



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION I  
2100 RENAISSANCE BLVD., SUITE 100  
KING OF PRUSSIA, PA 19406-2713

April 28, 2015

Mr. Dean Curtland  
Vice President, Seabrook Station  
c/o Mr. Michael Ossing  
NextEra Energy Seabrook, LLC  
626 Lafayette Rd.  
Seabrook, NH 03874

SUBJECT: SEABROOK STATION, UNIT NO. 1 – NRC EVALUATION OF CHANGES,  
TESTS, AND EXPERIMENTS AND PERMANENT PLANT MODIFICATIONS  
TEAM INSPECTION REPORT 05000443/2015007

Dear Mr. Curtland:

On March 19, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Seabrook Station, Unit No. 1. The enclosed inspection report documents the inspection results, which were discussed on March 19, 2015, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. In conducting the inspection, the team reviewed selected procedures, calculations and records, observed activities, and interviewed station personnel.

Based on the results of the inspection, no findings were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for the public inspection in the NRC Public Docket Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Paul G. Krohn, Chief  
Engineering Branch 2  
Division of Reactor Safety

Mr. Dean Curtland  
Vice President, Seabrook Station  
c/o Mr. Michael Ossing  
NextEra Energy Seabrook, LLC  
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Sincerely,

/RA/

Paul G. Krohn, Chief  
Engineering Branch 2  
Division of Reactor Safety

Distribution: See Next Page

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DATE	4/17/15	4/21/15	4/28/15		

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D. Curtland

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

Enclosure:  
Inspection Report No. 05000443/2015007  
w/ Attachment: Supplemental Information

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RidsNrrDorLpl1-2 Resource  
ROPreports Resource

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No.: 50-443

License No.: NPF-86

Report No.: 05000443/2015007

Licensee: NextEra Energy Seabrook, LLC

Facility: Seabrook Station, Unit No.1

Location: Seabrook, New Hampshire 03874

Inspection Period: March 2 through March 19, 2015

Inspectors: J. Lilliendahl, Senior Emergency Response Coordinator, Division of  
Reactor Safety (DRS), Team Lead  
S. Pindale, Senior Reactor Inspector, DRS  
J. Schoppy, Senior Reactor Inspector, DRS

Approved By: Paul G. Krohn, Chief  
Engineering Branch 2  
Division of Reactor Safety

## **SUMMARY OF FINDINGS**

IR 05000443/2015007; 3/2/2015 – 3/19/2015; Seabrook Station, Unit No. 1; Permanent Plant Modifications Engineering Team Inspection.

This report covers a 2 week on-site inspection of the evaluations of changes, tests, and experiments and permanent plant modifications. The inspection was conducted by three region-based engineering inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

No findings were identified.

## REPORT DETAILS

### 1. REACTOR SAFETY

#### Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R17 Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications (IP 71111.17T)

.1 Evaluations of Changes, Tests, and Experiments (23 samples)

a. Inspection Scope

The team reviewed six safety evaluations to evaluate whether the changes to the facility or procedures, as described in the Updated Final Safety Analysis Report (UFSAR), had been reviewed and documented in accordance Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59 requirements. In addition, the team evaluated whether NextEra had been required to obtain U.S. Nuclear Regulatory Commission (NRC) approval prior to implementing the changes. The team interviewed plant staff and reviewed supporting information including calculations, analyses, design change documentation, procedures, the UFSAR, Technical Specifications, and plant drawings to assess the adequacy of the safety evaluations. The team compared the safety evaluations and supporting documents to the guidance and methods provided in Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Evaluations," Revision 1, as endorsed by NRC Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," to determine the adequacy of the safety evaluations.

The team also reviewed a sample of seventeen 10 CFR 50.59 screenings for which NextEra had concluded that a safety evaluation was not required. These reviews were performed to assess whether NextEra's threshold for performing safety evaluations was consistent with 10 CFR 50.59. The sample included design changes, calculations, and procedure changes.

The team reviewed the safety evaluations and screenings that NextEra had performed and approved during the time period covered by this inspection not previously reviewed by NRC inspectors. The samples selected were based on the safety significance, risk significance, and complexity of the change to the facility.

In addition, the team compared NextEra's administrative procedures used to control the screening, preparation, review, and approval of safety evaluations to the guidance in NEI 96-07 to evaluate whether the procedures adequately implemented the requirements of 10 CFR 50.59. The reviewed safety evaluations and screenings are listed in the Attachment.

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b. Findings

No findings were identified.

.2 Permanent Plant Modifications (10 samples)

