabrook Station OR18 Small Bore Radiographic Testing (RT) Pipe Inspection Scope
 EPRI Flow-Accelerated Corrosion of Small-Bore Piping: Pressure Threshold Operating Experience Study, June 29, 2016
 Flow-Accelerated Corrosion in Power Plants: Revision 2, September 30, 2016 (Report 3002008071)
 Field Guide: Flow-Accelerated Corrosion and Erosion, December 14, 2016
 Letter SBK-L-13115, Dated Jul 2, 2013, NextEra Energy to NRC, "Seabrook Station Third Annual Update to the NextEra Energy Seabrook License Renewal Application."
 Letter SBK-L-11002, Dated January 13, 2011, NextEra Energy to NRC, Seabrook Station Response to Request for Additional Information NextEra Seabrook License renewal Application Aging Management Programs – Set 4
 Recommendations for an Effective Flow-Accelerated Corrosion Program (NSAC-202L-R4), November 26, 2013

Section 40A5: Other ActivitiesProcedures

EN-AA-203-1001, Operability Determinations/Functionality Assessments, Revisions 20

PI-AA-205, Condition Evaluation and Corrective Action, Revisions 1, 2, and 3

PI-AA-104-1000, Corrective Action, Revision 4

LI-AA-102-1001, Regulatory Reporting, Revision 7

LI-AA-102-1002, Part 21 Reporting, Revision 10

Condition Reports

08-15919

LIST OF ACRONYMS

CAP	corrective action program
CDBI	component design basis inspection
CFR	<i>Code of Federal Regulations</i>
CT	cooling tower
CR	condition report
EDG	emergency diesel generator
EFW	emergency feedwater
LER	Licensee Event Report
MR	Maintenance Rule
NRC	Nuclear Regulatory Commission
OEM	original equipment manufacturer
PAB	primary auxiliary building
PCCW	primary component cooling water
SSC	structure, system, and component
SSH	substantial safety hazard
SW	service water
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
URI	unresolved item