NEXTera® ENERGY SEABROOK

March 22, 2019

10 CFR 50.59(d)(2)
10 CFR 50.71(e)

Docket 50-443

SBK-L-19033

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Seabrook Station

10 CFR 50.59 Report, Revision 19 to the Seabrook Station Updated Final Safety Analysis Report, Revision 16 to "Fire Protection Safe Shutdown Capability (10CFR50, Appendix R)," Revision 17 to "Evaluation and Comparison to BTP APCSB 9.5-1, Appendix A" and Revision 157 to the Technical Requirements Manual

NextEra Energy Seabrook, LLC (NextEra) encloses the 10 CFR50.59 Report, Revision 19 to the Seabrook Station Updated Final Safety Analysis Report (UFSAR), Revision 16 to "Fire Protection Safe Shutdown Capability (10CFR50, Appendix R)," Revision 17 to "Evaluation and Comparison to BTP APCSB 9.5-1, Appendix A" and Revision 157 to the Technical Requirements Manual. The 10 CFR 50.59 Report and the UFSAR are submitted pursuant to the requirements of 10 CFR 50.59(d)(2) and 10 CFR 50.71(e). The 10 CFR 50.59 report covers the period from August 1, 2017 through December 31, 2018. UFSAR Revision 19 incorporates approved and implemented design changes and UFSAR changes identified through December 31, 2018. The incorporated changes to the UFSAR have been reviewed in accordance with 10 CFR 50.59. The reviews determined that these changes did not require prior NRC approval.

The UFSAR is provided in its entirety on CD-ROM in Portable Document Format (PDF). Changes from Revision 18 are indicated by a change in revision number and a vertical line (revision bar) in the margin next to the change. The List of Effective Pages contained within the UFSAR provides a listing of each page and its revision number with a revision bar indicating which pages contain changes. The controlled drawings referenced in the UFSAR are not being provided as they have the potential to contain security-related information. The drawings are available on site for NRC review. The Fire Protection Safe Shutdown Capability Report, Evaluation and Comparison to BTP APCSB 9.5-1 Report and the Technical Requirements Manual are also provided on CD-ROM.

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The summaries of 10 CFR 50.59 evaluations for design changes incorporated in Revision 19 of the UFSAR are attached as Enclosure 1. No 10 CFR 50.59 evaluations were performed for other activities during the reporting period. Enclosure 2 provides a summary for changes to the UFSAR incorporated using the guidance of NEI 98-03, "Guidelines for Updating Final Safety Analysis Reports."

Enclosure 3 is a listing of UFSAR Change Requests (UFCRs) incorporated in UFSAR Revision 19 during the reporting period. The affected Sections, Tables and Figures are provided for each UFCR. Enclosure 4 contains UFCRs incorporated in the Fire Protection Safe Shutdown Capability Report, Enclosure 5 provides the UFCRs incorporated in Evaluation and Comparison to BTP APCSB 9.5-1 Report and Enclosure 6 contains UFCRs incorporated in the Technical Requirements Manual.

One copy of the UFSAR revision on CD-ROM is being submitted to the Document Control Desk, Washington, DC, along with a copy to the Region I Regional Office and a copy to the Resident Inspector at Seabrook Station.

Should you have any questions regarding this matter, please contact Mr. Kenneth J. Browne, Licensing Manager, at (603) 773-7932.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 22, 2019

Sincerely,

Eric McCartney
Regional Vice President
NextEra Energy Seabrook, LLC

cc: NRC Region I Administrator
NRC Project Manager, Project Directorate I-2
NRC Senior Resident Inspector

Enclosed CD Listing:

CD 1, 39 files, 646,297,859 bytes
CD 2, 3 files, 46,712,725 bytes

Enclosure 1 to SBK-L-19033

Summary Report of Facility Changes, Tests, and Experiments
Completed in Accordance with the Requirements of 10CFR50.59
for Revision 19 of the Updated Final Safety Analysis Report

Design Change Evaluations

Design changes documented in the following Engineering Changes (EC) were installed during the period covered by the 10 CFR 50.59 Report. A 10 CFR 50.59 evaluation was performed for the ECs identified below. For each of the evaluations performed, there were no activities requiring prior NRC approval identified.

