UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 22, 2021

Mr. Bob Coffey
Executive Vice President, Nuclear
and Chief Nuclear Officer
Florida Power & Light Company
NextEra Energy Seabrook, LLC
Mail Stop: EX/JB
700 Universe Blvd.
Juno Beach, FL 33408

SUBJECT: SEABROOK STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT NO. 169 RE: NON-CONSERVATIVE HEAT FLUX HOT CHANNEL FACTOR REQUIREMENTS (EPID L-2020-LLA-0187)

Dear Mr. Coffey:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 169 to Renewed Facility Operating License No. NPF-86 for the Seabrook Station, Unit No. 1. This amendment consists of changes to the technical specifications (TSs) in response to your application dated August 17, 2020, as supplemented by letter dated March 24, 2021.

The amendment revises the TSs in order to resolve non-conservative requirements associated with nuclear heat flux hot channel factor, as reported in Westinghouse Nuclear Safety Advisory Letter 09-5, Revision 1, and Nuclear Safety Advisory Letter 15-1.

A copy of the related safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's monthly *Federal Register* notice.

Sincerely,

/RA/

Justin C. Poole, Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosures:
1. Amendment No. 169 to NPF-86
2. Safety Evaluation

cc: Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

NEXTERA ENERGY SEABROOK, LLC, ET AL.*

DOCKET NO. 50-443

SEABROOK STATION, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 169
License No. NPF-86

1. The Nuclear Regulatory Commission (the Commission) has found that:

A. The application for amendment filed by NextEra Energy Seabrook, LLC, et al. (the licensee), dated August 17, 2020, as supplemented by letter dated March 24, 2021, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

*NextEra Energy Seabrook, LLC, is authorized to act as agent for the: Hudson Light & Power Department, Massachusetts Municipal Wholesale Electric Company, and Taunton Municipal Lighting Plant (collectively, with NextEra Energy Seabrook, LLC, "licensees") and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-86 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 169, are incorporated into the Renewed Facility Operating License No. NPF-86. NextEra Energy Seabrook, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

James G. Danna

Digitally signed by James G. Danna
Date: 2021.09.22 11:44:12 -04'00'

James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility Operating License and Technical Specifications

Date of Issuance: September 22, 2021

ATTACHMENT TO LICENSE AMENDMENT NO. 169

SEABROOK STATION, UNIT NO. 1

RENEWED FACILITY OPERATING LICENSE NO. NPF-86

DOCKET NO. 50-443

Replace the following page of Renewed Facility Operating License No. NPF-86 with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove	Insert
3	3

Replace the following pages of the Appendix A, Technical Specifications, with the attached revised pages as indicated. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

Remove	Insert
3/4 2-4	3/4 2-4
3/4 2-6	3/4 2-6
3/4 2-6a	3/4 2-6a
3/4 2-6b	3/4 2-6b
---	6-20a

(3) NextEra Energy Seabrook, LLC, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

(4) NextEra Energy Seabrook, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(5) NextEra Energy Seabrook, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

(6) NextEra Energy Seabrook, LLC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility authorized herein.

(7) DELETED

C. This renewed license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

NextEra Energy Seabrook, LLC, is authorized to operate the facility at reactor core power levels not in excess of 3648 megawatts thermal (100% of rated power).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 169, are incorporated into the Renewed Facility Operating License No. NPF-86. NextEra Energy Seabrook, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3/4 2.2 HEAT FLUX HOT CHANNEL FACTOR - $F_Q(Z)$

LIMITING CONDITION FOR OPERATION

3.2.2 $F_Q(Z)$, as approximated by $F_Q^W(Z)$, shall be within the limits specified in the COLR:

APPLICABILITY: MODE 1.

ACTION:

With $F_Q^W(Z)$ exceeding its limit:

1. Within 4 hours, implement a RAOC operating space if specified in the COLR that restores $F_Q^W(Z)$ to within limits, and within 72 hours, perform SR 4.2.2.2.a and SR 4.2.2.2.b if control rod motion is required to comply with the new operating space. .