.2.1 Installation of Oil Sample Ports on the 'A' and 'B' Containment Building Spray Pump and Motor Bearings

a. Inspection Scope

The team reviewed engineering change (EC) 144978 which installed oil sample ports on the containment building spray (CBS) pump and motor bearings. NextEra performed the modification to provide more effective oil sampling through the collection of a representative and repeatable sample to determine oil and component condition. The modification affected eight locations, two on each CBS pump and two on each CBS motor.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the CBS system had been degraded by the modification. The team interviewed design engineers and reviewed design drawings and calculations to determine if the new oil sample ports and installed configuration met design and licensing requirements. The team reviewed post maintenance test (PMT) results and associated maintenance work orders to determine if NextEra appropriately implemented the modification. The team also reviewed CBS pump and motor oil analysis reports, trend data, and the CBS system health report to assess the oil and bearing conditions. The team performed several walkdowns of all eight CBS oil sample ports to verify that NextEra had adequately implemented the modification, maintained configuration control, and had not impacted the function of other safety-related structures, systems, and components (SSC) located in the vicinity. The team also reviewed corrective action condition reports (CR) and the CBS system health report to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.2 Service Water Piping Replacement for the Diesel Generator and Primary Component Cooling Water Heat Exchangers

a. Inspection Scope

The team reviewed EC 274172 which replaced degraded Platisol-lined service water (SW) piping on the supply and return of the 'A' and 'B' emergency diesel generator (EDG) heat exchangers and degraded cement-lined SW piping on the supply side of the 'A' primary component cooling water (PCCW) heat exchanger. NextEra performed the modification to

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replace degraded SW piping with a corrosion resistant material to ensure long-term system pressure boundary integrity. NextEra replaced the carbon steel lined piping with AL-6XN, an austenitic stainless steel material, suitable for seawater service without the need for internal lining or protective coating.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the EDG, PCCW, and SW systems had been degraded by the modification. The team interviewed design engineers and reviewed design drawings and calculations to determine if the new SW piping met design and licensing requirements. Additionally, the team reviewed non-destructive examination (NDE) results and associated maintenance work orders to determine if NextEra appropriately implemented the modification. The team performed several walkdowns of the accessible portions of the replaced SW piping, including a walkdown during a prolonged 'A' EDG run on March 5, 2015, to verify that NextEra had adequately implemented the modification, maintained pressure boundary integrity and configuration control, and had not impacted the function of other safety-related SSCs located in the vicinity. The team also reviewed corrective action CRs and the EDG, PCCW, and SW system health reports to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.3 Diesel Generator Turbocharger Jacket Cooling Water Outlet Piping Replacement

a. Inspection Scope

The team reviewed EC 274318 which replaced the majority of the turbocharger small-bore jacket water (JW) outlet piping on the 'A' EDG. NextEra performed the modification to eliminate four of the six non-standard piping flanges, and to replace all of the DURLON 8500 gasket material installed in October 2003. Industry operating experience (OE) from Callaway Nuclear Station indicated that the gasket material installed in 2003 was susceptible to age-related failure. Callaway had experienced a leak from a 2-bolt rectangular flange on their EDG turbocharger JW outlet piping that resulted in unplanned EDG unavailability. In addition to replacing all of the susceptible gasket material, the Seabrook modification included fabricating new 8-bolt plates for the turbocharger casing. NextEra machined the new plates with socket weld fittings which allowed welding of the piping directly to the plate. For the remaining two 2-bolt flanges, NextEra installed new gaskets, new higher torque bolting, and locking devices.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the EDG's JW cooling system had been degraded by the modification. The team interviewed design engineers and reviewed design drawings and calculations to determine if the new piping and flanges met design and licensing requirements. Additionally, the team reviewed NDE results and associated maintenance

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work orders to determine if NextEra appropriately implemented the modification. The team performed several walkdowns of the accessible portions of the replaced JW piping and the JW expansion tanks, including a walkdown during a prolonged 'A' EDG run on March 5, 2015, to verify that NextEra had adequately implemented the modification, maintained pressure boundary integrity and configuration control, and had not impacted the function of other safety-related EDG components located in the vicinity. The team also reviewed corrective action CRs and the EDG system health report to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.4 Chemical and Volume Control System Control Valve Air Supply Modification

a. Inspection Scope

The team reviewed EC 270448 which modified the airline piping material for two air-operated valves (AOV) 1-CS-HCV-182 and 1-CS-FCV-121) in the chemical and volume control system (CVCS). NextEra performed the modification in response to a sheared airline caused by the use of improperly annealed red brass piping. NextEra implemented the modification to upgrade the material for the piping and selected fittings to stainless steel to provide a more robust and reliable piping configuration. Valve 1-CS-HCV-182 is an air-operated, fail-open, modulating control valve. Its design function is to control and direct charging pump flow to the reactor coolant system (RCS) loops via the normal charging path. By controlling the charging path flow, the reactor coolant pump (RCP) seal injection flow is also controlled. Valve 1-CS-FCV-121 is an air-operated, fail-open, modulating control valve. It is used to control the charging flow rate to the RCS when either of the centrifugal charging pumps is used for normal charging operations.

The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the CVCS system had been degraded by the modification. The team interviewed design engineers and reviewed design drawings and airline specifications to determine if the new piping and fittings met design and licensing requirements. Additionally, the team reviewed PMT results and associated maintenance work orders to determine if NextEra appropriately implemented the modification. The team performed walkdowns of both AOVs to verify that NextEra had adequately implemented the modification, maintained configuration control, and had not impacted the function of other safety-related SSCs located in the vicinity. The team also reviewed corrective action CRs and the CVCS and plant air system health reports to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.5 Diesel Generator Cooling Water Header O-Ring Material Substitution

a. Inspection Scope

The team reviewed EC 274150 which evaluated and approved a material substitution for the O-rings installed in the cylinder JW headers on the EDGs. NextEra performed the modification because the diesel engine original equipment manufacturer (OEM) recommended the substitute material (Viton) for the EDG cooling water system application. The O-rings, which are installed in the mechanical joints of the JW supply and return headers, provide a soft sealing element to prevent fluid leakage. The team reviewed the modification to determine if the design basis, licensing basis, or performance capability of the EDG's JW cooling system had been degraded by the modification.

