NEXTera ENERGY SEABROOK

L-2022-106
10 CFR 50.90

June 27, 2022

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington DC 20555-0001

RE: Seabrook Station
Docket No. 50-443
Renewed Facility Operating License No. NPF-86

Revised Response to Request for Additional Information (RAI) Regarding License Amendment Request 21-01, Revise 120-Volt AC Vital Instrument Panel Requirements

References:

1. NextEra Energy Seabrook, LLC letter SBK-L-21067, License Amendment Request 21-01 , Revise 120-Volt AC Vital Instrument Panel Requirements, July 21, 2021 (ADAMS Accession No. ML21202A238)

2. Supplement to License Amendment Request 21-01, Revise 120-Volt AC Vital Instrument Panel Requirements, September 22, 2021 (ADAMS Accession No. ML21265A416)

3. NRC Electronic Memorandum dated January 7, 2022, Requests for Additional Information (RAIs) Regarding the License Amendment Request to Revise Technical Specification 3/4.8.3, "Onsite Power Distribution - Operating" Seabrook Station, Unit No. 1, Docket No. 50-443

4. NRC Electronic Memorandum dated February 7, 2022, Requests for Additional Information (RAIs) Regarding the License Amendment Request to Revise Technical Specification 3/4.8.3, "Onsite Power Distribution - Operating" Seabrook Station, Unit No. 1, Docket No. 50-443

5. Response to Request for Additional Information (RAI) Regarding License Amendment Request 21-01, Revise 120-Volt AC Vital Instrument Panel Requirements, March 7, 2022 (ADAMS Accession No. ML22066B007)

6. NRC Electronic Memorandum dated May 31, 2022, Requests for Additional Information (RAIs) Regarding the License Amendment Request to Revise Technical Specification 3/4.8.3, "Onsite Power Distribution - Operating" Seabrook Station, Unit No. 1, Docket No. 50-443

In Reference 1, NextEra Energy Seabrook, LLC (NextEra) requested an amendment to Renewed Facility Operating License (RFOL) NPF-86 for Seabrook Nuclear Plant Unit 1 (Seabrook). The proposed license amendment would modify Seabrook Technical Specifications (TS) 3.8.3, Onsite Power Distribution - Operating, by increasing the Allowed Outage Time (AOT) for the 120-volt AC vital instrument panel inverters, establishing a new required action for two inoperable 120-volt AC vital instrument panel inverters of the same electrical train and related administrative changes.

In Reference 2, NextEra provided supplemental information requested by the NRC during a September 1, 2021 conference call.

In Reference 5, NextEra responded to the NRC's request for additional information (RAI) provided in References 3 and 4.

In Reference 6, the NRC forwarded additional RAIs determined necessary to complete its review. The enclosure to this letter provides NextEra's RAI response.

The supplements included in this RAI response provide additional information that clarifies the application, do not expand the scope of the application as originally noticed, and should not change the NRC Staff's original proposed no significant hazards consideration determination as published in the Federal Register.

This letter contains no new regulatory commitments.

Should you have any questions regarding this submittal, please contact Mr. Michael Davis, Fleet Licensing Manager, at 319-851-7032.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on the 27th day of June 2022.

Sincerely,

for

Dianne Strand
General Manager, Regulatory Affairs

Enclosure

cc: USNRC Region I Administrator
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Seabrook Station

**Revised Response to Request for Additional Information (RAI) Regarding
License Amendment Request 21-01, Revise 120-Volt AC Vital Instrument Panel Requirements**

In an electronic memorandum dated May 20, 2031 (Reference 1), the NRC staff of the Office of Nuclear Reactor Regulation (NRR) requested additional information regarding NextEra Energy Seabrook, LLC (NextEra) License Amendment Request (LAR) 21-01, Revise 120-Volt AC Vital Instrument Panel Requirements. NextEra's response to the request for additional information (RAI) is provided below.