OR

2. Perform the following:

---------- NOTE ----------
Required Action 2.4 shall be completed whenever Required Action 2.1 is performed prior to increasing THERMAL POWER above the limit of Required Action 2.1

1. Within 4 hours, limit THERMAL POWER to less than RATED THERMAL POWER and reduce AFD limits as specified in the COLR, and

2. Within 72 hours, reduce Power Range Neutron Flux - High trip setpoints ≥ 1% for each 1% that THERMAL POWER is limited below RATED THERMAL POWER required by Action 2.1, and

3. Within 72 hours, reduce Overpower ΔT trip setpoints ≥ 1% for each 1% that THERMAL POWER is limited below RATED THERMAL POWER required by Action 2.1, and

4. Perform SR 4.2.2.2.a and 4.2.2.2.b prior to increasing THERMAL POWER above the limit of Required Action 2.1.

SURVEILLANCE REQUIREMENTS

4.2.2.1 The provisions of Specification 4.0.4 are not applicable.

4.2.2.2 $F_Q(Z)$ shall be evaluated to determine if $F_Q(Z)$ is within its limits by:

a. Using the incore detectors to obtain a power distribution map at any THERMAL POWER greater than 5% of RATED THERMAL POWER.

b. Satisfying the $F_Q(Z)$ relationships specified in the COLR.

c. DELETED.

d. Verifying $F_Q^W(Z)$ to be within its limits according to the following schedule,

1) Upon achieving equilibrium conditions after exceeding by 20% or more of RATED THERMAL POWER, the THERMAL POWER at which $F_Q^W(Z)$ was last determined*, or

2) In accordance with the Surveillance Frequency Control Program, whichever occurs first.

* During power escalation at the beginning of each cycle, power level may be increased until a power level for extended operation has been achieved and a power distribution map obtained.

e. DELETED.

f. DELETED.

g. DELETED.

4.2.2.3 DELETED.

4.2.2.4 (THIS SPECIFICATION NUMBER IS NOT USED)

6.8.1.6.b (Continued)

17. License Amendment 169 issued 09/22/21 (ADAMS Accession No. ML21190A177)

Methodology for Specification:

3.2.2 - Heat Flux Hot Channel Factor

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 169 TO FACILITY OPERATING LICENSE NO. NPF-86

NEXTERA ENERGY SEABROOK, LLC

SEABROOK STATION, UNIT NO. 1

DOCKET NO. 50-443

1.0 INTRODUCTION

By letter dated August 17, 2020, as supplemented by letter dated March 24, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML20230A425 and ML21083A250, respectively), NextEra Energy Seabrook, LLC (NextEra or the licensee) submitted License Amendment Request (LAR) No. 20-02, requesting changes to the technical specifications (TSs) for Seabrook Station, Unit No. 1 (Seabrook). Specifically, the LAR would revise TS 3/4.2.2 in order to resolve the non-conservative TS requirements associated with heat flux hot channel factor, $F_Q(Z)$ (RAOC-W(Z) Methodology), as identified in Westinghouse Nuclear Safety Advisory Letter (NSAL)-09-5, Revision 1, "Relaxed Axial Offset Control F_Q Technical Specification Actions," dated September 23, 2009, and NSAL-15-1, "Heat Flux Hot Channel Factor Technical Specification Surveillance," dated February 3, 2015. The proposed TS 3/4.2.2 is intended to resolve the identified non-conservative TS requirements by implementing selected improvements in the $F_Q(Z)$ surveillance formulations and Required Actions included in the NRC-approved topical report (TR) WCAP-17661-P-A, Revision 1, "Improved RAOC and CAOC F_Q Surveillance Technical Specifications" (ADAMS Accession Nos. ML19225C083 for Part 1 of 2 and ML19225C084 for Part 2 of 2). WCAP-17661-P-A, Revision 1 addresses issues previously discussed in NSAL-09-5, Revision 1 and NSAL-15-1. These NSALs identified non-conservatisms in the methodology in Westinghouse Standard TS (STS) 3.2.1B, "Heat Flux Hot Channel Factor ($F_Q(Z)$ (RAOC-W(Z) Methodology)," for plants that have implemented the relaxed axial offset control (RAOC) methodology. Seabrook is administratively implementing conservative interim actions consistent with the NSAL recommendations and NRC Administrative Letter 98-10 (ADAMS Accession No. ML031110108), "Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety."