10 CFR 50.59 Evaluation 15-002 — **EC 145303, SSPS Circuit Board Replacement**

Summary Description and Purpose:

This design change package (EC 145303) approves the replacement of Seabrook Unit 1 Westinghouse Solid State Protection System (SSPS) original design printed circuit boards with the Westinghouse new design boards. The SSPS boards are being replaced due to obsolescence issues of the original design boards and to improve reliability. The approved boards are for use in the control board demutliplexing cabinets 1-MM-CP-25 & 30 and Main SSPS cabinets 1-MM-CP-12 & 13. The replacement boards are all designed to be fit and function replacements for the original design SSPS boards.

Evaluation Summary:

This design change and 10CFR50.59 Evaluation are based on work performed by Westinghouse and the Pressurized Water Reactor Owners Group (PWROG) in support of upgrading SSPS to the new design boards. The PWROG submitted Topical Report (TR), WCAP-17867-P, Revision 1, "Westinghouse SSPS Board Replacement Licensing Summary Report" (approved version is Reference 13) to the Nuclear Regulatory Commission (NRC) for review and approval.

The TR documents the design process, design details, analyses, manufacturing controls, and verification process that was used for the new design SSPS boards. The results provide a comprehensive summary that concludes that the installation of the new design SSPS boards maintain or improve upon the original design board reliability and functional requirements for the SSPS. Additionally, no unanalyzed failures are introduced and the consideration of the software common cause failures (CCF) that would compromise SSPS equipment operations is eliminated.

The NRC issued the Final Safety Evaluation Report (FSE) for WCAP-17867-P, Rev. 1 (included in reference 13) on September 19, 2014. The NRC FSE states in general, the new design boards can be used to replace the original design boards.

Based on the 10CFR50.59 Evaluation performed and the NRC FSE it is concluded that a 10CFR50.59, License Amendment is not required.

10 CFR 50.59 Evaluation 18-001 **EC 289694, Containment Model Update for NSAL-11-5 and NSAL 14-2**

Summary Description and Purpose:

This activity updates the Seabrook GOTHIC containment response analysis performed as part of the stretch power uprate and its base-deck calculation. Specifically, this change incorporates three updates:

- Updates the assumed droplet size to 660 microns based on a review of vendor test data.
- Updated the uprate GOTHIC model in accordance with NRC approved Topic Report DOM-NAF-3 NP-A (ML063190467) with some conservative exceptions.
- Incorporates the latest mass and energy release input due to issues identifies in Nuclear Safety Advisory Letter NSAL-14-2.

Evaluation Summary:

A 10 CFR 50.59 screening was performed and the following two (2) items screened in and required performance of a 50.59 evaluation:

1. NSAL-11-5 and NSAL-14-2 identified modeling issues that impacted the long term LOCA Mass and Energy (M&E) releases that were used as in input to the GOTHIC SPU analysis.
2. The updated Seabrook verification model uses GOTHIC 8.0 in lieu of GOTHIC 7.0, 7.1 or 7.2 which are discussed in DOM-NAF-3 NP-A.

Reanalysis of the confirmatory GOTHIC model, developed as part of the power uprate project and used to determine the containment peak pressure and temperature during a LOCA, to include new mass and energy values resulting from Westinghouse NSAL-11-5 and NSAL-14-2 (Update 1) and modelling updates (Update 3). The new mass and energy values had a minimal impact on the confirmatory analysis results and remained bounded by the original CONTRAST analysis. Specifically, the projected piping temperatures increased during a design basis accident but remained well below their qualification analysis for a faulted condition. All other parameters remain bounded by the original DBA analysis. Therefore, the new mass and energy releases results in a minimal increase likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the UFSAR.

