December 22, 2020
Docket No. 50-443
SBK-L-20154

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

Seabrook Station
Submittal of Changes to the Seabrook Station Technical Specification Bases

NextEra Energy Seabrook, LLC submits the enclosed changes to the Seabrook Station Technical Specification Bases. The changes were made in accordance with Technical Specification 6.7.6.j., "Technical Specification (TS) Bases Control Program." Please update the Technical Specification Bases as follows:

REMOVE	INSERT
B 2-7	B 2-7
B 3/4 1-4	B 3/4 1-4 B 3/4 1-5 B 3/4 1-6 B 3/4 1-7 B 3/4 1-8 B 3/4 1-9
B 3/4 10-1	B 3/4 10-1
B 3/4 5-1 B 3/4 5-1a	B 3/4 5-1 B 3/4 5-1a

Should you have any questions concerning this submittal, please contact me at (603) 773-7932.

Sincerely,

NextEra Energy Seabrook, LLC

Kenneth Browne
Safety Assurance and Learning Site Director

cc: D. Lew, NRC Region I Administrator
J. Poole, NRC Project Manager, Project Directorate I-2
C. Newport, NRC Senior Resident Inspector

Enclosure to SBK-L-20154

2.2.1 REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS (Continued)

Undervoltage and Underfrequency - Reactor Coolant Pump Busses

The Undervoltage and Underfrequency Reactor Coolant Pump Bus trips provide core protection against DNB as a result of complete loss of forced coolant flow. The specified Setpoints assure a Reactor trip signal is generated before the Low Flow Trip Setpoint is reached. Time delays are incorporated in the Underfrequency and Undervoltage trips to prevent spurious Reactor trips from momentary electrical power transients. For undervoltage, the delay is set so that the total delay between the time the bus supply voltage on two or more reactor coolant pump bus circuits is lost and the time the control rods are free and begin to fall into the core shall not exceed 2.25 seconds. For underfrequency, the delay is set so that the time required for a signal to reach the Reactor trip breakers after the Underfrequency Trip Setpoint is reached shall not exceed 0.6 second. On decreasing power the Undervoltage and Underfrequency Reactor Coolant Pump Bus trips are automatically blocked by P-7 (a power level of approximately 10% of RATED THERMAL POWER with a turbine impulse chamber pressure at approximately 10% of full power equivalent); and on increasing power, the Undervoltage and Underfrequency Reactor Coolant Pump Bus trips are reinstated automatically by P-7.

Turbine Trip

A Turbine trip initiates a Reactor trip. On decreasing power, the Reactor trip from the Turbine trip is automatically blocked by P-9 (a power level of approximately 45% of RATED THERMAL POWER during normal power operation or a power level of approximately 20% of RATED THERMAL POWER during Tavg or Tavg/power coastdown operation); and on increasing power, the Reactor trip from the Turbine trip is reinstated automatically by P-9.

Safety Injection Input from ESF

If a Reactor trip has not already been generated by the Reactor Trip System instrumentation, the ESF automatic actuation logic channels will initiate a Reactor trip upon any signal which initiates a Safety Injection. The ESF instrumentation channels that initiate a Safety Injection signal are shown in Table 3.3-3.

Reactor Trip System Interlocks

The Reactor Trip System interlocks perform the following functions:

P-6 On increasing power, P-6 allows the manual block of the Source Range trip (i.e., prevents premature block of Source Range trip). On decreasing power, Source Range Level trips are automatically reactivated and high voltage is restored.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The OPERABILITY (i.e., trippability) of the shutdown and control rods is an initial assumption in all safety analyses that assume rod insertion upon reactor trip. Maximum rod misalignment is an initial assumption in the safety analysis that directly affects core power distributions and assumptions of available shutdown margin (SDM). The specifications of this section ensure that: (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of rod misalignment on associated accident analyses are limited.

The limits on control rod alignment ensure that the assumptions in the safety analysis will remain valid. The requirement for control rod OPERABILITY ensures that upon reactor trip, the assumed reactivity ·will be available and will be inserted. The control rod OPERABILITY requirements (i.e., trippability) are separate from the alignment requirements, which ensure that the RCCAs and banks maintain the correct power distribution and rod alignment. The rod OPERABILITY requirement is satisfied provided the rod will fully insert in the required rod drop time assumed in the safety analysis. Rod control malfunctions that result in the inability to move a rod (e.g., rod lift coil failures), but that do not impact trippability, do not result in rod inoperability.