The supplement dated March 24, 2021, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on November 3, 2020 (85 FR 69655).

2.0 REGULATORY EVALUATION

The specification for the F_Q limits ensures that the values of the initial total peaking factor assumed in the accident and transient analyses remain valid. As noted in NUREG-1431, Revision 4 (ADAMS Accession Nos. ML12100A222 for Volume 1 and ML12100A228 for Volume 2), "Standard Technical Specifications: Westinghouse Plants," the F_Q limits assumed in the emergency core cooling system (ECCS) performance analysis are typically limiting relative to the F_Q limits assumed in safety analyses for other postulated accidents and anticipated operational occurrences (AOOs). Even if the ECCS limits are less limiting than those determined by another safety analysis, specification of and adherence to the F_Q limits still ensures that facility operation remains bounded by the safety analyses.

The regulatory evaluation thus identified performance requirements and design criteria contained within Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, "Domestic Licensing of Production and Utilization Facilities." The applicable requirements related to the specific content of TSs, relative to the facility safety analyses, are also included.

2.1 Performance Requirements and Design Criteria

The performance requirements and design criteria applicable to the power distribution assumed in the safety analysis are those that pertain to accident and transient analysis. Primarily, these include the requirements contained in 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," and General Design Criterion (GDC) 10 contained in Appendix A, "General Design Criteria for Nuclear Power Plants." Since the TSs also prescribe appropriate remedial action to follow if TS limitations are not met, some additional GDC relative to the reactor protection and reactivity control systems apply, as listed below.

The requirements in 10 CFR 50.46 state, in part, that the emergency core cooling system shall be designed such that an evaluation performed using an acceptable evaluation model demonstrates that acceptance criteria set forth in 10 CFR 50.46(b), including peak cladding temperature, maximum cladding oxidation, maximum hydrogen generation, maintenance of coolable core geometry, and long-term core cooling, are met for a variety of hypothetical loss-of-coolant accidents (LOCAs), including the most severe hypothetical LOCA.

GDC 10, "Reactor design," states that the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits (SAFDLs) are not exceeded during any condition of normal operation, including the effects of AOOs.

GDC 20, "Protection system functions," states that the protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that SAFDLs are not exceeded as a result of AOOs and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

GDC 26, "Reactivity control system redundancy and capability," states that two independent reactivity control systems of different design principles shall be provided. One of the systems shall use control rods, preferably including a positive means for inserting the rods, and shall be capable of reliably controlling reactivity changes to assure that under conditions of normal operation, including AOOs, and with appropriate margin for malfunctions such as stuck rods, specified acceptable fuel design limits are not exceeded. The second reactivity control system shall be capable of reliably controlling the rate of reactivity changes resulting from planned,

normal power changes (including xenon burnout) to assure acceptable fuel design limits are not exceeded. One of the systems shall be capable of holding the reactor core subcritical under cold conditions.

The requirements for TSs are set forth in 10 CFR 50.36, "Technical specifications." Specific categories of TSs are provided in 10 CFR 50.36(c). These include, in part, limiting conditions for operation (LCOs), surveillance requirements (SRs), and Administrative Controls. If an LCO is not met, the facility must be shut down, or other acceptable remedial action must be taken. SRs are intended to ensure that facility operation remains within the LCOs.

Paragraph (c)(2) of 10 CFR 50.36 discusses LCOs, stating that such TSs are the lowest functional capability or performance levels of equipment required for safe operation of the facility. The requirements indicate that LCOs must be established for each item that meets one or more of four criteria. One of the criteria is a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident (DBA) or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

Paragraph (c)(3) of 10 CFR 50.36 states that surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

Paragraph (c)(5) of 10 CFR 50.36 states that Administrative Controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner. Each licensee shall submit any reports to the Commission pursuant to approved technical specifications as specified in 10 CFR 50.4.

