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SBK-L-17063

United States Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, D.C. 20555-0001

Seabrook Station

Response to Request for Additional Information Regarding License Amendment Request 17-01
One-Time Exigent Change to the Seabrook Licensing Basis Regarding Service Water
Cooling Tower Functionality

References:

1. NextEra Energy Seabrook, LLC letter SBK-L-17041, "License Amendment Request 17-01 One-Time Exigent Change to the Seabrook Licensing Basis Regarding Service Water Cooling Tower Functionality," April 4, 2017
2. NRC E-mail "DRAFT - Request for Additional Information Regarding Exigent SW amendment request," April 6, 2017

In Reference 1, NextEra Energy Seabrook, LLC (NextEra) submitted an exigent license amendment request (LAR) for a one-time change to the licensing basis. The proposed change will allow NextEra to credit functionality of the service water (SW) system during the period that the SW cooling tower is unavailable while in Modes 5 and 6 during the current refueling outage.

In Reference 2, the NRC staff requested additional information to complete its review of the requested amendment. The Enclosure to this letter provides NextEra's response to the request for additional information (RAI). This response to the RAI does not alter the conclusion in Reference 1 that the change does not involve a significant hazards consideration pursuant to 10 CFR 50.92, and there are no significant environmental impacts associated with the change.

This letter contains no new or revised regulatory commitments.

If you have any questions or require additional information, please contact Ken Browne, Licensing Manager, at 603-773-7932.

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

Executed on April 8, 2017

Eric McCartney
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Enclosure

cc: NRC Region I Administrator
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ENCLOSURE

Response to Request for Additional Information Regarding License Amendment Request 17-01, One-Time Exigent Change to the Seabrook Licensing Basis Regarding Service Water Cooling Tower Functionality

RAI-SBPB -01:

Section 3.1 of Attachment 1 to the License Amendment Request included the following statement regarding the safety-significance of removing the cooling tower from service:

> Seabrook License Amendment 32 revised TS 3.7.4 with changes to take advantage of the extra redundancy in the SW system and UHS designs to provide enhanced flexibility during station operation. Among other changes, the amendment extended the allowed outage time for one inoperable cooling tower SW loop from 72 hours to seven days and added an allowed outage time of 72 hours for two inoperable cooling tower SW pumps. The safety evaluation for the amendment discussed the consequences of a loss of SW. For transients and loss of coolant accidents, loss of SW would fail primary component cooling leading to loss of cooling to the reactor coolant pump seals and to the emergency core cooling system pumps. For a loss-of-offsite-power event, loss of SW would fail the diesel generators leading to station blackout. In its safety evaluation, the NRC staff concluded that the proposed changes to TS 3/4.7.4 accurately reflect the SW system and UHS design bases and provide an adequate level of safety while providing considerable flexibility.
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> The changes approved in Amendment 32 allow continued operation for up to 72 hours in Modes 1 through 4 with both cooling tower loops or the cooling tower inoperable. In this condition, which the NRC concluded provides an adequate level of safety, the SW system does not meet GDC 2 for natural phenomenon (earthquakes). The proposed change to the licensing basis, however, would only be applicable in Modes 5 and 6, when the reactor coolant system is in a much lower energy state than in Modes 1 through 4, and the consequences of a loss of SW would be less severe.

For transient events in Modes 1 through 4, the fundamental safety function of decay heat removal is provided by rejecting heat to the atmosphere from the steam generators with secondary makeup from the auxiliary feedwater system. In these modes, thermal capacity and inventory of the reactor coolant system allows time to implement required procedures addressing a loss of service water before other fundamental safety functions (e.g., reactor coolant system inventory) would be challenged.

In Mode 6 and Mode 5 with the reactor coolant system loops not filled, the service water system is essential to the fundamental decay heat removal safety function. Specify the minimum expected time to recover decay heat removal before any temperature limits would be exceeded following a loss of service water. Recognizing the low probability of an event challenging the integrity of the tunnels to the normal heat sink, for such an event explain the actions needed to restore at least one loop of service water from the cooling tower during the planned maintenance activities, the expected time necessary for the actions, and the extent those actions are covered by procedures (e.g., defined in work plan or included in permanent procedure for loss of service water).