ACTION a

When one or more rods are inoperable (i.e., untrippable), there is a possibility that the required SDM may be adversely affected. Under these conditions, it is important to determine the SDM, and if it is less than the required value, initiate boration until the required SDM is recovered. The completion time of 1 hour is adequate for determining SDM and, if necessary, for initiating boration and restoring SDM. The SDM verification must include the worth of the untrippable rod, as well as a rod of maximum worth.

ACTION b

When entering ACTION b, it is incumbent upon the plant to verify the trippability of the inoperable control rod(s). Trippability is defined in Attachment C to a letter dated December 21, 1984, from E. P. Rahe (Westinghouse) to C. 0. Thomas (NRC). This may be by verification of a control system failure, usually electrical in nature, or that the failure is associated with the control rod stepping mechanism. In the event the plant is unable to verify the rod(s) trippability, it must be assumed to be untrippable and thus falls under the requirements of ACTION a.

Surveillance Requirement (SR) 4.1.3.1.1

Verifying that the position of individual rods is within alignment limits is performed in accordance with the Surveillance Frequency Control Program. The SR is modified by a Note that permits it to not be performed for rods associated with an inoperable demand position indicator or an inoperable rod position indicator. The alignment limit is based on the demand position indicator, which is not available if the indicator is inoperable. TS 3.1.3.2, "Rod Position Indication System - Operating," provides Actions to verify the rods are in alignment when one or more rod position indicators are inoperable.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES (continued)

SR 4.1.3.1.2

Verifying each control rod is OPERABLE would require that each rod be tripped. However, in MODES 1 and 2 with Keff 2: 1.0, tripping each control rod would result in radial or axial power tilts, or oscillations. Exercising each individual control rod provides increased confidence that all rods continue to be OPERABLE without exceeding the alignment limit, even if they are not regularly tripped. Moving each control rod by 10 steps will not cause radial or axial power tilts, or oscillations, to occur. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

Between required performances of SR 4.1.3.2 (determination of control rod OPERABILITY by movement), if a control rod(s) is discovered to be immovable, but remains trippable, the control rod(s) is considered to be OPERABLE. At any time, if a control rod(s) is immovable, a determination of the trippability (OPERABILITY) of the control rod(s) must be made and appropriate action taken.

3/4.1.3.2 Position Indication Systems – Operating

OPERABILITY of the control rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits. The OPERABILITY, including position indication, of the shutdown and control rods is an initial assumption in all safety analyses that assume rod insertion upon reactor trip. Maximum rod misalignment is an initial assumption in the safety analysis that directly affects core power distributions and assumptions of available SDM. Rod position indication is required to assess OPERABILITY and misalignment. The requirements for position indication are only applicable in MODES 1 and 2 (consistent with TS 3.1.3.1, 3.1.3.5, and 3.1.3.6) because these are the only MODES in which power is generated, and the OPERABILITY and alignment of rods have the potential to affect the safety of the plant.

ACTION a

When one DRPI channel per group in one or more groups fails, the position of the rod may still be determined indirectly by use of the incore detectors. Based on experience, normal power operation does not require excessive movement of banks. If a bank has been moved significantly, ACTION c is applicable. Verification of RCCA position within 8 hours is adequate for allowing continued full power operation since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small.

ACTION b

When more than one DRPI per group in one or more groups fail, additional actions are necessary. Placing the Rod Control System in manual assures unplanned rod motion will not occur. The immediate completion time for placing the rod control system in manual reflects the urgency with which unplanned rod motion must be prevented while in this condition.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES (continued)

The inoperable DRPIs must be restored, such that a maximum of one DRPI per group is inoperable, within 24 hours. Twenty-four hours provides sufficient time to troubleshoot and restore the DRPI system to operation while avoiding the plant challenges associated with a plant shutdown without full rod position indication. Based on operating experience, normal power operation does not require excessive rod movement. If one or more rods have been moved significantly, ACTION c is applicable.