The guidance contained in Generic Letter (GL) 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," dated October 4, 1988 (ADAMS Accession No. ML031200485), provides a means by which the values of certain parameters could be determined and modified on a cycle-specific basis without prior NRC review and approval. In order to implement this guidance, licensees are required to do the following: (1) use NRC-approved methodology to determine the operating limits; (2) include a list in the TS Administrative Controls section of the references used to determine the operating limits; and (3) maintain the limits in a core operating limits report (COLR), which must be submitted to the NRC for information. Seabrook TS 6.8.1.6, "CORE OPERATING LIMITS REPORT" contains the plant-specific implementation of the GL 88-16 guidance.

2.2 Regulatory Requirements Application

The safety analyses required to establish that a facility will comply with the requirements of 10 CFR 50.46 and with GDC 10 require, as input, the peak fuel power and the power distribution. Since the peak power and the power distribution are initial conditions of design basis accident and transient analyses, facility operation must be controlled by LCOs that are established based on these parameters. Hence, Westinghouse pressurized-water reactors (PWRs) have LCOs relative to F_Q. In accordance with 10 CFR 50.36(c)(2), the LCO is accompanied by SRs to ensure that the LCO is satisfied. At plants that have implemented GL 88-16, specific parameter values may be administratively controlled, and in such cases, these parameters must be determined in accordance with NRC-approved methodology and contained in the facility COLR.

If, during performance of an SR, the F_Q is determined not to be within the limit, then the LCO is not met, and the TS remedial actions must be followed to ensure that facility operation remains safe. These remedial actions are based on (1) restoring compliance with the LCO, and (2) adjusting the reactor protection system settings so that the functionality required by GDC 20 and GDC 26 is maintained.

3.0 TECHNICAL EVALUATION

The proposed changes to TS 3/4.2.2 address the issues of non-conservatisms identified in NSAL-09-5, Revision 1, and NSAL-15-1 by implementing selected improvement in the F_Q surveillance reformulations and Required Actions included in WCAP-17661-P-A, Revision 1.

The NRC staff's evaluation of the following proposed TSs for Seabrook considered whether the proposed TSs are consistent with the regulatory requirements identified above and have appropriate technical bases.

3.1 Proposed Changes to TS 3/4.2.2

3.1.1 Limiting Condition for Operation (LCO), Formulations for $F_Q(Z)$ – Heat Flux Hot Channel Factor

Current TS LCO 3.2.2 requires that $F_Q(Z)$ be limited by the following formulations:

$$F_Q(Z) \leq [F_Q^{RTP} \times K(Z)] / [P] \text{ for } P > 0.5$$

$$F_Q(Z) \leq [(F_Q^{RTP} \times K(Z)] / [0.5] \text{ for } P \leq 0.5$$

The associated TS SR 4.2.2.2.c requires that $F_Q(Z)$ be evaluated if $F_Q(Z)$ is within its limits by satisfying the following formulations:

$$F^M_Q(Z) \leq [F_Q^{RTP} \times K(Z)] / [P \times W(Z)] \text{ for } P > 0.5$$

$$F^M_Q(Z) \leq [(F_Q^{RTP} \times K(Z)] / [0.5 \times W(Z)] \text{ for } P \leq 0.5$$

Where $F_Q^M(Z)$ is the measured $F_Q(Z)$ increased by the allowances for manufacturing tolerances (3 percent) and measurement uncertainty (5 percent), F_Q^{RTP} is the peak power density limit (F_Q) at RATED THERMAL POWER (RTP), K(Z) is the normalized $F_Q(Z)$ as a function of core height, P is the relative THERMAL POWER, and W(Z) is the cycle dependent function that accounts for power distribution transients encountered during normal operation. A F_Q^{RTP} value of 2.5, and the values of K(Z) and W(Z) are specified in the COLR.