This 50.59 Evaluation was performed for the activity due to the potential effect on methods of evaluation used in containment analysis. Methods of evaluation described in the UFSAR are subject to criterion 10 CFR 50.59(c)(2)(viii) if they are used in analysis that demonstrate that the design basis limits of fission product barriers are met. Methods of evaluation are described as the calculational framework used for evaluating behavior or response of the facility or an SSC. As described in NEI 96-07 Revision 1, section 4.3.8, the use of a different method of evaluation (i.e. Topical Report DOM-NAF-3) can be used if that methodology has been previously approved by the NRC. It was demonstrated that GOTHIC versions 7.2 and 8.0 produce results that are essentially the same for Seabrook's containment model.

As a result, the changes of this activity do not require prior NRC approval.

10 CFR 50.59 Evaluation 18-002 **EC 290987, Disable Main Turbine Automatic High Vibration Trip Function**

Summary Description and Purpose:

EC 290987 is a temporary configuration change that will change the main turbine high vibration input to the turbine trip from an automatic to a manual trip.

Evaluation Summary:

This activity involved a SSC (Turbine Supervisory Instrumentation) whose failure could initiate a transient by causing a turbine trip which would result in a reactor trip. Additionally, this activity fundamentally alters the existing means of performing or controlling a design function. The automatic high vibration input to the design function (turbine trip) is being replaced by a manual action.

This activity temporarily disconnects the Turbine Vibration High Trip Signal from the Emergency Trip System (ETS) of the Main Turbine, disabling the Turbine Vibration High Trip signal from the automatic Turbine Trip design function. This logic change does not introduce any physical changes of hardware or software and the individual instruments and signals available for a Turbine Trip remain functional. Therefore, this activity does not result in a more than minimal increase in accidents or malfunctions previously evaluation in the UFSAR. This change also does not create a new type of event not previously evaluated in the UFSAR. This 50.59 evaluation concluded that this activity does not require prior NRC approval.

10 CFR 50.59 Evaluation 18-003 **EC 290992, RCP UV RX Trip Response Time Margin Reallocation**

Summary Description and Purpose:

EC 290992 increases the protection system overall response delay for the Reactor Coolant Pump (RCP) Undervoltage (UV) Reactor (RX) Trip function from the existing < 1.5 seconds to < 2.25 seconds.

A 50.59 screening was performed and the following item screened in and required performance of a 50.59 evaluation:

1. The proposed change to the overall RCP UV trip response time delay required re-analysis of the UFSAR-described safety analysis.

Evaluation Summary:

The EC change in the RCP UV trip response time will not impact how electrical power is supplied to the RCPs, nor will it impact the likelihood or frequency of occurrence of an event which could cause a simultaneous loss of electrical power to all four RCPs. With the change to the RCP UV trip response time, the reactor is still tripped in the(Partial Loss of Flow) PLOF event by the low flow trip with a 1.0 second delay (which has not been changed). The DNBR will change due to an increase in the RCP UV trip delay time to 2.25 seconds, however, the revised DNBR is still above the safety analysis limit. The RCP UV trip response time change does not alter the consequences of a (Complete Loss of Flow) CLOF accident, nor does it introduce a new type of potential malfunction. This change also does not create a new type of event not previously evaluated in the UFSAR. This 50.59 evaluation concluded that this activity does not require prior NRC approval.

10 CFR 50.59 Evaluation 18-004 | **EC 291808, Issue Calculation for EWF Pump Exhaust Stack Tornado Missile**

Summary Description and Purpose:

This activity calculates the impact probability of a tornado missile on the Turbine Driven Emergency Feedwater (TDEFW) pump exhaust stack on top of the EFW pumphouse. Further, this change incorporates the stack as a new missile target in Seabrook's design basis. Specifically, it is considered a safety related component not located in a tornado protected structure. The TDEFW pump exhaust stack calculation and analysis methodology are similar to other small targets at Seabrook. The activity in the scope of this 50.59 evaluation is the adverse impact of increasing the tornado missile risk due to the addition of a new target.

