



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

August 15, 2017

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 - TRIENNIAL FIRE PROTECTION
INSPECTION REPORT 05000443/2017008**

Dear Mr. Nazar:

On July 13, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection team inspection at Seabrook Station, Unit No. 1 (Seabrook). On July 13, 2017, the team discussed the results of the inspection with Mr. Eric McCartney, Regional Vice President – Northern Region, and other members of your staff. The results of the inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. These findings involved violations of NRC requirements. The NRC is treating these findings as non-cited violations (NCV's) consistent with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a written response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington D.C. 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Seabrook. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Seabrook.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC's Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Glenn T. Dentel, Chief
Engineering Branch 2
Division of Reactor Safety

M. Nazar

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

Enclosure:
Inspection Report 05000443/2017008
w/Attachment: Supplemental Information

SUBJECT: SEABROOK STATION, UNIT NO. 1 TRIENNIAL FIRE PROTECTION
INSPECTION REPORT 05000443/2017008 DATED AUGUST 15, 2017

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U.S. NUCLEAR REGULATORY COMMISSION**REGION I**

Docket No.: 50-443

License No.: NFP-86

Report No.: 05000443/2017008

Licensee: NextEra Energy Seabrook, LLC (NextEra)

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

Location: Seabrook, NH 03874

Dates: June 26 – July 13, 2017

Inspectors: T. O'Hara, Senior Reactor Inspector (Acting), Team Leader
E. DiPaolo, Senior Reactor Inspector
D. Werkheiser, Senior Reactor Analyst
S. Anderson, Reactor Inspector

Observers: C. Bickett, Senior Reactor Inspector

Approved by: Glenn T. Dentel, Chief
Engineering Branch 2
Division of Reactor Safety

SUMMARY

IR 05000443/2017008; 06/26/2017 - 07/13/2017; Seabrook Station, Unit No. 1; Fire Protection (Triennial).

The report covered a two-week onsite triennial fire protection team inspection by specialist inspectors. Two findings of very low significance (Green) were identified. These findings were determined to be non-cited violations (NCVs). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process", dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

Cornerstone: Mitigating Systems

- Green. The team identified a Green, non-cited violation of Seabrook Station Unit 1 Facility Operating License Condition 2.F, "Fire Protection," for failure to implement and maintain in effect all provisions of the approved Fire Protection Program. Specifically, although NextEra identified that procedure OS1200.00 did not properly implement a mitigating action for a fire in the Switchgear Room 'A' as prescribed in the Appendix R Safe Shutdown Analysis Report on August 30, 2010 (Action Requests (ARs) 576775 and 1638123), corrective actions were delayed due to higher priority work and were not timely commensurate with the potential safety significance. NextEra entered the issue into the corrective action program as AR 2214834 and planned to reprioritize the preparation and submittal of a license amendment request to resolve the issue.

The issue was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of protection against external factors (fire) and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, by failing to correct the condition in a timely manner, NextEra did not ensure that the associated fire safe shutdown procedure implemented actions to mitigate a fire in the Switchgear Room 'A' as analyzed in the Appendix R Safe Shutdown Report. The team performed a Phase 1 screening in accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process." The deficiency affected the post-fire safe shutdown category because NextEra's fire response procedures were degraded. The finding was screened to very low safety significance (Green) because it was assigned a low degradation rating because the procedural deficiencies could be compensated by operator experience and system familiarity. This finding was determined to have a cross-cutting aspect in the area of Human Performance, Resources, in that, NextEra did not ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. Specifically, action to submit a license amendment request to support a deviation from the 10 CFR Part 50, Appendix R, III.G.2 requirements for cable separation had been rescheduled five times due to higher priority licensing work [H.1]. (Section 1R05.05)

- Green. The team identified a Green, non-cited violation of Seabrook License Condition 2.F, "Fire Protection," because NextEra did not implement the fire protection test program to ensure that the emergency lighting units were in conformance with design requirements. Specifically, NextEra did not implement procedure LS0565.31, "8-Hour Emergency Light Inspections," to verify that the Appendix R emergency lighting units would meet the annual inspection requirements, as well as the 3-year preventive maintenance task for battery replacement and the 8-hour capacity test. Additionally, since the 3-year preventive maintenance task was coded incorrectly, there was no process to ensure that the LS0565.31 would be completed going forward. NextEra entered this issue into the corrective action program as AR 2214652. NextEra's planned corrective actions included revising the classification of the emergency lighting unit preventive maintenance task in order to ensure that the task is performed at the appropriate frequency.

The team determined that this issue was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, failure to conduct the annual inspection requirements and 3-year preventive maintenance activities could result in the emergency lighting units not meeting the 8-hour battery capacity requirement. The team evaluated this finding using Inspection Manual Chapter 0609, "Fire Protection Significance Determination Process." Because safe shutdown conditions could be reached and maintained, this finding screened as having very low safety significance (Green). The team determined this finding had a cross-cutting aspect in the area of Human Performance, Work Management, because the organization did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the three-year preventive maintenance task to replace the batteries in the emergency lighting units was coded incorrectly in the work management system, which resulted in NextEra not completing the required testing and maintenance on the lighting units to ensure that they would perform their function during safe shutdown operations [H.5]. (Section 1R05.08)

REPORT DETAILS

Background

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05T, "Fire Protection." The objective of the inspection was to assess whether NextEra Energy Seabrook, LLC (NextEra) had implemented an adequate fire protection program (FPP) and that post-fire safe shutdown capabilities have been established and are being properly maintained at the Seabrook Station, Unit No. 1 (Seabrook). The following fire areas (FAs) were selected for detailed review based on risk insights from the Seabrook Individual Plant Examination of External Events (IPEEE) and the Seabrook Fire Probabilistic Risk Assessment:

- CB-F-2A-A, Cable Spreading Room
- CB-F-1A-A, Switchgear 'A'
- PAB-F-1D-A, Charging Pump '2B'
- EFP-F-1-A, Emergency Feedwater Pump House

Inspection of these areas fulfills the inspection procedure requirement to inspect a minimum of three samples.

The inspection team evaluated NextEra's FPP against applicable requirements which included Operating License Condition 2.F, NRC Safety Evaluation Reports (SERs), Title 10 of the *Code of Federal Regulations* (CFR) 50.48, and 10 CFR Part 50, Appendix R. The team also reviewed related documents that included the Updated Final Safety Analysis Report (UFSAR), Section 9.5.1, fire protection plan, fire hazards analysis (FHA), and post-fire safe shutdown analyses.

The team evaluated aspects of three mitigating strategies for responding to large fires and explosions, as required by Facility Operating License Condition 2.C.(4) and 10 CFR 50.54(hh)(2). Inspection of these strategies fulfills the inspection procedure requirement to inspect a minimum of one sample.