EEEB RAI - 5

In the licensee's response to EEEB RAI-2(b), the licensee stated the following:

> Specifically, in the event of two or more vital panel/inverter failures on the same electrical train due to the inoperability of the DC links to their associated inverters, the most likely scenario for the application of proposed ACTION d, the instrument panels would either remain energized from their normal inverter-powered Class 1 E qualified 480-volt MCCs or 125 VDC bus, or if power to the instrument panels were disrupted, their associated static transfer switches would shift power to their backup (aka maintenance) MCC power supplies, just as the case for a single inverter failure, and operating procedures direct manual transfer to the backup AC power supplies if required.

In the supplement dated September 22, 2021, the licensee had stated the following:

> The UPS units consist of a rectifier section which converts three-phase 460V AC power to a nominal 125 VDC power and an inverter section which inverts the DC power to single phase 120 VAC power. The inverters (two per train) assure an uninterruptible supply of AC electrical power to the AC vital buses even if the 4.16 kV safety buses are de-energized. The common DC bus which connects the rectifier output, the battery bank, and the input of the inverter, is called the DC link. Blocking circuitry installed in each UPS unit connect the battery source to the internal DC bus and prevents the 125 VDC batteries from supplying the inverter section when ac power is available and is capable of supplying the required output. Should AC power become unavailable or degrade below the allowable voltage, the diode instantly conducts, linking the internal DC bus to the battery supply providing power to the inverter section..

The NRC staff understands that based on the description of the UPSs in the September 22, 2021, supplement, either the Class 1E 480 VAC MCC through the rectifier or the 125 VDC power source supplies DC power to the inverter/panel via the DC link. Once the DC link is not available, the Class 1E 480 VAC MCC or the 125 VDC power source can no longer supply power to the inverter/panel. This staff's understanding is not consistent with the above underlined statement in response to EEEB RAI-2(b). Please clarify this inconsistency between the September 22, 2021 supplement and the response to EEEB RAI-2(b).

NextEra Response to EEEB RAI - 5

The Staff's understanding of the "DC link" is correct. Once the DC link is lost, i.e., the UPS/inverter's DC output from both the 480 VAC MCC and the battery backed 125 VDC output are unavailable, the affected instrument panel is no longer powered by the UPS/inverter and must be powered by the backup (maintenance) power supply and declared inoperable. The EEEB RAI-2(b) response was to note that the most likely scenario involving issues with the DC link is the unavailability of the 480 VAC MCC power source or the battery backed 125 VDC power source, but rarely both. However, in this scenario, the affected instrument panel would remain operable as long as the associated DC link output is powered from either the 480 VAC MCC or the battery backed 125 VDC bus. More likely, the affected instrument panel would be declared inoperable in order to conduct maintenance on the non-functioning

DC link power source during which both DC link power sources would be disconnected for electrical safety considerations and the affected instrument panel would be powered by the backup power supply.

EEEB RAI-6

In the supplement dated September 22, 2021, the licensee stated the following:

> During the proposed AOT extensions, power to the affected vital instrument panel will be maintained such that the assumptions and inputs associated with plant safety analyses are unaffected. Thereby, the balance of prevention and mitigation strategies remains preserved.

It appears that, based on the above statement, the assumptions and inputs associated with Seabrook's safety analyses would be affected if power to the affected 120 VAC vital instrument panel was not maintained using a maintenance supply from a non-Class 1 E 480-volt AC motor control center during the proposed 7-day AOT. However, the NRC staff notes that the maintenance power supply is not required by the Seabrook TS LCO 3.8.3.1 and/or for the operability of the 120 VAC vital instrument panel.

Clarify what power supply is credited such that the assumptions and inputs associated with plant safety analyses are unaffected. Clarify whether the inoperability of one 120 VAC vital instrument panel and the proposed associated AOT extension in the proposed revised TS 3.8.3.1 Action b will adversely affect any assumptions or inputs associated with Seabrook's safety analyses. If such assumptions or inputs will be affected, provide justification to ensure sufficient safety margin will continue to exist during the proposed AOT extension.