The team interviewed design engineers and reviewed design drawings and material specifications to determine if the new O-rings met design and licensing requirements. Additionally, the team reviewed a sample of EDG surveillances, including a 24-hour loaded run on the 'A' EDG, and associated maintenance work orders that installed the new O-rings to determine if NextEra appropriately implemented the modification and to assess the leak tightness of the JW piping mechanical joints. The team performed several walkdowns of the accessible portions of the JW supply and return header mechanical joints and the JW expansion tanks, including a walkdown during a prolonged 'A' EDG run on March 5, 2015, to verify that NextEra had adequately implemented the modification, minimized JW leakage, and properly maintained JW system inventory. The team also reviewed corrective action CRs and the EDG system health report to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.6 Replacement of 1-CBS-V-2 Motor Operator

a. Inspection Scope

The team reviewed modification EC 272397 that replaced the motor for motor-operated valve (MOV) 1-CBS-V-2, which is a containment building spray suction valve from the refueling water storage tank. The motor's existing magnesium rotor was replaced with an aluminum rotor to address an industry operating experience concern where oxidation and corrosion of the magnesium rotor components resulted from exposure to high humidity and temperatures.

The team reviewed the modification to evaluate whether NextEra's analysis of the change was adequate to maintain the design bases, licensing bases, and design margins of the MOV. The team verified that NextEra properly translated design inputs into the associated design bases and procedures. The team also reviewed the PMT and performed a walkdown of the MOV and adjacent equipment to assess whether NextEra adequately maintained configuration control. The team reviewed associated CRs to assess NextEra's ability to evaluate and correct problems. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.7 Revise Emergency Feedwater High Flow Isolation Setpoint

a. Inspection Scope

The team reviewed modification EC 274551 that increased the emergency feedwater (EFW) high flow isolation setpoint to ensure that two intact steam generators would be available with a single failure following a postulated faulted steam generator condition. NextEra determined that this modification was necessary following a plant transient in 2008 (plant trip due to 345 kV bus fault) in which EFW flow was automatically isolated from two steam generators due to high EFW flow. NextEra determined that increasing the high flow isolation setpoint would provide additional margin to reaching the high flow trip while maintaining the design and licensing bases intact.

The team reviewed the modification to determine if the design bases, licensing bases, and performance capability of the EFW system had been degraded by the high flow isolation setpoint modification. The team reviewed calculations, drawings, and procedures to verify that the EFW system would function in accordance with design assumptions. The team reviewed the associated work order instructions, PMT results, and other documentation to verify that the modification was implemented as designed. The team also performed walkdowns of accessible portions of the EFW system to verify that NextEra had maintained configuration control and to assess the material condition of affected components. Additionally, the team reviewed corrective action reports to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

## .2.8 Valve Modifications to Prevent Pressure Locking for 1-SI-V-138 and 1-SI-V-139

### a. Inspection Scope

The team reviewed modification EC 275419 that provided a vent path from the bonnet cavity of high head safety injection valves 1-SI-V-138 and 1-SI-V-139 (parallel cold leg injection valves). This modification was necessitated by reduced margin for overcoming the calculated loads associated with pressure locking. Although the valves remained capable of performing their design functions under postulated conditions, this modification improved the operating margin.

The team reviewed the modification to determine if the design bases, licensing bases, and performance capability of the high head safety injection system had been degraded by the valve modification. The team reviewed calculations, drawings, and procedures to verify that the safety injection system would function in accordance with design assumptions. The team reviewed the associated work order instructions, PMT results, and other documentation to verify that the modification was implemented as designed. The team also performed walkdowns of accessible portions of the modified valves and associated accessible equipment to verify that NextEra had maintained configuration control and to assess the material condition of affected components. Additionally, the team reviewed corrective action reports to determine if there were reliability or performance issues that may have resulted from the modification. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

### b. Findings

No findings were identified.

## .2.9 Seabrook Substation Reliability Upgrade Project

### a. Inspection Scope

The team reviewed modification EC 145280 that upgraded several breakers in the Seabrook substation and redesigned the substation layout to improve reliability. The upgraded substation added three new breakers and replaced two of the original breakers. The new configuration addresses breaker obsolescence and provides dedicated breakers for the reserve auxiliary transformers and generator step-up transformer. This configuration improves the redundancy for power sources during offsite line losses and outages.

The team reviewed the modification to determine if the design basis, licensing basis, and performance capability of the substation had been degraded by the modification. The team reviewed the completed work order and documentation to verify that the modification was installed as designed and the team reviewed the associated PMT results to ensure that NextEra specified appropriate tests and acceptance criteria, and that the test results confirmed satisfactory performance. Additionally, the team interviewed design engineers and reviewed CRs to determine if the modification corrected performance issues associated with substation reliability and to determine if there were reliability or performance issues

Enclosure

created from the modification. The team also reviewed affected drawings and maintenance procedures to ensure that they were properly updated and walked down the substation to assess the material condition and configuration. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.2.10 1-SW-V-4 Running Current Change

a. Inspection Scope

The team reviewed modification EC 277469 that adjusted the thermal overload (TOL) setpoint for 1-SW-V-4, which is an MOV credited with isolating safety-related portions of the service water system from non-safety portions of the system. When MOVs are initially installed at Seabrook, their TOL is set based upon the initial full load amps (FLA) for the motor. After maintenance is performed on the motors, the valves occasionally draw more current than the initial FLA. With an increase in current, there is a potential for inadvertently tripping the TOL. 1-SW-V-4 was found to draw more current than the initial FLA so the associated TOL setting was increased to prevent spurious tripping.