Specific documents reviewed by the team are listed in the attachment to this report.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (IP 71111.05T)

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the FHA, safe shutdown analyses, and supporting drawings and documentation to verify that safe shutdown capabilities were properly protected from fire damage. The team evaluated equipment and cable separation to determine whether the applicable separation requirements of Appendix A to Branch Technical Position (BTP) APCS 9.5-1 and the Seabrook design and licensing bases were maintained for the credited safe shutdown equipment and their supporting power, control, and instrumentation cables. The team's review included an assessment of the adequacy of the selected systems for reactor pressure control, reactivity control, reactor coolant

makeup, decay heat removal, process monitoring, and associated support system functions.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected FAs to evaluate whether the material conditions of the FA boundaries were adequate for the fire hazards in the area. The team compared the FA boundaries, including walls, ceilings, floors, fire doors, fire dampers, penetration seals, electrical raceway and conduit fire barriers, and redundant equipment fire barriers and radiant energy heat barriers to design and licensing basis requirements, industry standards, and the Seabrook FPP, as approved by the NRC, to identify any potential degradation or non-conformances.

The team reviewed selected engineering evaluations, installation and repair work orders, and qualification records for a sample of penetration seals to determine whether the fill material was properly installed and whether the as-left configuration satisfied design requirements for the intended fire rating. The team also reviewed similar records for selected fire protection wraps to verify whether the material and configuration was appropriate for the required fire rating and conformed to the engineering design.

The team also reviewed recent inspection records for fire dampers, and the inspection records for penetration seals and fire barriers, to verify whether the inspection and testing was adequately conducted, the acceptance criteria were met, and any potential performance degradation was identified.

b. Findings

No findings were identified.

.03 Active Fire Protection

a. Inspection Scope

The team evaluated manual and automatic fire suppression and detection systems in the selected FAs to determine whether they were installed, tested, maintained, and operated in accordance with NRC requirements, National Fire Protection Association (NFPA) codes of record, and the Seabrook FPP, as approved by the NRC. The team also assessed whether the suppression systems capabilities were adequate to control and/or extinguish fires associated with the hazards in the selected areas.

The team reviewed the as-built capability of the fire water supply system to verify the design and licensing basis and NFPA code of record requirements were satisfied, and to assess whether those capabilities were adequate for the hazards involved. The team reviewed the fire water system hydraulic analyses to assess the adequacy of a single fire water pump to supply the largest single hydraulic load on the fire water system plus concurrent fire hose usage. The team evaluated the fire pump performance tests to assess the adequacy of the test acceptance criteria for pump minimum discharge

pressure at the required flow rate, to verify the criteria was adequate to ensure that the design basis and hydraulic analysis requirements were satisfied. The team also evaluated the underground fire loop flow tests to verify the tests adequately demonstrated that the flow distribution circuits were able to meet design basis requirements. In addition, the team reviewed recent pump and loop flow test results to verify the testing was adequately conducted, the acceptance criteria were met, and any potential performance degradation was identified.

The team reviewed design specifications, vendor requirements, modifications and engineering evaluations, and routine functional testing for the Halon suppression systems for the area protected. The team walked down accessible portions of the Halon system, including storage tanks and supply systems, to independently assess the material condition, operational lineup, and availability of the systems. The team also reviewed and walked down the associated fire fighting strategies and Halon system operating procedures.

The team walked down accessible portions of the detection and water suppression systems in the selected areas and major portions of the fire water supply system, including motor and diesel driven fire pumps and fire water storage tanks, interviewed system and program engineers, and reviewed selected ARs to independently assess the material condition of the systems and components. In addition, the team reviewed recent test results for the fire detection and suppression systems for the selected FAs to verify the testing was adequately conducted, the acceptance criteria were met, and any performance degradation was identified.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed Seabrook's fire fighting strategies (i.e., pre-fire plans) and smoke removal plans for the selected FAs to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation, and to facilitate suppression of a fire that could impact post-fire safe shutdown capability. The team independently inspected the fire brigade equipment, including personnel protective gear (e.g., turnout gear) and smoke removal equipment, to determine operational readiness for firefighting. In addition, the team reviewed Seabrook's fire brigade equipment inventory and inspection procedure and recent inspection and inventory results to verify adequate equipment was available, and any potential material deficiencies were identified.

b. Findings

No findings were identified.

.04 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and plant walkdowns to verify that redundant trains of systems required for hot shutdown, which are located in the same FA, are not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified that:

- A fire in one of the selected FAs would not indirectly, through production of smoke, heat or hot gases, cause activation of suppression systems that could potentially damage all redundant safe shutdown trains;

- A fire in one of the selected FAs (or the inadvertent actuation or rupture of a fire suppression system) would not indirectly cause damage to all redundant trains (e.g. sprinkler caused flooding of other than the locally affected train); and,
- Adequate drainage is provided in areas protected by water suppression systems.

b. Findings

No findings were identified.

.05 Post-Fire Safe Shutdown Capability – Normal and Alternative

a. Inspection Scope

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings (P&IDs), electrical drawings, the UFSAR and other supporting documents for the selected FAs to verify that the licensee had properly identified the systems and components necessary to achieve and maintain safe shutdown conditions. The team assessed the adequacy of the selected systems and components for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and support system functions. This review included verification that alternative post-fire shutdown could be performed both with and without the availability of offsite power. Plant walkdowns were also performed to verify that the plant configuration was consistent with that described in the safe shutdown and fire hazards analyses. The team verified that the systems and components credited for use during shutdown would remain free from fire damage.

The team verified that the training program for licensed and non-licensed operators included alternative shutdown capability. The team also verified that personnel required for safe shutdown using the normal or alternative shutdown systems and procedures are trained and available onsite at all times, exclusive of those assigned as fire brigade members.

The team reviewed the adequacy of procedures utilized for post-fire shutdown and performed an independent walk through of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team also verified that the operators could be reasonably expected to perform specific actions within the time required to maintain plant parameters within specified limits.

Specific procedures reviewed for normal and alternative post-fire shutdown included the following:

- OS1200.00, Response to Fire or Fire Alarm Actuation;
- OS1200.00A, Fire Hazards Analysis for Affected Area/Zone-Appendix A;
- OS1200.01, Safe Shutdown and Cooldown from the Main Control Room;
- OS1200.02, Safe Shutdown and Cooldown from the Remote Safe Shutdown Facilities;
- OS1200.02A, Remote Safe Shutdown Control-Train A; and,
- OS1200.02B, Remote Safe Shutdown Control-Train B.

The team reviewed manual actions to ensure that they had been properly reviewed and approved and that the actions could be implemented in accordance with plant procedures in the time necessary to support the safe shutdown method for each FA.

The team also reviewed the periodic testing of the alternative shutdown transfer capability and instrumentation and control functions to ensure the tests are adequate to ensure the functionality of the alternative shutdown capability.

b. Findings

Introduction. The team identified a Green, non-cited violation of Seabrook Station Unit 1 Facility Operating License Condition 2.F, "Fire Protection," for failure to implement and maintain in effect all provisions of the approved FPP. Specifically, although NextEra identified that procedure OS1200.00 did not properly implement a mitigating action for a fire in the Switchgear Room 'A' as prescribed in the Appendix R Safe Shutdown Analysis Report on August 30, 2010 (Action Requests (ARs) 576775 and 1638123), corrective actions were delayed due to higher priority work and were not timely commensurate with the potential safety significance.