ACTION c

With one DRPI inoperable in one or more groups and the affected groups moved greater than 24 steps in one direction since the last determination of rod position, additional actions are needed to verify the position of rods within inoperable DRPI. Within 4 hours, the position of the rods with inoperable position indication must be determined using the incore detector system to verify these rods are still properly positioned relative to their group positions.

If, within 4 hours, the rod positions have not been determined, THERMAL POWER must be reduced to ≤ 50% RTP within 8 hours to avoid undesirable power distributions that could result from continued operation at > 50% RTP if one or more rods are misaligned by more than 24 steps. The allowed time of 4 hours provides an acceptable period of time to verify the rod positions.

ACTION d

With one or more demand position indicators per bank inoperable in one or more banks, the rod positions can be determined by the DRPI system. Since normal power operation does not require excessive movement of rods, verification by administrative means that the rod position indicators are OPERABLE and the most withdrawn rod and the least withdrawn rod are ≤ 12 steps apart once every 8 hours is adequate.

SR 4.1.3.2

Verification that the DRPI agrees with the demanded position within± 12 steps at 24, 48, 120, and 228 steps withdrawn for the control banks and 18, 210, and 228 steps withdrawn for the shutdown banks provides assurances that the DRPI is operating correctly over the full range of indication. Since the DRPI does not indicate the actual shutdown rod position between 18 steps and 210 steps, only points in the indicated ranges are used for verification of agreement with demanded position.

The Surveillance is modified by a Note that states it is not required to be met for DRPIs associated with rods that do not meet LCO 3.1.3.1. If a rod is known to not to be within 12 steps of the group demand position, the ACTIONS of LCO 3.1.3.1 provide the appropriate Actions.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES (continued)

3/4.1.3.4 Rod Drop Time

The maximum rod drop time restriction is consistent with the assumed rod drop time used in the safety analyses. Measurement with rods at their individual mechanical fully withdrawn position, Tavg greater than or equal to 551°F and all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a reactor trip at operating conditions.

3/4.1.3.5 Shutdown Rod Insertion Limit

On a reactor trip, all RCCAs (shutdown banks and control banks), except the most reactive RCCA, are assumed to insert into the core. The shutdown banks must be within their insertion limits any time the reactor is critical or approaching criticality. This ensures that a sufficient amount of negative reactivity is available to shut down the reactor and maintain the required SDM following a reactor trip. The shutdown bank insertion limits are defined in the COLR. The shutdown banks must be within their insertion limits any time the reactor is critical or approaching criticality. This ensures that a sufficient amount of negative reactivity is available to shut down the reactor and maintain the required SDM following a reactor trip. The shutdown bank insertion limits are defined in the COLR.

LCO

The shutdown banks must be within their insertion limits any time the reactor is critical or approaching criticality. This ensures that a sufficient amount of negative reactivity is available to shut down the reactor and maintain the required SDM following a reactor trip. The shutdown bank insertion limits are defined in the COLR.

The LCO is modified by a Note indicating the LCO requirement is not applicable to shutdown banks being inserted while performing SR 4.1.3.1.2. This SR verifies the freedom of the rods to move, and may require the shutdown bank to move below the LCO limits, which would normally violate the LCO. This Note applies to each shutdown bank as it is moved below the insertion limit to perform the SR. This Note is not applicable should a malfunction stop performance of the SR.

ACTION a

When one or more shutdown banks is not within insertion limits for reasons other than ACTION b, two hours is allowed to restore the shutdown banks to within the insertion limits. This is necessary because the available SDM may be significantly reduced, with one or

3/4.1.3 MOVABLE CONTROL ASSEMBLIES (continued)

more of the shutdown banks not within their insertion limits. Also, verification of SDM or initiation of boration within 1 hour is required, since the SDM in MODES 1 and 2 is ensured by adhering to the control and shutdown bank insertion limits.