The team reviewed the modification to determine if the design basis, licensing basis, and performance capability of the MOV, associated motor control center, and associated EDG had been degraded by the modification. The team reviewed the completed work order and documentation to verify that the modification was installed as designed and the team reviewed the associated PMT results to ensure that NextEra specified appropriate tests and acceptance criteria, and that the test results confirmed satisfactory performance. Additionally, the team interviewed design engineers and reviewed CRs to determine if the modification corrected the inadequate TOL sizing and to determine if there were reliability or performance issues created from the modification. The team also reviewed affected calculations and maintenance procedures to ensure that they were properly update. Additionally, the team reviewed the 10 CFR 50.59 screen and engineering evaluation associated with this modification. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

#### 4. OTHER ACTIVITIES

##### 4OA2 Identification and Resolution of Problems (IP 71152)

###### a. Inspection Scope

The team reviewed a sample of CRs associated with 10 CFR 50.59 and plant modification issues to evaluate whether NextEra was appropriately identifying, characterizing, and correcting problems associated with these areas, and whether the planned or completed corrective actions were appropriate. In addition, the team reviewed CRs written on issues identified during the inspection to verify NextEra adequately described the problem and incorporated the issue into their corrective action system. The CRs reviewed are listed in the Attachment.

###### b. Findings

No findings were identified.

##### 4OA6 Meetings, including Exit

The team presented the inspection results to Mr. Dean Curtland, Site Vice President, and other members of the Seabrook Station staff at an exit meeting on March 19, 2015. The team returned the proprietary information reviewed during the inspection and verified that this report does not contain proprietary information.

**ATTACHMENT**

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Licensee Personnel

D. Curtland, Site Vice President  
V. Brown, Senior Licensing Engineer  
R. Dean, Principal Engineer  
T. Glowacky, Principal Engineer  
K. Harper, System Engineer (Charging System)  
J. Klempa, System Engineer (EDGs)  
B. Matte, Electrical Design Engineer  
D. McGonigle, Jr., Design Engineering Supervisor  
V. Patel, Senior Engineer  
N. Pietrantonio, Mechanical Design Engineer  
J. Sweeney, Principal Engineer  
C. Thomas, Mechanical Design Engineer

**LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED**

Open and Closed

None

**LIST OF DOCUMENTS REVIEWED**

10 CFR 50.59 Evaluations

10-001, EC 144992 Revision 4, EDG Engine Temperature Control Upgrade, 5/11/12  
12-001, EC-271261: MSO Resolution: RWST Valve Circuit on VCT Valve Closure Circuit, Revision 0  
12-002, EC-271262: MSO Resolution: ASDV Circuit Changes, Revision 0  
12-003, EC-250048: Steam Generator Feed Pump Turbine Digital Upgrade Project  
12-004, EC-271259: MSO Resolution: SW & CC MOV Circuit Changes, Revision 0  
13-002, UFSAR Documentation Only Modification for NSAL 07-10, dated 9/26/14

10 CFR 50.59 Screenings and/or Applicability Determinations

11-219, EC 271074 Replacement of GE Sync Check Relay, dated 6/4/14  
12-119, Bases Change 12-04, Bases Change Regarding Deactivated Automatic Containment Isolation Valves, dated 5/15/12  
12-210, A&B ESWGR Floor Drain Debris Above 10% Criterion, dated 9/17/12  
12-234, EC 277476, 1810-SG-23, Shim Modification, dated 10/7/12  
12-302, UFCR 12-03 UFSAR Corrections Related to Electrical Manhole Waterproofing, dated 12/12/12  
12-311, EC 278085 Documentation Update Supporting Revision 15 of Battery Sizing Calculation 9763-3-ED-00-14-F, dated 12/24/12



## A-2

13-002, Change to Technical Requirement 2 for Service Water Response Time, dated 1/3/13  
 13-004, EC 278153 Repair of SW-P-41-A Corroded Feeder Cable Conduit, dated 1/4/13  
 13-038, AR 1813880 Doors D300, D305, D306 Flood Protection Weather Stripping, dated 2/25/13  
 13-049, B3/4.6.5.1 and B3/4.6.5.2, Bases Change to Support Amendment for LAR 10-02, Change to Technical Specifications for Containment Enclosure Emergency Air Cleanup System, dated 2/19/13  
 13-077, Aligning DG 1A Controls for Auto Start, dated 3/16/13  
 13-085, Post-Accident Monitoring Monthly Channel Checks, dated 4/1/13  
 13-099, EC 278993 Breaker 11 Trip Circuit Monitoring Updates, 4/15/13  
 13-103, E-0, Reactor Trip or Safety Injection, dated 4/17/13  
 13-187, EC 279700, 1-DG-P-116-A/B Inner/Outer Pump Bearing Substitution, dated 8/6/13  
 13-207, Setpoint Change for CST Level High Alarm (1-CO-LB-4079), dated 8/29/13  
 13-266, Reactor Coolant System Evacuation and Fill, OS 1000.14, dated 12/15/13