Description. NextEra's safe shutdown analysis, "Fire Protection of Safe Shutdown Capability 10 CFR Part 50, Appendix R Safe Shutdown Capability (Appendix R Report)," Revision 14, stated that for a fire in the Switchgear Room 'A' (FA CB-F-1A-A), the reactor trip breakers are tripped from the Main Control Room (MCR) as an initial operator action. Tripping the reactor is stated to be performed "expeditiously" per the Appendix R Report. The report also noted that a fire in Switchgear Room 'A' could prevent operation of both trains of tripping capability due to a fire in the area of the reactor trip switchgear, and should this occur, the operators can remove power from the reactor trip motor-generator (MG) sets by tripping the switching station breakers that supply power to the Unit Auxiliary Transformer (UAT) and Reserve Auxiliary Transformer (RAT). This trip can be initiated from the MCR as the switching station breaker control circuits are not routed through the Switchgear Room 'A' and this action will cause a loss of offsite power to the station. The removal of power from the reactor trip MG sets will, after a short time delay to allow for coastdown, result in de-energizing the reactor trip solenoids and; hence, insertion of the control rods.

The team reviewed procedure OS1200.01, "Safe Shutdown and Cooldown from the Main Control Room," which would be used for a fire in Switchgear Room 'A'. The procedure directed that operators initiate a reactor trip from the MCR. The "response not observed" step for verifying the reactor trip in OS1200.01 stated to dispatch an operator to locally open the reactor trip breakers and reactor trip bypass breakers. The step also stated that if the reactor trip breakers cannot be opened locally, then trip the reactor trip MG sets. The team noted that all of the circuit breakers directed by the "response not observed" step are located in the fire-affected area (i.e., Switchgear Room 'A'), that these actions would constitute unevaluated operator manual actions performed outside of the control room, and that the procedure did not direct the station to trip the switching station breakers that supply power to the UAT and RAT as credited in the Appendix R Report.

The team found that the station originally identified the discrepancy in AR 576775 in 2010 and planned to revise OS1200.01 to match the actions prescribed in the Appendix R Report. However, Operations review of the changes raised questions about whether they were prudent because opening the UAT and RAT breakers would de-energize the reactor coolant pumps along with the reactor trip MG sets. The concern was that the reactor coolant pumps would coast down on a loss of power resulting in a loss of flow potentially before the reactor trip MG sets would coast down sufficiently to insert the control rods. As a result, the station wrote AR 1638123 in April 2011. At that time, NextEra implemented compensatory measures for the condition and planned

potential modifications to correct the issue. The team reviewed NextEra's actions to correct the issue.

In May 2014, the station canceled the corrective action plan for the modifications. Instead, NextEra created a new corrective action to revise the Appendix R Report to credit tripping the reactor from the MCR based on an evaluation that concluded that losing both trains of reactor trip capability due to a fire in Switchgear Room 'A' was very unlikely. However, the plan to revise the Appendix R Report would require NRC approval of a deviation to the 10 CFR Part 50, Appendix R, III.G.2 requirements for a fire in the area. NextEra established July 31, 2014, as the due date for submitting the license amendment request (LAR) to the NRC for the deviation and July 16, 2016, as the due date to revise the Appendix R Report. As of the completion of this inspection, the action to submit the LAR had a due date of March 30, 2018, and had been rescheduled five times due to higher priority licensing work based on discussions with station personnel.

Prior to the inspection, NextEra performed a self-assessment of the FPP. The self-assessment acknowledged that the long-term corrective actions of AR 1638123, including submitting the LAR for the deviation to Appendix R III.G.2 cable separation requirements, had not been processed to date. As a result, NextEra took actions, via a routine work activity, to benchmark similar Westinghouse plants to determine how industry complied with Appendix R requirements where the reactor trip breakers are installed in common switchgear rooms. This was performed to establish a potential new path going forward to resolve the issue. NextEra took no action to reprioritize the corrective actions already established in AR 1638123 (e.g., revise the Appendix R Report). The team concluded that NextEra's actions to correct the adverse condition were not timely commensurate with the potential safety significance.

Analysis. The team determined that NextEra's failure to correct a condition adverse to fire protection in a timely manner in accordance with the FPP was a performance deficiency. Specifically, although NextEra identified that procedure OS1200.00 did not properly implement a mitigating action for a fire in the Switchgear Room 'A' as prescribed in the Appendix R Safe Shutdown Analysis Report on August 30, 2010 (ARs 576775 and 1638123), corrective actions were delayed due to higher priority work and were not timely commensurate with the potential safety significance.

The issue was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of protection against external factors (fire) and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, by failing to correct the condition in a timely manner, NextEra did not ensure that the associated fire safe shutdown procedure implemented actions to mitigate a fire in the Switchgear Room 'A' as analyzed in the Appendix R Safe Shutdown Report.

The team performed a Phase 1 screening in accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process." The deficiency affected the post-fire safe shutdown category because NextEra's fire response procedures were degraded. The finding was screened to very low safety significance (Green) because it was assigned a low degradation rating. The team determined this issue had a low degradation rating because the procedural deficiencies could be compensated by operator experience and system familiarity. Specifically, the operators would be able to insert negative reactivity by inserting control rods, by emergency boration, or by removing power to the reactor trip MG sets by other means. In addition, NextEra

implemented compensatory measures (i.e., established a fire watch, increased transient combustible controls, etc.) which reduced frequency and severity of a potential fire in Switchgear Room 'A'.

This finding was determined to have a cross-cutting aspect in the area of Human Performance, Resources, in that, NextEra did not ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. Specifically, action to submit a license amendment request to support a deviation from the 10 CFR Part 50, Appendix R, III.G.2 requirements for cable separation had been rescheduled five times due to higher priority licensing work [H.1].

Enforcement. Seabrook Station Unit 1 Facility Operating License Condition 2.F, in part, requires that NextEra shall implement and maintain in effect all provisions of the approved FPP as described in the Final Safety Analysis Report and the FPP Report as approved by the NRC. "Fire Protection Evaluation and Comparison to BTP APCSB 9.5-1, Appendix A Report" (i.e., FPP Report) as approved in NRC Safety Evaluation Report, dated March 1983, is incorporated by reference into the UFSAR. Fire Protection Program Report, Section F.3, Item C, describes Quality Assurance Program, which stated that measures should be established to assure that conditions adverse to fire protection are promptly identified, reported, and corrected. Contrary to the above, from August 30, 2010, to present, NextEra did not correct a condition adverse to fire protection. Specifically, NextEra identified that procedure OS1200.01 did not properly implement a mitigating action for a fire in FA CB-F-1A-A, Switchgear Room 'A', as prescribed in "Fire Protection of Safe Shutdown Capability 10 CFR Part 50, Appendix R Safe Shutdown Capability," but did not take corrective actions to revise the procedure in a timely manner commensurate with the potential safety significance. NextEra entered the issue into the corrective action program as AR 2214834 and planned to reprioritize the preparation and submittal of a license amendment request to resolve the issue. Because this finding was of very low safety significance (Green) and was entered into NextEra's corrective action program, the NRC is treating this violation as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy.