NextEra Response to EEEB RAI - 6

During the proposed AOT extensions, Class 1 electrical power to the fully capable and qualified redundant train of 120-volt AC vital instrument panels is available to support the minimum safety functions necessary to shut down and maintain the reactor in a safe shutdown condition. As such, the inoperability of one or more 120 VAC vital instrument panels of the same electrical train will not adversely affect any plant safety analysis inputs and assumptions. The balance of prevention and mitigation strategies remain preserved during the AOT extensions proposed for TS 3.8.3.1, ACTION b.

STSB RAI-1

In response to EEEB RAI-2(a), the licensee stated the following (in part):

> The proposed TS Bases will also clarify that upon exiting ACTION d and entering ACTION b for the remaining inoperable inverter, the proposed 7-day AOT of ACTION b begins at the time of initial inoperability (rather upon exiting ACTION d).

The purpose of the TS bases is to provide an explanation for the TS requirements. According to 10 CFR 50.36(a)(1), while TS bases should be included in an application, they are not to become a part of the TS. NRC staff noted that the proposed TS bases for TS 3.8.3.1 Action d appear to introduce a requirement to enter Action b. This requirement is only in the TS bases, not the proposed TS, which increases the possibility for misinterpretation. Please describe the location of this requirement in the TS or update the proposed TS to clarify the requirement.

NextEra Response to STSB RAI-1

The proposed TS Bases statement serves as guidance to the end user that LCO 3.0.2 applies to the condition of two or more inoperable 120-volt AC vital instrument panel inverters of the same electrical train. LCO 3.0.2 states that upon discovery of a failure to meet an LCO, the ACTIONS shall be met,

except as provided in LCO 3.0.5 and LCO 3.0.6. Since ACTION b.2 addresses the condition of an inoperable instrument panel inverter, both ACTION b.2 and proposed ACTION d.2 must be entered for the condition of two or more inoperable instrument panel inverters of the same electrical train and the associated completion times (aka AOTs) run concurrently. More specifically, upon exiting proposed ACTION d.2 after verifying at least two instrument panel inverters operable, ACTION b.2 applies to the remaining inoperable inverter, if any, and its AOT begins at the time of initial inoperability. The proposed TS Bases statement reinforces that the completion time for any inoperable inverter cannot extend beyond the AOT of ACTION b.2 and is consistent with Specification 3.0.2 of the Seabrook TS Bases which states, in part, that the completion time of each ACTION is applicable from the point in time that the ACTION is entered. Accordingly, a new TS requirement is not being introduced by the proposed TS Bases statement and an update to the proposed TS to clarify the requirement is not warranted.

STSB RAI-2

The licensee's response to RAI 2(c) states, in part, "For the reasons discussed in the response to EEEB RAI-1, operating experience has shown that the restoration of at least one inverter within the 8-hour AOT of proposed ACTION d is unlikely." NRC staff noted that this statement is in contradiction to proposed Action d.2 of TS 3.8.3.1 which requires, in part, that at least two AC vital panels be energized from their associated inverters and DC buses within eight hours when two or more AC vital panels of the same train are inoperable. In light of this information, please explain how the actions in proposed Action d.2 would meet the intent of 10 CFR 50.36(c)(2)(i) which states, in part, "When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met."