### Assessments and Nuclear Oversight Reports

AR 2018950, Self-Assessment of Station Readiness for the 2015 NRC Inspection Pertaining to Evaluation of Changes, Tests, and Experiments and Permanent Plant Modifications, dated 1/16/15  
 SBK 12-021, System Engineering Nuclear Oversight Report, dated 1/23/13  
 SBK 13-003, Engineering Design Nuclear Oversight Report, dated 2/28/13  
 SBK 14-016, Modification Process Nuclear Oversight Report, dated 9/10/14

### Calculations

4.3.08.72F, SW System Steady State Analysis, Revision 10  
 9763-3-ED-00-02-F, Voltage Regulation, Revision 13  
 9763-3-ED-00-28-F, Motor Control Circuit Protection, Revision 7  
 9763-3-ED-00-83, Diesel Generator Loading, Revision 9  
 C-S-1-20801, Emergency Feedwater System Flow Study, Revision 1  
 C-S-1-45583, Piping Qualification for SI-V-138/139 Motor Replacement, Revision 1  
 C-S-1-45695, EDG Turbocharger Cooling Water Piping Replacement Qualification, Revision 5  
 C-S-1-45718, Service Water Supply Piping to CC-E-17-A & B Qualification, Revision 8  
 C-S-1-45886, Service Water Return Piping to CC-E-17-A & B Qualification, Revision 3

### Corrective Action Condition Reports

0017633	0584768	1803056	1920896
0019714	0585586	1808261	1922271
0021206	1650365	1808389	1940612
0168599	1659623	1809068	1941330
0191440	1682547	1813767	1999416
0196950	1718445	1813793	2009457
0202362	1754260	1813880	2013363
0219394	1760200	1817113	2018509
0219494	1765186	1818771	2024046
0222005	1770242	1849796	2025203
0573043	1779206	1880301	2028824
0581373	1801499	1913363	2029298*

Attachment

### A-3

2029685	2030920*	2031915*	2033292*
2030014*	2031368	2032623*	2033452*
2030264*	2031564	2032740*	2033687*
2030483*	2031771*	2033002*	
2030485*	2031901*	2033127*	

(\* denotes NRC identified during this inspection)

#### Design and Licensing Documents

1-NHY-250000, Data Sheets for Motor and Air Operated Valves and Dampers, Revision 79  
 1-NHY-300219, Service Environment Chart, Revision 28  
 DBD-PB-01, Plant Barriers Design Basis/Requirements, Revision 3  
 DBD-SW-01, Service Water System Design Basis Document, Revision 7  
 MMOD 91-0596, Penetration Seal Revisions, dated 10/28/91  
 SBK-L-14179, 10 CFR 50.59 Report, Revision 16 to the Seabrook Station Updated Final Safety Analysis Report, Revision 13 to Appendix R, "Fire Protection Safe Shutdown Capability," Revision 14 to Appendix A, "Evaluation and Comparison to BTP APCSB 9.5-1," and Revision 142 to the Technical Requirements Manual, dated 10/21/14  
 SBU-20417, Seabrook Station - Units 1 & 2 Cooling Tower Actuation, dated 8/10/78  
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 TP-7, Moderate Energy Line Break Study, Revision 5

#### Drawings

1-CC-B20207, Primary Component Cooling Loop 'A' Detail, Revision 12  
 1-CS-B20722, Chemical & Volume Control System Heat Exchangers Detail, Revision 14  
 1-CS-B20725, Chemical & Volume Control Charging System Detail, Revision 28  
 1-DG-B20461, Diesel Generator Cooling Water System Train 'A' Detail, Revision 22  
 1-DG-D20460, Diesel Generator Starting Air System Train 'A' Detail, Revision 23  
 1-DG-D20461, Diesel Generator Cooling Water System Train 'A' Detail, Revision 19  
 1-DG-F20461, DG Cooling Water System Train A Detail Functional Test Limits, Revision 9  
 1-NHY-250000, Data Sheets for Motor and Air Operated Valves/Dampers, Revision 80  
 1NHY-506403, DG-1A Engine Air Cooler Water Control Loop Diagram, Revision 14  
 1NHY-506404, DG-1A Engine Jacket Cooling Water Control Loop Diagram, Revision 20  
 1-NHY-BD-2042, Primary Auxiliary Building Elev. 25', Revision 5  
 1-SI-B20447, SI System, High Head Injection System Detail, Revision 18  
 1-SI-D20447, SI System, High Head Injection System Detail, Revision 16  
 1-SI-F20447, SI System, High Head Injection System Detail, Functional Test Limits, Revision 5  
 1-SW-B20795, Service Water System Nuclear Detail, Revision 42  
 1-SW-F20795, Service Water System Nuclear Detail Functional Test Limits, Revision 21  
 309825, 345KV Switching Station Equipment Single Line Diagram, Sheet 1, Revision 25  
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 EC144978-SK-2000, Add Oil Sample Ports for 1-CBS-P-9-A/B (Pump Bearings), Revision 1  
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 EC270448-SK-5001, Air Supply Modification for Valves 1-CS-HCV-182 & 1-CS-FCV-121, Revision 0  
 EC274318-SK-2000, Modify Turbocharger Piping Train 'A' - Left Bank, Revision 2  
 EC274318-SK-2004, Fabrication Detail Plate 4 - Right Bank Socket Weld Connection, Revision 1