(NCV 05000443/2017008-01, Failure to Correct Condition Adverse to Fire Protection Associated with Fire Safe Shutdown)

.06 Circuit Analysis

a. Inspection Scope

The team verified that NextEra performed a post-fire safe shutdown analysis for the selected FAs and the analysis appropriately identified the structures, systems, and components important to achieving and maintaining safe shutdown. Additionally, the team verified that NextEra's analysis ensured that necessary electrical circuits were properly protected and that circuits that could adversely impact safe shutdown due to hot shorts or shorts to ground were identified, evaluated, and dispositioned to ensure spurious actuations would not prevent safe shutdown.

The team's review considered fire and cable attributes, cable routing, potential undesirable consequences and common power supply/bus concerns. Specific items included the credibility of the fire threat, cable insulation attributes, cable failure modes, and actuations resulting in flow diversion or loss of coolant events.

The team also reviewed cable raceway drawings and/or cable routing databases for a sample of components required for post-fire safe shutdown to verify that cables were

routed as described in the safe-shutdown analysis. The team also reviewed equipment important to safe shutdown, but not part of the success path, to verify that NextEra had taken appropriate actions in accordance with the design and licensing basis and NRC Regulatory Guide 1.189, Revision 2.

Circuit analysis was performed for the following components:

- FW-FV-4214A / 4234A, 'A' Emergency Feedwater Header Flow Valves;
- FW-P-113, Start-Up Feedwater Pump;
- FW-FT-4214A & 4234A, 'A' Emergency Feedwater Flow Transmitter / Indicators; and,
- LI-4310 / 4330, 'A' Steam Generator Wide Range Level Indicators.

The team reviewed a sample of circuit breaker coordination studies to ensure equipment needed to conduct post-fire safe shutdown activities would not be impacted due to a lack of coordination that could result in a common power supply or common bus concern.

The team verified that the transfer of control from the control room to the alternative shutdown location(s) would not be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

b. Findings

No findings were identified.

.07 Communications

a. Inspection Scope

The team reviewed safe shutdown procedures, the safe shutdown analysis, and associated documents to verify an adequate method of communications would be available to plant operators following a fire. During this review the team considered the effects of ambient noise levels, clarity of reception, reliability, and coverage patterns. The team also inspected the designated emergency storage lockers to verify the availability of portable radios for the fire brigade and for plant operators. The team also verified that communications equipment such as repeaters and transmitters would not be affected by a fire.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of 8-hour emergency lights throughout the selected FAs to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation or instrumentation monitoring for post-fire safe shutdown. The team also verified that the battery power supplies were rated for at least an 8-hour capacity. Preventive maintenance procedures, the vendor manual, completed surveillance tests, and battery replacement practices were also reviewed to verify that the emergency lighting was being maintained

consistent with the manufacturer's recommendations and in a manner that would ensure reliable operation.

b. Findings

Introduction. The team identified a Green, non-cited violation of Seabrook License Condition 2.F, "Fire Protection," because NextEra did not implement the fire protection test program to ensure that the emergency lighting units were in conformance with design requirements.

Description. The 10 CFR Part 50, Appendix R lighting system at Seabrook consists, in part, of 8-hour battery-powered emergency lighting units for areas that are required for Appendix R safe shutdown operations and for access and egress routes. Seabrook's testing and preventive maintenance program for the 8-hour battery-powered emergency lighting units includes performance of procedure LS0565.31, "8-Hour Emergency Light Inspections." Procedure LS0565.31 provides the administrative controls for the following activities:

- Yearly inspection of all 8-hour Appendix R emergency lighting units, with the exception of those in the emergency diesel generator rooms, which are covered by another procedure;
- Yearly replacement of the batteries in approximately 33 percent of the emergency lighting units; and
- 8-hour battery capacity test on a minimum of two sets of batteries removed per the replacement schedule.

Prior to 2011, the batteries for the emergency lighting units were required to be replaced on a 5-year frequency. In 2011, the station adjusted the replacement frequency in LS0565.31 to 3 years due to high failure rates. To meet this requirement, NextEra divided the Appendix R lighting units into three groups (A, B, and C), and replaced the batteries in one group yearly on a rotating basis such that each unit received a battery replacement every three years.

Based on a review of maintenance records for the emergency lighting units, the team noted that a portion of the units (Group A) had not had a battery replacement since June 2013. Further inspection revealed that the preventive maintenance task for the 3-year battery replacement was incorrectly coded in the station's work management system. As a result, NextEra did not complete this 3-year preventive maintenance task on the Group A emergency lighting units due to other higher-priority work. Additionally, because the yearly inspection per LS0565.31 was tied to the 3-year preventive maintenance task in the work management system, NextEra had not performed the yearly inspection of all the emergency lighting units since February 11, 2015. The team did note that NextEra scheduled the other two groups of lighting units for battery replacement in October and December 2017. However, because the preventive maintenance task was also incorrectly coded, it was possible that these replacements could be delayed or rescheduled due to other higher-priority work, similar to Group A.

The team also noted that the functional failure guidance in Seabrook's maintenance rule scoping document for the Appendix R emergency lighting units stated that greater than a five percent failure rate of the lighting units during the yearly inspection or failure of an 8-hour battery during the discharge test completed on batteries that are replaced during the yearly inspection would constitute a maintenance preventable functional failure. As such, the team determined that failure to perform the yearly inspection had the potential

to impact the performance monitoring of the Appendix R emergency lighting units per the Maintenance Rule (10 CFR 50.65).

NextEra entered this issue into their corrective action program as AR 2214652.

Analysis. The team determined that failure to implement the fire protection test program for the Appendix R emergency lighting units in accordance with Section F.3.C of Seabrook's FPP Report was a performance deficiency. The team determined that this issue was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, failure to conduct the annual inspection requirements and 3-year preventive maintenance activities could result in the emergency lighting units not meeting the 8-hour battery capacity requirement. The team evaluated this finding using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," and assigned the finding to the post-fire safe shutdown category since it impacted the alternate shutdown element. The team assigned the finding a low degradation rating because the failure to perform the required annual inspections and preventive maintenance in accordance with LS0565.31 would not prevent reaching and maintaining safe shutdown conditions in the event of a fire. Specifically, the team had reasonable assurance that the emergency lighting units would provide adequate illumination for a sufficient amount of time for operators to achieve safe shutdown conditions. In addition, the team determined that operators performing safe shutdown activities had flashlights available for use. Because the team determined that safe shutdown conditions could be reached and maintained, in accordance with IMC 0609, Appendix F, Step 1.3.1.A, this finding screened as having very low safety significance (Green).

The team determined this finding had a cross-cutting aspect in the area of Human Performance, Work Management, because the organization did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, the 3-year preventive maintenance task to replace the batteries in the emergency lighting units was incorrectly coded in the work management system, which resulted in NextEra not completing the required testing and maintenance on the lighting units to ensure that they would perform their function during safe shutdown operations [H.5].