Evaluation Summary:

This activity calculates the impact probability of a tornado missile on the TDEFW pump exhaust stack on top of the EFW pumphouse and incorporates the stack as a new missile target. Per NEI 96-07, design changes associated with natural phenomena are considered to potentially cause malfunctions. Using the same level of detail as existing small targets to assess the TDEFW pump exhaust stack, there is no more than a minimally increase in the likelihood of a malfunction. This activity does not create any new malfunctions as tornado missiles are already considered in Seabrook's UFSAR. The radiological consequences of this activity are no more than minimal. This activity does not impact any design basis limits for fission product barriers and follows methodology consistent with Seabrook's licensing basis. This 50.59 evaluation concluded that this activity does not require prior NRC approval.

10 CFR 50.59 Evaluation 18-005 **EC 145020 – 7300 System Printed Circuit Board Upgrades**

Summary Description and Purpose:

EC145020 R/013 approves the installation and use of re-designed Westinghouse 7300 Process Control System printed circuit boards (PCBs). As evaluated in the screening, all but the re-designed 12NLL PCBs are equivalent performance, operating characteristics and design function and screen out of the 10 CFR 50.59 Evaluation process. This 10 CFR 50.59 Evaluation is specifically written to address the design activity for installation and use of the new digital Westinghouse 7300 12NLL PCB.

Evaluation Summary:

The 12NLL PCBs are more reliable than the original design NLL PCBs, and therefore, there would be a reduction in the frequency of occurrence of an accident associated with the 7300 PPS. The 12NLL PCBs do not result in more than minimal increase in the likelihood of occurrence of malfunctions. The 12NLL PCBs are more reliable than the original design NLL PCBs as documented in the MTBF calculations; therefore, the 12NLL PCBs will not result in more than a minimal increase in the likelihood of occurrence of a malfunction. Therefore, the installation of the 12NLL PCBs does not impact any of the design bases, including the environmental qualification impacts. Therefore, the proposed activity does not adversely affect other equipment used for accident mitigation such that the consequences of an accident are more than minimally increased. The 7300 PPS design functions are the same and are not changed or modified by the installation of the 12NLL PCBs, therefore all consequences are bounded by the events evaluated in the UFSAR. As described in previous evaluation questions, the 7300 PPS is not altered by the installation of the 12NLL PCBs. This activity does not impact the function of any plant SSC, nor does it create any new accidents of a different type, which would alter the current failure modes as discussed in UFSAR Chapter 7, Chapter 6 and 15 safety analyses.The installation of the 12NLL PCBs does not deviate from the analytical methods previously used to establish the design basis for the 7300 PPS and does not affect the method of evaluation used in the safety analysis. This 50.59 evaluation concluded that this activity does not require prior NRC approval.

Enclosure 2 to SBK-L-19033

Summary of Changes to the Updated Final Safety Analysis Report
Incorporated Using the Guidance of NEI 98-03,
"Guidelines for Updating Final Safety Analysis Reports

The following provides a summary of changes incorporated in Revision 19 of the Updated Final Safety Analysis Report using the guidance contained in NEI 98-03, "Guidelines for Updating Final Safety Analysis Reports."

UFCR/UCR Number	Affected Sections, Tables, Figures

EC 289861 — **UFSAR Section 3.9(B)**

Description of Change: This activity adds a note in Section 3.9(B) discussion of snubbers to indicate that later editions of the ASME Code may be used as allowed by ASME Section XI, Para. IWA-4223. This is additional information for clarification.

EC 290022 — **UFSAR Table 2.3-14**

Description of Change: The activity is an administrative correction to the title of Table 2.3-14.

EC 290031 — **UFSAR Section 1.8**

Description of Change: The activity updates a document reference related to Oversight/QA training requirements to refer to the correct governing document.