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FP20594, Jacket Coolant Schematic, Revision 15  
FP22574, Operation and Maintenance Manual Emergency Diesel Generator Systems  
(Colt-11-206086), Revision 43  
FP22788, Second Emergency Diesel Generator Unit Test Report, Revision 1  
FP23694, Pressures & Temperatures DG Systems, Revision 1  
SK-EC274172- 2000, SW Piping Replacement 1-DG-E-42A PID Mark Up, Revision 0  
SK-EC274172- 2004, Replace SW 180° Elbow 1-CC-E-17-A Inlet, Revision 0  
SK-EC274172- 2032, Service Water Diesel Generator Piping Replacement, Revision 1

#### Evaluations

1880301, CS-F-121-CAL-2 ERPM Level II Evaluation, dated 12/5/13  
AR 191440-03, "B" Diesel Generator Right Bank Turbocharger Coolant Outlet Flange Leak Root  
Cause Analysis Report, dated 5/28/09  
AR 191440-41, DG Jacket Water Gasket Replacement Evaluation, dated 9/30/10  
AR 222005-01, Failure of 1-CS-HCV-182 due to Broken Airline MRFF-MPFF Determination,  
dated 5/26/10  
AR 222005-03, Failure of 1-CS-HCV-182 due to Broken Airline Apparent Cause Evaluation  
Report, dated 6/15/10  
CR 1803056, A&B ESWGR Floor Drain Debris Above 10% Criterion Prompt Operability  
Determination, dated 9/17/12  
EC281495, Equivalent Design Package (EDP) Evaluation, Revision 0  
HUPE 1801499-02, Human Performance Evaluation, dated 10/2/12  
MA 10.3A, 1-CS-HCV-182 Boric Acid Leak Screening, dated 2/12/15  
Maintenance Rule (a)(1) Improvement Plan for Charging System AOV Tubing Failures,  
Revision 5  
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dated 3/13/13  
PCR 1861395, OX1456.19, Post-Accident Monitoring Monthly Channel Checks, dated 4/1/13  
Preliminary Assessment of Callaway Emergency Diesel Cooling Jacket Flange Leak, dated  
4/21/09  
Stock Code 018893, Commercial Grade Dedication Verification, dated 5/3/99  
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1-CS-F-121-CAL-2, Charging Pumps 2A and 2B Header Flow Control Valve 1-CS-FCV-121 and  
I/P Calibration, performed 11/3/09  
1-CS-H-182-CAL-1, Charging Header Flow Control Calibration, performed 4/12/11  
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40043762-01, FME Multiple Initial and Closeout Inspection Signature Form, dated 12/15/11  
40044911-03, FME Initial and Closeout Inspection Signature Form, dated 10/2/12  
8019, Emergency Diesel Mechanical Instructor Guide, Revision 0  
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CBS Pump Motor SOMS Data (Equipment Operator Logs), dated 1/25/15 - 2/1/15  
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DG-SKD-7-A-M17, Cylinder Liner O-Ring Replacement, dated 3/3/15  
FME Plan for OR15 DGA Outage, dated 8/17/12  
LTR-TA-10-214, Westinghouse Letter, Operability Assessment for Seabrook, dated 11/8/10

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MS0599.20, Fire Barrier Wrap Installation and Repair, performed 5/29/14  
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MX0539.28, A-EDG Coolant Recirculation, Draining, and Refilling, performed 10/5/12  
MX0539.50, Emergency Diesel Generator Engine 24-Month Preventive Maintenance, performed 3/12/13 & 3/27/13  
NEI 96-07, Guidelines for 10 CFR 50.59 Implementation, Revision 1  
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ORD5700, Parker O-Ring Handbook, 2007 Edition  
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SBN-321, Letter, Seabrook Station EFW System Design Changes, dated 9/7/82  
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Tech Spec and Commitment Logs (RMD), dated 3/2/15 - 3/5/15

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EC 144978, Installation of Oil Sample Ports for A and B CBS Pump and Motor Bearings, Revision 0  
EC 145280, Seabrook Substation Reliability Upgrade Project Phase II, Revision 5  
EC 270448, 1-CS-HCV-182 & 1-CS-FCV-121 Air Supply Modification, Revision 0  
EC 272397, Replacement of 1-CBS-V-2 Motor Operator, Revision 2  
EC 274150, Diesel Generator Cooling Water Header O-ring Material Substitution, Revision 0  
EC 274172, OR15 SW Piping Modifications: Replacement of SW DGHX Piping and A PCCW Piping with AL-6XN, Revision 0  
EC 274318, DG-A Turbocharger Jacket Water Cooling Outlet Piping Replacement, Revision 0  
EC 274551, Revise EFW High Flow Isolation Setpoint, Revision 1  
EC 275419, Valve Mods to Prevent Pressure Locking for 1-SI-V-138 and 1-SI-V-139, Revision 7  
EC 277469, 1-SW-V-4 Running Current Change, Revision 0  
EC-250048, Steam Generator Feed Pump Turbine Digital Upgrade Project, Revision 11  
EC-271259, MSO Resolution: SW & CC MOV Circuit Changes, Revision 7  
EC-271261, MSO Resolution: RWST Valve Auto Circuit on VCT Valve Closure Circuit, Revision 6  
EC-271262, MSO Resolution: ASDV Circuit Changes, Revision 5