Enforcement. Seabrook License Condition 2.F states, in part, that NextEra shall implement and maintain in effect all provisions of the approved FPP as described in the UFSAR and the FPP Report as approved by the NRC. The "Fire Protection Evaluation and Comparison to BTP APCS 9.5-1, Appendix A Report," (i.e., FPP Report), as approved in the NRC SER, dated March 1983, is incorporated by reference into the UFSAR. Section F.3.C of the FPP Report describes the Quality Assurance Program and states that a fire protection test program has been established and implemented to ensure that the fire protection systems are in conformance with the design requirements. This section also states that current station procedures provide for tests and inspections to assure readiness of the systems and its components. Contrary to the above, from February 11, 2015, to present, NextEra did not implement the fire protection test program to ensure fire protection systems are in conformance with design requirements. Specifically, NextEra did not implement procedure LS0565.31, "8-Hour Emergency Light Inspections," to verify that the Appendix R emergency lighting units would meet the annual inspection requirements, as well as the 3-year preventive maintenance task for battery replacement and 8-hour capacity test. Additionally, since the 3-year preventive maintenance task was incorrectly coded, there was no process to ensure that the LS0565.31 would be completed going forward. NextEra entered this issue into the

corrective action program as AR 02214652. NextEra's planned corrective actions included revising the classification of the emergency lighting unit preventive maintenance task in order to ensure that the task is performed at the appropriate frequency. Because this issue is of very low safety significance (Green) and NextEra entered the issue into their corrective action program as AR 2214652, this finding is being treated as an NCV, consistent with Section 2.3.2.a of the Enforcement Policy. **(NCV 05000443/2017008-02, Failure to Implement Test Program for Appendix R Emergency Lighting Units)**

.09 Cold Shutdown Repairs

a. Inspection Scope

The team verified that NextEra had dedicated repair procedures, equipment, and materials to accomplish repairs of components required for cold shutdown which might be damaged by the fire to ensure cold shutdown could be achieved within the time frames specified in their design and licensing bases. The team verified that the repair equipment, components, tools, and materials (e.g. pre-cut cables with prepared attachment lugs) were available and accessible on site.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were in place for out-of-service, degraded or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g. detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing safe shutdown functions or capabilities). The team also verified that the short term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that the licensee was effective in returning the equipment to service in a reasonable period of time.

The team noted that for the selected FAs which were designated as 10 CFR Part 50 Appendix R, Section III.G.2 areas, there were no compensatory measures in the form of operator manual actions.

b. Findings

No findings were identified.

.11 Fire Protection Program Changes

a. Inspection Scope

The team reviewed recent changes to the approved FPP to verify that the changes did not constitute an adverse effect on the ability to safely shutdown.

b. Findings

No findings were identified.

.12 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed NextEra's procedures and programs for the control of ignition sources and transient combustibles to assess their effectiveness in preventing fires and in controlling combustible loading within limits established in the FHA. A sample of hot work and transient combustible control permits were also reviewed. The team performed plant walkdowns to verify that transient combustibles and ignition sources were being implemented in accordance with the administrative controls.

b. Findings

No findings were identified.

.13 Large Fires and Explosions Mitigation Strategies

a. Inspection Scope

The team conducted a review of selected mitigation strategies intended to maintain or restore core decay heat removal and spent fuel pool cooling capabilities under the circumstances associated with the loss of large areas of the plant due to explosions and/or fires. The team assessed whether NextEra continued to meet the requirements of the Seabrook Station, Unit No. 1 Facility Operating License 2.C(4) and CFR 50.54(hh)(2).

The team reviewed the following mitigation strategies:

- EDMG-2, Major Loss of Plant Control Systems
- OS1016.07, Cooling Tower Portable Makeup Pump Operation
- SAG-9, Portable Diesel-Driven Pump and Hose Trailer Deployment

The team's review included: a detailed assessment of the procedural guidance; a tabletop discussion with licensed operators; a walk down of selected mitigation strategies with plant staff to assess the feasibility of the strategies and familiarity of the staff with plant equipment and implementing procedures; maintenance and surveillance testing of selected strategy equipment; and an inventory check of selected mitigation equipment to verify whether equipment storage and availability was appropriate.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems

Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team verified that NextEra was identifying fire protection and post-fire safe shutdown issues at an appropriate threshold and entering them into the corrective action program. The team also reviewed a sample of selected issues to verify that NextEra had taken or planned appropriate corrective actions.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The team presented their preliminary inspection results to Mr. Eric McCartney, Regional Vice President – Northern Region, and other members of the site staff at an exit meeting on July 13, 2017. The team verified no proprietary information was retained or documented in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

E. McCartney, Regional Vice President – Northern Region
B. Barr, Unit Supervisor
M. Haidul, Fire Protection Engineer
P. Hanscom, Nuclear Systems Operator
S. Kessinger, Senior Operations Manager
R. Law, Fire Protection Coordinator
B. Matte, Safe Shutdown Engineer
W. Roschewski, Non-Licensed Operator Training Lead
C. Stienecker, Licensed Operator Continual Training Lead
C. Thomas, Licensing

NRC

G. Dentel, Chief, Engineering Branch 2, Division of Reactor Safety
P. Cataldo, Senior Resident Inspector Seabrook Station
P. Meier, Resident Inspector, Seabrook Station

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Opened and Closed

05000443/2017008-01	NCV	Failure to Correct Condition Adverse to Fire Protection Associated with Fire Safe Shutdown (Section 1R05.05)
05000443/2017008-02	NCV	Failure to Implement Test Program for Appendix R Emergency Lighting Units (Section 1R05.08)

Closed

None.

LIST OF DOCUMENTS REVIEWED

Fire Protection Licensing and Design Basis Documents:

DBD-FP-01, Seabrook Station Unit 1 Design Basis Document (Appendix 'R' Emergency Lighting), Revision 3
 DBD-CBA-02, Design Basis Document Control Building Electrical Areas Heating and Ventilation Systems, Revision 2
 DBD FP-05, Fire Hydrants, Hose Stations, & Miscellaneous, Revision 03
 Fire Protection of Safe Shutdown Capability (10CFR50, Appendix R), Revision 14
 Seabrook Station Fire Protection of Safe Shutdown Capability, Revision 14 (10 CFR 50 Appendix R Analysis)
 Seabrook Station Evaluation and Comparison to BTP APCS 9.5-1, Appendix A, Revision 15 (Fire Protection Program Report)
 Seabrook Station Unit No. 1 Facility Operating License
 Safety Evaluation Report, dated 3/1983
 Safety Evaluation Report Supplement 4, dated 5/1986
 Safety Evaluation Report Supplement 5, dated 7/1986
 Safety Evaluation Report Supplement 6, dated 10/1986
 Safety Evaluation Report Supplement 7, dated 10/1987
 Safety Evaluation Report Supplement 8, dated 5/1989

Calculations, Analysis, and Engineering Evaluations:

C-S-1-84213, Appendix R Timing Calculations for Reactor Coolant Inventory Control, Revision 2
 C-S-1-84214, Appendix R Timing Calculations for Reactivity Control, Revision 0
 C-S-1-84019, Appendix R Timing Calculations for Reactor Coolant Pressure Control, Revision 1
 C-S-1-80801, Appendix R Timing Calculations for Decay Heat Removal, Revision 2
 EE-13-007, Maintenance Rule (a)(4) Implementation, Revision 0
 EE-14-020, Appendix R Evaluation of Reactor Trip for a Fire in Train A Switchgear, Revision 0
 EC 281809, Update Battery Replacement Frequencies
 FP61504-003, Cable Spreading Room Hydraulic Calculations, dated 9/18/1981
 MS-MISC-46, Verification of Combustibles, fire loading, temperature in fire zones of Primary Auxiliary Building, Revision 3
 MS-MISC-40, Verification of Combustibles, fire loading, temperature in fire zones of Emergency Feedwater Pump Building, Revision 2
 Multiple Spurious Operation Calculation C-S-1-86211
 PRA-301, Maintenance Rule (a)(4) Process for On-Line Maintenance, Revision 2
 SM 7.20, Control of Time Critical Operator Actions and Time Sensitive Actions, Revision 10
 TP-7, Moderate Energy Line Break Study, dated 5/9/1986
 9763-3-ED-00-63-F, Associated Circuit Study of 1E-Non 1E, Revision 9

Drawings and Wiring Diagrams:

84.6956-E5, Control Building Halon Piping Layout and Isometric Piping Diagram, dated 9/22/1981
 9763-F-604166, Cable Spreading Area Floor Drainage, Revision 2
 1-NHY-310002, Unit Electrical Distribution – One Line Diagram, Revision 44
 1-NHY-310007, 4160V Switchgear Bus 1-E5 – One Line Diagram, Revision 21
 1-NHY-310008, 4160V Switchgear Bus 1-E6 – One Line Diagram, Revision 19
 1-NHY-310013, 480V Unit Substation Buses E-51 & E-52 – One Line Diagram Sht. 1, Revision 22
 1-NHY-310024, Control Building 460V MCC 1-E512 – One Line Diagram, Revision 44
 1-NHY-310026, Control Building 460V MCC 1-E531 – One Line Diagram, Revision 43
 1-NHY-310027, Control Building 460V MCC 1-E521 – One Line Diagram, Revision 32

1-NHY-310042, 125VDC Vital Distribution System – One Line Diagram, Revision 18
 1-NHY-310066, Control Building 460V MCC 1-E515– One Line Diagram, Revision 11
 1-NHY-310431, Control Building Elev. 21'-6" – Electrical General Arrangement, Revision 30
 1-NHY-310841, MS ATMOS Relief Valve 1-PV-3001 Schematic Diagram, Sh. E2T/8a,
 Revision 8
 1-NHY-310841, MS ATMOS Relief Valve 1-PV-3001 Legend & Sw. Development, Sh. E2T/8c,
 Revision 10
 1-NHY-310841, MS ATMOS Relief Valve 1-PV-3001 Sw. Development, Sh. E2T/8d, Revision 8
 1-NHY-310841, MS ATMOS Relief Valve 1-PV-3001 Cable Table, Sh. E2T/8f, Revision 11
 1-NHY-310841, MS ATMOS Relief Valve 1-PV-3001 Cable Schematic, Sh. E2T/8e, Revision 10
 1-NHY-310844, Emergency Feedwater Valve 1-FV-4214A Shts B3Va-g, Revision 8
 202065, Emergency Feedwater Pump Building Plan & Sections – General Arrangement,
 Revision 6
 9763-F-805061, Primary Auxiliary Building Plans at Elevation 7'-0" and Below – General
 Arrangement, Revision 13

Cable Routing Reports (CASP):

CA FK0-GL3 – Appendix R: FW-FV-4214-A, 4224A, 4234A, 4244A, FW-FT—4214-2, 4234-2,
 4224-4, 4244-4 (LOW LEVEL INSTRUMENTATION), dated 6/26/2017
 CA F86-FK0 – Appendix R: FW-FV-4214-A, 4224A, 4234A, 4244A, FW-FT—4214-2, 4234-2,
 4224-4, 4244-4, dated 6/26/2017
 CA F56-FK0 – Appendix R: FW-FV-4214-A, 4224A, 4234A, 4244A, FW-FT—4214-2, 4234-2,
 4224-4, 4244-4, dated 6/6/2017
 CA FL2-GL4 – Appendix R: FW-FV-4214-A, 4224A, 4234A, 4244A, FW-FT—4214-2, 4234-2,
 4224-4, 4244-4, dated 6/6/2017
 CA G81-GL3 – Appendix R: FW-FV-4214-A, 4224A, 4234A, 4244A, FW-FT—4214-2, 4234-2,
 4224-4, 4244-4, dated 6/6/2017
 CA G81-GY3/6 – Appendix R: FW-FV-4214-A, 4224A, 4234A, 4244A, FW-FT—4214-2, 4234-2,
 4224-4, 4244-4, dated 6/6/2017
 CA B3V-G5X – Appendix R: FW-FV-4214-A (Train A SG Emergency Feedwater Flow Control
 Valve), dated 6/6/2017
 CA B3V-G5X/1 – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA FN6-G5X – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA FN6-G5X/1 – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA B3V-V2E – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA B3V-V2E/1 – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA B3V-V2E/2 – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA E3C-G2G – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA E3C-F51 – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA E3C-FN6 – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA F51-G2G – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA F51-FN6 – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA G2G-V2E – Appendix R: FW-FV-4214-A, dated 6/6/2017
 CA B3X-G5X – Appendix R: FW-FV-4234-A (Train A SG Emergency Feedwater Flow Control
 Valve), dated 6/6/2017
 CA B3X-G5X/1 – Appendix R: FW-FV-4234-A, dated 6/6/2017
 CA FN6-G5X/4 – Appendix R: FW-FV-4234-A, dated 6/6/2017
 CA FN6-G5X/5 – Appendix R: FW-FV-4234-A, dated 6/6/2017
 CA B3X-V2G – Appendix R: FW-FV-4234-A, dated 6/6/2017
 CA B3X-V2G/1 – Appendix R: FW-FV-4234-A, dated 6/6/2017
 CA B3X-V2G/2 – Appendix R: FW-FV-4234-A, dated 6/6/2017
 CA E3C-F51/2 – Appendix R: FW-FV-4234-A, dated 6/6/2017

CA F51-G2G/2 – Appendix R: FW-FV-4234-A, dated 6/6/2017
CA G2G-V2G – Appendix R: FW-FV-4234-A, dated 6/6/2017
CA F51-FN6/2 – Appendix R: FW-FV-4234-A, dated 6/6/2017
CA E3C-FN6/2 – Appendix R: FW-FV-4234-A, dated 6/6/2017
CA H44-R1M – Appendix R: FW-FT-4310, dated 6/6/2017
CA G2H-H44 – Appendix R: FW-FT-4310, dated 6/6/2017
CA G2H-H45 – Appendix R: FW-FT-4330, dated 6/6/2017
CA H45-R1P – Appendix R: FW-LT-4330, dated 6/6/2017

Instrument Loop Diagrams:

ILD-1-FW-F04214, RC-E-11A Emergency Feedwater Header Flow, Revision 18
ILD-1-FW-F04234, RC-E-11C Emergency Feedwater Header Flow, Revision 18
ILD-1-FW-L04310, RC-E-11A Steam Generator Wide Range Level Loop 1, Revision 14
ILD-1-FW-L04330, RC-E-11C Steam Generator Wide Range Level Loop 3, Revision 13
ILD-1-MS-P03001, RC-E-11A Outlet Steam Header Pressure Instrument, Shts 1-3, Revision 8