EC 290074 — **UFSAR Section 3.2.1**

Description of Change: The activity is an administrative change to remove excessive detail which is not relevant to the plants licensing basis.

EC 290875 — **UFSAR Section 2.5.4.5e.6**

Description of Change: Editorial correction to change subsection 2.5.4.5e.6 to 2.5.4.5c.6.

EC 291268 — **UFSAR Sections 9.2.2.1, 9.2.2.3.b and 9.5.1.2.c.8**

Description of Change: This activity updates UFSAR sections to clarify the plant's licensing basis for PCCW system. The change clearly states that the heat tank capacity is used to provide system with the needed capacity during a design basis event. The design basis does not credit additional make-up from other sources, although additional sources of water are available during an emergency. This change provides clarifications to improve reading understanding.

EC 291813 **UFSAR Section 9.5.1.5**

Description of Change: This activity updates job titles and responsibilities in UFSAR Section 9.5.1.5, Personnel Qualification and Training (Fire Protection). Revising the job titles and requirements does not change the meaning or substance of the information provided. This change is editorial.

Enclosure 3 to SBK-L-19033

Listing of UFSAR Change Requests (UFCRs/UCRs) Incorporated in Updated Final Safety Analysis Report, Revision 19

UFCR/UCR Number	Affected Sections	Affected Tables	Affected Figures
EC283632	8.2		
EC287676	10.4		
EC287678	3.9(N), 4.3, 7.7	1.3-1, 1.3-2	7.7-9
EC287679	8.3.1.1.d	8.3-1, 8.3-2, 8.3-5	
EC287966	8.3.2.1.b		
EC289591	5.4, 7.1, 7.3, 10.3		
EC289694	6.2		
EC289778	5.4		
EC289861	3.9(B)		
EC289886	9.4		
EC290022		2.3-14	
EC290031	1.8		
EC290074	3.2		
EC290705	12.5	12.5-1	

UFCR/UCR Number	Affected Sections	Affected Tables	Affected Figures
EC290875	2.5		
EC290919	8.2.1.3.e	8.2-1	
EC290992		7.2-3, 15.0-4, 15.3-1	15.3-3 thru 15.3-5
EC291170	2.2	2.2-1	2.2-1, 2.2-5
EC291268	9.2.2.1, 9.2.2.3.b, 9.5.1.c.8		
EC291427		8.3-1, 8.3-2	
EC291808	6.8		
EC291813	9.5.1.5		
EC292531	1.8, 15.7, App 15C	15.7-19, 15.7-20, 15.7-21, 15C-5	

Enclosure 4 to SBK-L-19033

Listing of UFSAR Change Requests (UFCRs) Incorporated in
Fire Protection Safe Shutdown Capability (10CFR50, Appendix R), Revision 16

UFCR/UCR Number	Affected Sections	Affected Tables/ Tabulations	Affected Figures
EC287679		MCR 3.1.3.17	
EC290025	3.2	MCR 3.1.3.12, RSS 3.1.3.12	
EC290816	3.2, 3.7		
EC290867	3.2		
EC291451	3.3.3.1, 3.3.5		
EC291941		MCR 3.1.3.12, RSS 3.1.3.12	

Enclosure 5 to SBK-L-19033

Listing of UFSAR Change Requests (UFCRs) Incorporated in
Evaluation and Comparison to BTP APCSB 9.5-1, Appendix A Revision 17

UFCR/UCR Number	Affected Sections	Affected Tables	Affected Figures
EC283133	F.2,Tab 5		
EC289722	F.2, Tab 5, 8		

Enclosure 6 to SBK-L-19033

Listing of UFSAR Change Requests (UFCRs) Incorporated in
Revisions 154 through 157 of the Technical Requirements Manual

UFCR/UCR Number	Affected Sections	Affected Tables	Affected Figures
EC284920	TR-13, TR-14		
EC287676	TR-33		
EC287678	TR-13		
EC290437	TR-13, TR-14		
EC290642	COLR		
EC290680	TR-24		
EC290992	2.2.1		