ACTION b

If one shutdown bank is inserted less than or equal to 10 steps below the insertion limit, 24 hours is allowed to restore the shutdown bank to ·within the limit. This is necessary because the available SDM may be reduced with a shutdown bank not within its insertion limit. In addition, verification of SDM or initiation of boration within 1 hour is required since the SDM in MODES 1 and 2 is ensured by adhering to the control and shutdown bank insertion limits. If a shutdown bank is not within its insertion limit, SDM will be verified by performing a reactivity balance calculation considering the effects listed in SR 4.1.1.1.1e. While the shutdown bank is outside the insertion limit, all control banks must be within their insertion limits to ensure sufficient shutdown margin is available. The 24 hours provided is sufficient time to repair most rod control failures that would prevent movement of a shutdown bank.

3/4.1.3.6

LCO

The limits on control banks physical insertion, as defined in the COLR, must be maintained to ensure that SDM is maintained, ejected rod worth is maintained, and adequate negative reactivity insertion is available on trip.

The LCO is modified by a Note indicating the LCO requirement is not applicable to control banks being inserted while performing SR 4.1.3.1.2. This SR verifies the freedom of the rods to move, and may require the control bank to move below the LCO limits, which would normally violate the LCO. This Note applies to each control bank as it is moved below the insertion limit to perform the SR. This Note is not applicable should a malfunction stop performance of the SR.

ACTION a

When the control banks are outside the acceptable insertion limits for reasons other than ACTION b, they must be restored to within limits. This restoration can occur in two ways:

a. Reducing power to be consistent with rod position or
b. Moving rods to be consistent with power.

In addition, verification of SDM or initiation of boration to regain SDM is required within 1 hour, since the SDM in MODES 1 and 2 is ensured by adhering to the control and shutdown bank insertion limits. If control banks are not ·within their insertion limits, then SDM will be

3/4.1.3 MOVABLE CONTROL ASSEMBLIES (continued)

verified by performing a reactivity balance calculation considering the effects listed in SR 4.1.1.1.1e.

ACTION b

If control bank A, B, or C is inserted less than or equal to 10 steps below the insertion limit, 24 hours is allowed to restore the control bank to within the limits. Verification of SDM or initiation of boration within 1 hour is required, since the SDM in MODES 1 and 2 is ensured by adhering to the control and shutdown bank insertion limits. If a control bank is not within its insertion limit, SDM will be verified by performing a reactivity balance calculation, considering the effects listed in SR 4.1.1.1.1.e.

While the control bank is outside the insertion limit, all shutdown banks must be within their insertion limits to ensure sufficient shutdown margin is available and that power distribution is controlled. The 24-hour completion time is sufficient to repair most rod control failures that would prevent movement of a shutdown bank. Action b s limited to control banks A, B, or C. The allowance is not required for control bank D because the full power bank insertion limit can be met during performance of the SR 3.1.4.2 control rod freedom of movement (trippability) testing.

3/4.10.1 SHUTDOWN MARGIN

This special test exception provides that a minimum amount of control rod worth is immediately available for reactivity control when tests are performed for control rod worth measurement. This special test exception is required to permit the periodic verification of the actual versus predicted core reactivity condition occurring as a result of fuel burnup or fuel cycling operations.

3/4.10.2 GROUP HEIGHT, INSERTION, AND POWER DISTRIBUTION LIMITS

This special test exception permits individual control rods to be positioned outside of their normal group heights and insertion limits during the performance of such PHYSICS TESTS as those required to: (1) measure control rod worth and (2) determine the reactor stability index and damping factor under xenon oscillation conditions.

3/4.10.3 PHYSICS TESTS

This special test exception permits PHYSICS TESTS to be performed at less than or equal to 5% of RATED THERMAL POWER with the RCS T_{avg} slightly lower than normally allowed so that the fundamental nuclear characteristics of the core and related instrumentation can be verified. In order for various characteristics to be accurately measured, it is at times necessary to operate outside the normal restrictions of these Technical Specifications. For instance, to measure the moderator temperature coefficient at BOL, it is necessary to position the various control rods at heights which may not normally be allowed by Specification 3.1.3.6 and the RCS T_{avg} may be below the minimum temperature of Specification 3.1.1.4 during the measurement.