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D6080, DG 'B' Water Jacket Temperature Control Trouble, Revision 0  
D7044, DG 'A' Air Manifold Temperature Control Trouble, Revision 1  
D7747, DG 'A' Water Jacket Temperature Control Trouble, Revision 1  
D8295, DG 'B' Air Manifold Temperature Control Trouble, Revision 0  
DG-CP-75 UA-9558, Local Alarm Responses, Revision 55  
DG-CP-76 UA-9568, Local Alarm Responses, Revision 58  
DG-CP-76A UA-9568, Panel DG-CP-76A UA-9568 Local Alarm Responses, Revision 58  
EN-AA-100, Design Control Program, Revision 2  
EN-AA-100-1002, Design Verification, Revision 1  
EN-AA-203-1201, 10 CFR Applicability and 10 CFR 50.59 Screening Reviews, Revision 4

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EN-AA-203-1202, 10 CFR 50.59 Evaluation, Revision 0  
EN-AA-205-1103, Equivalent Design Package, Revision 1  
ES1807.020, Machinery Oil Analysis, Revision 2  
ES1850.003, Motor Operated Valve Performance Monitoring, Revision 9  
F5280, Steam Generator 'A' EFW Flow High, Revision 5  
F5281, Steam Generator 'B' EFW Flow High, Revision 5  
F5449, Steam Generator 'C' EFW Flow High, Revision 5  
F5453, Steam Generator 'D' EFW Flow High, Revision 5  
F6587, DG Train 'A' Emergency Power Inoperable, Revision 8  
F6637, DG Train 'B' Emergency Power Inoperable, Revision 6  
IS0603.901, Fabrication of Instrument Air Flex Hose, Revision 4  
IS0603.902, Installation/Repair of Instrument Tubing/Fittings/Clamps, Revision 2  
LS0569.01, Inspection and Testing of Limitorque Valve Actuators, Revision 2  
MGDI, Maintenance Group Standards and Expectations, Revision 42  
MS0517.03, Flange Maintenance, Revision 24  
MS0523.18, Bingham-Willamette Containment Building Spray Pump Maintenance, Revision 7  
ODI.28, Proper Journal and Log Maintenance; Channel Checks, Revision 27  
ON1242.01, Loss of Instrument Air, Revision 13  
ON1242.02, Loss of Containment Instrument Air, Revision 12  
OS1005.05, Safety Injection System Operation, Revision 26  
OS1005.05, Safety Injection System Operation, Revision 26  
OS1026.11, Operating DG 1B Jacket Cooling Water System, Revision 10  
OS1056.03, Containment Penetrations, Revision 13  
OS1090.05, Component Configuration Control, Revision 59  
OS1200.02A, Remote Safe Shutdown Control – Train A, Revision 18  
OS1200.02B, Remote Safe Shutdown Control – Train B, Revision 18  
OS1238.02, Turbine Building Flooding, Revision 5  
OX1406.02, Containment Spray Pump and Valve Quarterly Operability, 18 Month Position  
Indication and Comprehensive Pump Testing, Revision 18  
OX1426.18, Aligning DG 1A Controls for Auto Start, Revision 5  
PEG-10, System Walkdowns, Revision 21

Surveillance and Modifications Acceptance Tests

FW-F-4214-2, Steam Generator 'A' Emergency Feedwater Flow Indication and Valve Auto  
Closure Calibration (IX1640.121), performed 10/18/12  
FW-F-4224-2, Steam Generator 'B' Emergency Feedwater Flow Indication and Valve Auto  
Closure Calibration (IX1640.122), performed 10/18/12  
FW-F-4224-4, Steam Generator 'A' Emergency Feedwater Flow Valve Auto Closure Verification  
(IX1640.111), performed 10/18/12  
FW-F-4224-4, Steam Generator 'D' Emergency Feedwater Flow Indication Auto Closure  
Verification (IX1640.114), performed 10/18/12  
FW-F-4234-2, Steam Generator 'C' Emergency Feedwater Flow Indication Auto Closure  
Verification (IX1640.113), performed 10/18/12  
OX1406.02, Containment Spray Pump and Valve Quarterly Operability, 18 Month Position  
Indication and Comprehensive Pump Testing (Train A), performed 1/12/15  
OX1406.02, Containment Spray Pump and Valve Quarterly Operability, 18 Month Position  
Indication and Comprehensive Pump Testing (Train B), performed 11/25/14  
OX1426.01, DG 1A Monthly Operability Surveillance, performed 2/10/15

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OX1426.05, DG 1B Monthly Operability Surveillance, performed 1/29/15  
OX1426.22, Diesel Generator 1A 24 Hour Load Test and Hot Restart, performed 11/12/14  
OX1456.19, Post-Accident Monitoring Monthly Channel Checks, performed 2/28/15