NextEra Response to STSB RAI-2

The discussion addressed in the response to RAI 2(c) of Reference 2 is not in contradiction to the proposed ACTION d.2 requirement to verify at least two AC vital instrument panels are energized from their associated inverters and DC buses within eight-hours. For the condition of two inoperable inverters (and one operable inverter) of the same electrical train, restoration of at least one inoperable inverter would be required to exit proposed ACTION d.2. Likewise, for the condition of three inoperable inverters of the same electrical train, restoration of at least two inverters would be required to exit proposed ACTION d.2. The discussion addressed in the response to RAI 2(c) of Reference 2 was only to acknowledge that restoration of one or more inverters within eight hours may be unlikely if major maintenance repair is required. A more relevant application of proposed ACTION d.2 is the sudden inoperability of a second inverter in the same electrical train as an inverter undergoing preventative maintenance, or a minor repair that can be accomplished in one shift, while the associated instrument panel is powered by its backup supply (and thereby inoperable). Without the 8-hour AOT of proposed ACTION d.2, there would be insufficient time to secure the maintenance activity, remove clearance tags and perform testing as necessary to return the inverter undergoing preventative maintenance or minor repair to operability before a unit shutdown would be required in accordance with LCO 3.0.3. The 8-hour AOT would avert the added risk of commencing an unplanned unit shutdown when from a plant safety perspective, focus should be on restoring normal Class 1 electrical power to the affected vital instrument panel(s). The proposed 8-hour AOT is reasonable given the fully capable and qualified redundant train of vital instrument panels available to meet safety analysis inputs and assumptions.

As it relates to this amendment request, the relevant portion of 10 CFR 50.36(c)(2)(i) states that when a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met. Under current TS 3.8.3.1, the unit must shutdown in accordance with LCO 3.0.3 for the condition of two or more inoperable 120-volt AC vital instrument panels of the same electrical train since no TS ACTION exists for more than one inoperable 120-volt AC vital instrument panel. NextEra believes the imposition of an immediate shutdown does not align with the safety significance of two or more inoperable vital instrument panels of the same electrical train. This is because the condition would not place the unit

outside of its design basis given the availability of the fully capable and qualified redundant electrical train to support the minimum safety functions necessary to shut down and maintain the reactor in a safe shutdown condition. In addition, power to the affected instrument panels is restored by means of their automatic and fast transfer switches to the backup (aka maintenance) MCC power supplies whenever the DC links to their associated inverters is lost, the most likely scenario for the application of proposed ACTION d, and operating procedures direct manual transfer to the backup AC power supplies if required. (In the case of vital instrument panel 1-EDE-PP-1D, which is not yet equipped with an integral static transfer switch for automatic and fast transfer to its backup power supply, a procedurally controlled manual transfer would be required within the 2-hour AOT proposed in ACTION d.1). The backup MCCs are non-safety related but are maintained fully qualified Class 1E in accordance with station procedures to further assure reliable power to the vital instrument panels. If upon loss of offsite power during the 8-hour AOT proposed in ACTION d.2, the affected instrument panels/inverters would be momentarily deenergized (~12 seconds) before being repowered from their maintenance-supply MCCs, which are EDG-backed. The redundant set of instrument panels/ inverters of the opposite train would be repowered by their normal EDG-backed, Class 1E MCC's. With power to the affected 120-volt AC vital instrument panels restored within the 2-hour AOT proposed in ACTION d.1, the instrument panels remain inoperable until the conditions in proposed ACTION d.2 for the associated instrument panel inverters are met. Consistent with 10 CFR 50.36(c)(2)(i), remedial actions are proposed which verify the operability of at least two instrument panel inverters within eight hours in order to exit ACTION d.2. For these reasons, NextEra believes the remedial actions of proposed ACTION d.2, in lieu of an immediate unit shutdown in accordance with LCO 3.0.3, complies with 10 CFR 50.36(c)(2)(i) for the 120 VAC vital instrument panel requirements of LCO 3.8.3.1.

References:

1. NRC Electronic Memorandum dated May 31, 2022, Requests for Additional Information (RAIs) Regarding the License Amendment Request to Revise Technical Specification 3/4.8.3, "Onsite Power Distribution - Operating" Seabrook Station, Unit No. 1, Docket No. 50-443

2. Response to Request for Additional Information (RAI) Regarding License Amendment Request 21-01, Revise 120-Volt AC Vital Instrument Panel Requirements, March 7, 2022 (ADAMS Accession No. ML22066B007)