3/4.10.4 (THIS SPECIFICATION NUMBER IS NOT USED)

3/4.10.5 (THIS SPECIFICATION NUMBER IS NOT USED)

3/4.5 EMERGENCY CORE COOLING SYSTEMS

BASES

3/4.5.1 ACCUMULATORS

The OPERABILITY of each Reactor Coolant System (RCS) accumulator ensures that a sufficient volume of borated water will be immediately forced into the reactor core through each of the cold legs in the event the RCS pressure falls below the pressure of the accumulators. This initial surge of water into the core provides the initial cooling mechanism during large RCS pipe ruptures.

The limits on accumulator volume, boron concentration, and pressure ensure that the assumptions used for accumulator injection in the safety analysis are met.

In MODES 1 and 2, the accumulator power-operated isolation valves are considered to be "operating bypasses" in the context of IEEE Std. 279-1971, which requires that bypasses of a protective function be removed automatically whenever permissive conditions are not met. In MODES 1, 2, 3, and in MODE 4 within 12 hours of entry into MODE 3 from 4, the accumulator isolation valves are open with their power removed whenever pressurizer pressure is greater than 1000 psig. In addition, as these accumulator isolation valves fail to meet single-failure criteria, removal of power to the valves is required.

Action a.

If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 24 hours. In this condition, the required contents of three accumulators cannot be assumed to reach the core during a LOCA. Due to the severity of the consequences should a LOCA occur in these conditions, the 24 hour completion time to open the valve, remove power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The completion time minimizes the potential for exposure of the plant to a LOCA under these conditions. The 24 hours allowed to restore an inoperable accumulator to OPERABLE status is justified in WCAP-15049-A, Rev. 1.

Action b.

If the boron concentration in one accumulator is not within limits, it must be returned to within the limits within 72 hours. In this condition, ability to maintain subcriticality or minimum boron precipitation time may be reduced. The boron in the accumulators contributes to the assumption that the combined ECCS water in the partially recovered core during the early reflooding phase of a large break LOCA is sufficient to keep that portion of the core subcritical. One accumulator below the minimum boron concentration limit, however, will have no effect on available ECCS water and an insignificant effect on core subcriticality during reflood. Boiling of ECCS water in the core during reflood concentrates boron in the saturated liquid that remains in the core. Thus, 72 hours is allowed to return the boron concentration to within limits.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one subsystem through any single-failure consideration. Either subsystem operating in conjunction with the accumulators is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double-ended break of the largest RCS cold-leg pipe downward. In addition, each ECCS subsystem provides long-term core cooling capability in the recirculation mode during the accident recovery period. Managing of gas voids is important to ECCS OPERABILITY.

Operability of the ECCS flow paths is contingent on the ability of the encapsulations surrounding the containment sump isolation valves (CBS-V8 and CBS-V14) to perform their design functions. During the recirculation phase of an accident, any postulated leakage resulting from the failure of the valves or piping will be contained within the encapsulations, preserving the water inventory needed to support ECCS operation during recirculation. Consequently, maintaining the encapsulations intact with leakage within allowable limits is necessary to ensure operability of the ECCS flow paths. Although designed to withstand containment pressure, the encapsulations do not function as a containment boundary, but rather prevent the release of radioactive fluid and gasses to the environment.

Each operable RHR subsystem must remain aligned to provide injection into all four RCS cold legs to meet the assumptions in the ECCS analysis. Isolating RHR flow to any RCS cold leg in MODES 1, 2, or 3 would render both trains of ECCS inoperable, placing the plant in a condition outside design bases.

A Note prohibits the application of LCO 3.0.4.b to an inoperable ECCS high head subsystem when entering MODE 4. There is an increased risk associated with entering MODE 4 from MODE 5 with an inoperable ECCS high head subsystem. The provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

With the RCS temperature below 350°F, the ECCS operational requirements are reduced. Only one OPERABLE ECCS subsystem is acceptable without single failure consideration during MODE 4 operation on the basis of the stable reactivity condition of the reactor and the limited core cooling requirements, as well as the reduced probability of occurrence of a Design Basis Accident (DBA). It is understood in these reductions in operational requirements that certain automatic safety injection (SI) actuation is not available. In this MODE, sufficient time exists for manual actuation of the required ECCS to mitigate the consequences of a DBA. LCO Condition d. requires that an OPERABLE flow path must be capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation. Thus, LCO Condition d. allows for the manual realignment of the OPERABLE ECCS subsystem to support the ECCS mode of operation.