### Non Destructive Examinations

40092941-03, VT-2 Visual Examination, performed 10/8/12  
40116507-03, VT-2 Visual Examination, performed 10/8/12  
40116507-04, VT-2 Visual Examination, performed 10/8/12  
40116507-05, VT-3 Visual Examination, performed 10/2/12  
40116507-06, VT-3 Visual Examination, performed 10/2/12  
40118861-03, VT-2 Visual Examination, performed 4/15/14  
40118861-04, VT-2 Visual Examination, performed 4/15/14  
40176790-01, VT-2 Visual Examination, performed 10/17/12  
40176790-04, VT-2 Visual Examination, performed 10/20/12  
40214257-01, EC274172 UT on SW-1813-01 Elbow, performed 2/27/13  
EC274172 UT on SW-1813-01 Elbow, performed 2/27/13  
EC274318-SK-2000 Joint F135, F136, F149, & F185 Weld Traveler, dated 9/23/12  
EC274318-SK-2000 Joint F137 - F148 Weld Traveler, dated 10/2/12  
EC274318-SK-2007 Joint F156, F164, F165, & F178 Weld Traveler, dated 9/23/12  
EC274318-SK-2007 Joint F166 - F177 Weld Traveler, dated 10/1/12  
SK-EC274172-2001 Joint F020 Liquid Penetrant Examination, performed 7/24/12  
SK-EC274172-2001 Joint F023 Weld Traveler, dated 8/15/12  
SK-EC274172-2001 Joint F024 Weld Traveler, dated 3/14/12  
SK-EC274172-2001 Joint F025 Liquid Penetrant Examination, performed 8/6/12  
SK-EC274172-2002 Joint F028 Liquid Penetrant Examination, performed 6/4/12  
SK-EC274172-2003 Joint F0908 Weld Traveler, dated 6/19/12  
SK-EC274172-2003 Joint F0909 Weld Traveler, dated 6/19/12  
SK-EC274172-2003 Joint F0910 Liquid Penetrant Examination, performed 3/28/12  
SK-EC274172-2004 Joint F0908 Liquid Penetrant Examination, performed 6/13/12  
SK-EC274172-2004 Joint F0909 Liquid Penetrant Examination, performed 6/13/12

### System Health Reports and Trending

Chemical and Volume Control System Health Report, 10/1/14 – 12/31/14  
Containment Spray System Health Report, 10/1/14 – 12/31/14  
Diesel Generator System Health Report, 10/1/14 – 12/31/14  
PEG-94, Service Water Inspection and Repair Trending, Revision 3  
Plant Air System Health Report, 10/1/14 – 12/31/14  
Primary Component Cooling Water System Health Report, 10/1/14 – 12/31/14  
Service Water System Health Report, 10/1/14 – 12/31/14  
V1304129, 1-CBS-P-9B Pump Outboard Bearing Oil Analysis Report, dated 12/18/14  
V1304130, 1-CBS-P-9B Pump Inboard Bearing Oil Analysis Report, dated 12/17/14  
V1304133, 1-CBS-P-9B Motor Outboard Bearing Oil Analysis Report, dated 12/17/14  
V1304134, 1-CBS-P-9B Motor Inboard Bearing Oil Analysis Report, dated 12/17/14  
V1310254, 1-CBS-P-9A Pump Outboard Bearing Oil Analysis Report, dated 1/30/15  
V1310255, 1-CBS-P-9A Pump Inboard Bearing Oil Analysis Report, dated 1/30/15  
V1310256, 1-CBS-P-9A Motor Outboard Bearing Oil Analysis Report, dated 1/30/15  
V1310257, 1-CBS-P-9A Motor Inboard Bearing Oil Analysis Report, dated 1/30/15

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FP21603, Design Specification for Cooling Water System, Revision 7

FP26187, Technical Specification – Tightening Table, Revision 0

FP52764, Containment Spray Pumps Instruction Manual, Revision 22

Specification No. 9763-006-128-1, General Specification for Alternating Current Induction Motors, Revision 5

Specification No. 9763-006-248-1, Shop Fabrication of Pipe, Revision 14

Specification No. 9763-006-46-1, Instrumentations Installations, Revision 13

S-S-1-E-0009, Station Requirements for Torque and Bolting Material Substitution, Revision 10

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00628676	40048638	40165785
00628677	40074441	40176790
01168258	40092941	40177023
01203624	40094392	40183575
01208906-01	40104897-01	40209347-01
01208906-01	40107427	40209347-02
01208907-01	40116507	40209348-01
01778094	40118861	40214257
40043761	40139617	40233615
40043762	40139966-01	40236831
40044911	40162216	40306569

**LIST OF ACRONYMS**

ADAMS	Agencywide Documents Access and Management System
AOV	Air Operated Valve
CBS	Containment Building Spray
CFR	Code of Federal Regulations
CR	Condition Report
CVCS	Chemical and Volume Control System
DRS	Division of Reactor Safety
EC	Engineering Change
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
FLA	Full Load Amps
JW	Jacket Water
MOV	Motor Operated Valve
NDE	Non-Destructive Examination
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
OE	Operating Experience
OEM	Original Equipment Manufacturer
PCCW	Primary Component Cooling Water
PMT	Post Maintenance Test
RCP	Reactor Coolant Pump

RCS	Reactor Coolant System
SSC	Structure, System and Component
SW	Service Water
TOL	Thermal Overload
UFSAR	Updated Final Safety Analysis Report