NextEra Response

The maximum expected time to recover decay heat removal is approximately 20 minutes. Actions needed for restoration of at least one loop of service water from the cooling tower will be specified in station procedure OS1016.12. The basic steps include recognition of the seismic event, the parallel activities of removing the diver(s) from the cooling tower basin and removal of clearance tags and racking in associated breakers followed by cooling tower actuation by the operations crew. A dry run of the procedure steps required for restoration will be performed to validate the 20 minute timeline.

If plant conditions warrant, including the event of any severe weather warning, diver(s) would be directed to exit the Cooling Tower basin. Assigned Nuclear System Operators (NSOs) stationed at the essential switch gear room and cooling tower would restore power to the pump(s) and, if necessary, manipulate system valves to allow Cooling Tower flow. The final step of restoration would be tower actuation by the operations crew per plant procedure.

During the postulated time period that SW flow may be interrupted, plant systems for heat removal would continue to function, albeit with reduced efficiency. The time is expected to be minimal and during the time period that both CT pumps would be tagged out, the time to boil is forecast to be approximately 30 minutes. As plant systems for heat removal would continue to function and actions needed for restoration of at least one cooling tower flow path can be restored in approximately 20 minutes, cooling will available prior to time to boil.

RAI-SBPB -02:

Section 3.1 of Attachment 1 to the License Amendment Request included the following statement among a list of administrative measures applicable to the maintenance activity:

> NextEra will perform a risk evaluation prior to removing the cooling tower from service with the reactor coolant system (RCS) in reduced inventory, with RCS time to boil less than six hours, or spent fuel pool time to reach 200 degrees F less than six hours.

The requirements of 10 CFR 50.65(a)(4) state in part that the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Clarify how the risk evaluation will be used to manage risk. Specifically, identify whether any minimum plant conditions are necessary for continuation with removal of the cooling tower from service (i.e., minimum RCS time to boil and minimum set of equipment supporting the decay heat removal and electric power functions).

NextEra Response

During each outage, the risk status of the plant configuration is evaluated at the beginning of each shift and includes a current risk status and a look-ahead risk status for upcoming plant activities. The current risk status indicates the overall plant risk level and identifies all of the major components within the key safety functions that are being relied on to manage plant risk via risk thresholds that are consistent with industry practice. The risk during SW Cooling Tower basin cleaning will be managed by the same risk management process. The highest risk window coinciding

with the cooling tower outage will be during flange and midloop operations with the RCS not intact. The cooling tower outage is scheduled for approximately two days. The risk is not driven by the cooling tower outage because of the high reliability of the Ocean SW, which includes four SW pumps. The SW Cooling Tower cleaning is scheduled to occur when the decay heat removal and AC electric power functions are required to be reliable – i.e., both trains of Ocean-SW/CCW/RHR and EDGs (and SEPS) will be available. In the highly unlikely event that the decay heat removal function is lost, the minimum RCS time-to-boil (TTB) during this period is approximately 30 minutes. Operations and work crews will be pre-briefed on efficient execution of the cooling tower restoration procedure, which is estimated to take approximately 20 minutes to complete.
A dry run of the actions needed for restoration of at least one loop of service water from the cooling tower will be conducted prior to the cooling tower cleaning activities during midloop operations to ensure completion time of approximately 20 minutes.

The SW cooling tower configuration to support diver cleaning would not be entered unless the estimated time to boil is equal to or greater than 30 minutes, the dry run of restoration action timeline and required crew briefings are complete and both trains of decay heat removal and EDGs are functional and protected via the protected train/guarded equipment program.

The likelihood of a major seismic event occurring during the cooling tower outage short duration is very low. In addition, the likelihood of a seismic-induced failure of the circulating water tunnels and associated transition structures is very low. Although these tunnels/structures were not specifically designed to Seismic Category 1 criteria, they are assessed as having considerable seismic capacity in the plant's seismic risk analysis of record. Also, the probability of a random loss of the Ocean SW function when the Cooling Tower is out-of-service is low. A complete loss of Ocean SW would require failure of multiple components. The reliability of the components is further enhanced through implementation of the protected train / guarded equipment program.