Piping and Instrumentation Diagrams:

1-CO-B20426, Condensate System Detail, Revision 31
1-CS-B2075, Chemical & Volume Control Charging System Details, Revision 32
1-FP-B20274, Fire Protection Yard Piping, Revision 20
1-RH-B20660, Residual Heat Removal System Overview, Revision 3

Large Fires and Explosions Mitigation Strategies Documents:

Assessment of Lower Pressure Limit for B.5.b Nitrogen Bottles (hard copy only in B.5.b
Licensing Basis Book)
CR 01-06360, CC Minimum Flow Requirements
CR 07-16264, Run Off Drain Evaluation
C-S-1-86208, Extreme Damage Mitigating Strategy Flow Capability, Revision 1
EDMG-2, Major Loss of Plant Control Systems, Revision 14
Engineering Evaluation 07-E05A, Security B.5.b Strategy Implementation Hardware Evaluation
(FP59989)
Engineering Evaluation SBK EE 05-017, Response to NRC Security Order B.5.b Related to
Large On-Site Fires
MSE# 07MSE183, Document Revisions for Pre-planned Makeup Strategies On-Site Fires
OS1016.07, Cooling Tower Portable Makeup Pump, dated, 6/12/2017
SAG-9, PDDP and Hose Trailer Deployment, Revision 6
SBK EE 07-033, B.5.b Hardware Pressure Rating
Seabrook Station Conforming License Amendment to Incorporate the Mitigating Strategies
Required by Section B.5.b of Commission Order EA-02-026, dated 4/21/2017
WCAP-16800-NP, Insights for Operating SGs to Minimize RCS Inventory Loss

B.5.b Layout Drawings:

B5B1, Revision 9/5/08
B5B2, Revision 9/29/08
B5B3, Revision 9/15/08
B5B4, Revision 9/15/08
B5B4A, Revision 9/22/08
B5B5, Revision 9/15/08
B5B6, Revision 9/15/08
B5B7, Revision 9/29/08
B5B8, Revision 9/16/08
B5B9, Revision 9/18/08

Fire Protection Evaluations of Modifications and Design Changes:

DCR 05-009, Permanent Standby Classification for Cable Spreading Room Ventilation Systems, dated 4/24/2005

System Health Reports:

Q2-2017 Fire Protection Program Health Report

Q4-2016 Fire Protection Program Health Report

Procedures:

E-0, Reactor Trip or Safety Injection, Revision 53

FP 2.1, Control of Ignition Sources, Revision 11

FP 2.2, Control of Combustible Materials, Revision 21

FP 2.3, Fire Protection Equipment Operations and Disablement, Revision 7

FP 2.4, Fire Watches and Fire Patrols, Revision 6

FP 4.1, Fire Protection Program Training and Qualifications, Revision 11

FP 3.1, Fire Protection Maintenance and Surveillance Testing, Revision 05

FP 6.1, Fire Protection Inspection and Logs, Revision 04

FPI.05, Preparation of a Technical Requirements Action Statement, Revision 6

FPI.06, Preparation of a Non-Technical Requirements Action Statement, Revision 7

FSG-6, Alternate CST Makeup, Revision 0

LI-AA-101-1000-10005, Prioritization and Scheduling of Licensing Actions, Revision 4

LS0565.06, Temporary Power Modifications for RHR Loop Isolation Valves, Revision 2

LS0565.31, 8-Hour Emergency Light Inspections, Revision 16

ON0443.35, Fire Brigade Ready Area Inventory, Revision 9

OP-AA-109, Control of Time Critical Operator Actions and Time Sensitive Actions, Revision 1

OS0443.47, 8-Hour Emergency Lighting Units Monthly Functional Test, Revision 12

OS1200.00, Response to Fire or Fire Alarm Actuation, Revision 23

OS1200.00A, Fire Hazards Analysis for Affected Area/Zone-Appendix A, Revision 21

OS1200.01, Safe Shutdown and Cooldown from the Main Control Room, Revision 24

OS1200.02, Safe Shutdown and Cooldown from the Remote Safe Shutdown Facilities,
Revision 22

OS1200.02A, Remote Safe Shutdown Control-Train A, Revision 20

OS1200.02B, Remote Safe Shutdown Control-Train B, Revision 22

OS1400.03, Remote Safe Shutdown Annual Equipment Inventory Surveillance, Revision 9

OS1023.57, Cable Spreading Area, Essential Switchgear Area and Electrical Tunnel Area
Ventilation System Operation, Revision 13

OS1016.07, Cooling Tower Portable Makeup Pump Operation, Revision 19

OX0443.06, Deluge and Preaction Sprinkler Valve 18 Month Actuation Test, Flow And System
Alarms Test, Revision 13

SSFP, Fire Protection Manual, Revision 40

Operator Safe Shutdown Training:

L0008J, Local Reactor Trip, Revision 8

L0016J, Restore Power to Bus 6 During Remote Safe Shutdown, Revision 0

L0048J, Emergency CST Fill, Revision 9

L0075J, Trip/Disable Fire Loads in Response to a Fire, Revision 7

SBK CRO CT8210Z, Response to Fire, Safe Shutdown, Revision 0

SBJ CRO CT3200C, Remote Safe Shutdown Activation and Operation Field Walkthrough,
Revision 0

Fire Fighting Strategies (i.e., Pre-Fire Plans):

CB-F-1A-A, Control Building, Revision 00
CB-F-2A-A, Cable Spreading Rooms, Revision 00
EFP-F-1-A, Emergency Feedwater Pumps, Revision 00
IM-PX09-38, Fire Protection Prefire Strategies, Revision 2
PAB-F-1D-A, Primary Auxiliary Building, Revision 00

Fire Brigade Training:

SBK FRP FP1013I, Communications, dated 2/10/14

Fire Brigade Drills and Critiques

Crew A, Announced Drill of the Circ Water Pump House, completed 8/3/2016
Crew A, Announced Drill of the Cable Spreading Room, completed 7/11/2016
Crew E, Unannounced Drill of the 75' Turbine Building, completed 3/23/2017
Crew E, Announced Drill of the SEPS "A" Engine, completed 12/16/2015
Crew C, Announced Drill of the Mechanical Room - A, completed 3/23/2017
Crew B, Announced Drill of the Mechanical Room- A, completed 3/18/2017
Crew A, Announced Drill of the Cable Spreading Room, completed 3/12/2017
Crew A, Announced Drill of the Circ Water Pump House, completed 8/3/2016
Crew D, Unannounced Drill of the SEPS "A" Engine, completed 12/8/2015

Transient Combustible, Hot Work, and Ignition Source Permits and Evaluations:

CMP-17-3931
CMP-17-3936
CMP-17-3938
CMP-17-3941
CMP-17-3942
ISP-17-3612
ISP-17-3661
ISP-17-3663
ISP-17-3664
ISP-17-3665
ISP-17-3666

Completed Tests and Surveillances:

LX0556.118, 1-FP-P-20-A Diesel Fire Pump Batteries Weekly Surveillance, completed 6/28/2017
LX0556.118, 1-FP-P-20-A Diesel Fire Pump Batteries Weekly Surveillance, completed 6/22/2017
MX0599.01, 18-Month Surveillance of Technical Requirements Fire-Rated Assembly Exposed Surfaces, completed 8/17/2016
MX0599.01, 18-Month Surveillance of Technical Requirements Fire-Rated Assembly Exposed Surfaces, completed 12/10/2014
MX0599.02, 18-Month Inspection of Type Se-Foam External Fire Rated Assembly, completed 7/31/2001
ON0443.35, Fire Brigade Ready Area Monthly Inventory, completed 6/6/2017
ON0443.35, Fire Brigade Ready Area Monthly Inventory, completed 6/13/2017
ON0443.28, Monthly Inspection of Halon 1301 System, completed 6/10/2017
ON0443.29, Semi Annual Halon 1301 Quantity Verification, completed 5/27/2017
ON0443.30, Annual Halon 1301 Inspection and Test, completed 12/11/2016
ON0443.35, Fire Brigade Ready Area Monthly Inspection, completed 5/16/2017
ON0443.35, Fire Brigade Ready Area Monthly Inspection, completed 5/12/2017

- OX0443.01, Diesel Fire Pump A Weekly Test, completed 5/22/2017
- OX0443.01, Diesel Fire Pump A Weekly Test, completed 5/15/2017
- OX0443.01, Diesel Fire Pump B Weekly Test, completed 5/19/2017
- OX0443.01, Diesel Fire Pump B Weekly Test, completed 5/11/2017
- OX0443.02, Electric Fire Pump Monthly Test, completed 5/10/2017
- OX0443.02, Electric Fire Pump Monthly Test, completed 4/5/2017
- OX0443.04, Fire Protection System Annual Flush, completed 6/25/2016
- OX0443.04, Fire Protection System Annual Flush, completed 6/9/2015
- OX0443.06, Deluge and Preaction Sprinkler Valve 18 Month Actuation Test, completed 5/2/2017
- OX0443.06, Deluge and Preaction Sprinkler Valve 18 Month Actuation Test, completed 3/30/2017
- OX0443.10, Fire Pumps Semi-Annual Flow Capacity Check, completed 4/2/2017
- OX0443.10, Fire Pumps Semi-Annual Flow Capacity Check, completed 12/1/2016
- OX0443.11, Three Year Fire System Flow Test, completed 7/16/2016
- OX0443.11, Three Year Fire System Flow Test, completed 6/16/2013
- OX0443.14, Fire Protection 3 Year Open Head Spray Nozzle and Header, completed 4/1/2013
- OX0443.14, Fire Protection 3 Year Open Head Spray Nozzle and Header, completed 3/25/2016
- OX0449.90, Control Building Fire Detection Trip Actuation Device, completed 10/21/2015
- OX0443.92, Primary Auxiliary Building Fire Detection Trip Actuating Device Operational Test, completed 4/28/2017
- OX0443.92, Primary Auxiliary Building Fire Detection Trip Actuating Device Operational Test, completed 10/24/2015
- WO 40475552 01, FP-ON399 - Weekly Check of B.5.b Pump and Trailers, completed 4/13/2017
- WO 40424044 01, 1-FP-P-449 – Portable Diesel Driven Pump Annual Inspection, completed 8/2/2016
- WO 40496734-01, Annual Equipment Inventory Surveillance Remote Safe Remote Safe Shutdown Annual Equipment Inventory, completed 5/13/2017
- WO 40475552 01, FP-ON399, Weekly Check of B.5.B Pump and Trailers, dated 4/13/2017
- WO 40424044 01, 1-FP-P-449, Portable Diesel Driven Pump Annual Inspection, dated 8/2/2017

Action Requests (ARs): (* denotes NRC identified during this inspection)

171291	576775	591515
1638123	1684204	1699636
1777801	1978622	1979269
1813619	1858715	1927046
1976814	1976898	1976944
1946944	1977233	1973734
1974791	1977233	1977793
1978622	1979269	1972702
1982946	1993772	2015343
2019813	2026682	2033864
2039592	2075310	2085657
2089967	2130464	2103156
2132566	2134712	2146217
2146218	2154189	2150559
2150631	2175205	2189212
2199015	2198350	2199015
2201054	2212584*	2212590*
2212726*	2212786*	2212787*
2213023*	2213029*	2213232*
2214211*	2214465*	2214509*

2214513*	2214652*	2214708*
2214762*	2214834*	2214929*

Work Orders:

40194658	40236814	40269558
40279779	40348644	40481732
40418465	40419769	40468151
40475253	40476708	40481733
40484448		

Vendor Manuals:

34840, Manville Holophane 12 Volt Emergency Lighting, Revision 1

Quality Assurance Audits and Self Assessments:

Quick Hit Department Assessment Report Assessment AR 2096323
 AR 2201054: Seabrook Nuclear Station – Fire Protection Program Self-Assessment in support
 of NRC Fire Protection Triennial Inspection
 Seabrook Daily Quality Summary Report, Fire Protection Assessment, 6/1/2014 – 6/1/2017
 Fukushima Flex Mod of the Fire Pump Suction Line Weakness
 Refueling Outage 17 Fire Protection Compensating Measures for Generator Step-up
 Transformer Work
 OM-AA-04, Plant readiness for Restart

Miscellaneous Documents:

AR 68280, Station Evaluation of Regulatory Issue Summary 2006-10 Regulatory Expectations
 with Appendix R Paragraph III.G.2 Operator Manual Actions
 EC-UCR 289199, Appendix R Report for Atmospheric Steam Dump Valves (ASDVs), dated
 6/20/2017
 Emergency Lighting Battery Replacement Matrix
 Maintenance Rule (a)(4) Risk Profile for Work Week 1728-07
 NRC Information Notice 2013-02, Issues Potentially Affecting Nuclear Facility Fire Safety
 NRC Information Notice 2014-15, Inadequate Control of Respiratory Protection Accessibility,
 Training, and Maintenance
 NRC Information Notice 2015-02, Antifreeze Agents in Fire Water Sprinkler Systems
 Radio Coverage and Deadspot Locations Spreadsheet
 SEA-1-LTG-FN01, Emergency Plant Lighting Maintenance Rule Function Scoping
 UFSAR Change Request 09-029, Appendix R Report Analysis Changes for Containment
 Instrument Air Supply, dated 10/29/09
 Technical Basis for PM 1-LTG-8HR-LTS-1-E900-6531-000
 UFSAR Change Request 07UFCR018, Appendix R Time Critical Operator Actions and RCP
 Seal Cooling, dated 6/5/2008

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
AR	Action Request
BTP	Branch Technical Position
CFR	Code of Federal Regulations
FA	Fire Area
FHA	Fire Hazards Analysis
FPP	Fire Protection Program
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
LAR	License Amendment Request
MCR	Main Control Room
MG	Motor-Generator
NCV	Non-Cited Violation
NextEra	NextEra Energy Seabrook, LLC
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory commission
P&ID	Piping and Instrumentation Drawing
RAT	Reserve Auxiliary Transformer
Seabrook	Seabrook Station, Unit No. 1
SDP	Significance Determination Process
SER	Safety Evaluation Report
UAT	Unit Auxiliary Transformer
UFSAR	Updated Final Safety Analysis Report