The proposed TS LCO 3.2.2 replaces the $F_Q(Z)$ requirements including the specified formulations and definitions establishing acceptance criteria for $F_Q(Z)$ with a new requirement specifying that $F_Q(Z)$, as approximated by $F_Q^W(Z)$, the transient component of $F_Q(Z)$, shall be within the COLR specified limit.

$F_Q^W(Z)$ is defined in the proposed formulations 2.10.1 through 2.10.5 in the COLR (Attachment 4 to the LAR) as follows:

$$F_Q^W(Z) \leq [F_Q^{RTP} \times K(Z)] / [P] \text{ for } P > 0.5$$

$F_Q^W (Z) \leq [(F_Q^{RTP} \times K(Z)] / [0.5]$ for $P \leq 0.5$

$F_Q^{RTP} = 2.50$

$F_Q^W(Z) = F_Q^M(Z) \times [W(Z)/P] \times Rj$ for $P > 0.5$

$F_Q^W(Z) = F_Q^M(Z) \times [W(Z)/0.5] \times Rj$ for $P \geq 0.5$

Where Rj is the penalty factor, specified in COLR Table 2, for operating space of COLR Figure 2, and accounts for the potential decrease in transient $F_Q(Z)$ margin between surveillances.

The proposed formulations for $F_Q^W(Z)$ are similar to the current $F_Q(Z)$ formulation, except that W(Z) for the $F_Q^W(Z)$ formulations is applied to the $F_Q^M(Z)$ (the measured $F_Q(Z)$) in the proposed formulations instead of applying W(Z) to the $F_Q(Z)$ limit defined in the current formulations specified in SR 4.2.2.2.c quoted above. Additionally, the $F_Q^W(Z)$ formulations contain a penalty factor, Rj, which accounts for the potential decrease in transient $F_Q(Z)$ margin between surveillances.

By letter dated March 24, 2021 (ADAMS Accession No. ML21083A250), the licensee clarified in its response to Request for Additional Information (RAI)-1 that the penalty factor, Rj, replacing the current factor of the greater of a 1.02 factor or a factor specified in the COLR, is determined using the WCAP-10216-P-A methodology (as discussed in WCAP-17661-P-A, Section 3.2.5 and Section 5.5 (page 5-6)). Therefore, the NRC staff finds that the inclusion of Rj in the $F_Q^W(Z)$ formulations is acceptable, since the Rj factor is determined using the NRC-approved methodology in WCAP-10216-P-A and the inclusion of Rj in the $F_Q^W(Z)$ formulations is consistent with a recommended improvement in the NRC-approved TR, WCAP-17661-P-A, Revision 1, to the current formulations in SR 4.2.2.2.e, which is based on the margin change from the previous measurement.

The LAR proposes Surveillance Formulations 2.10.4 and 2.10.5 in the COLR to address the non-conservatisms identified in NSAL-15-1 regarding the $F_Q(Z)$ surveillance. The NRC staff noted that the proposed COLR surveillance formulations do not contain the terms such as T(Z) and $A_{XY}(Z)$ in the NRC-approved formulations (Equations 5-1 and 5-2) in WCAP-17661-P-A, Revision 1. T(Z) is an analytical ratio to characterize the maximum transient over the core average axial power shape, and $A_{XY}(Z)$ is a correction factor to adjust the $F_Q^W(Z)$ value for cases when the surveillance is conducted in a different condition, (i.e., thermal power and control rod insertion) than the reference condition (typically hot full-power, all rod out, equilibrium xenon. The LAR states (in paragraph 2 on page 5 of 35) that "T(Z) and $A_{XY}(Z)$ are not being pursed due to low safety significance" without presenting a technical basis that supports the quoted statement. The NRC staff requested the licensee to discuss how the effect of terms, such as T(Z) and $A_{XY}(Z)$, on the proposed formulations for $F_Q^W(Z)$ in the COLR were determined to involve low safety significance. By letter dated March 24, 2021, the licensee stated in its response to RAI-6 that the proposed formulation for $F_Q^W(Z)$ in the COLR is the same as the current formulation in the TS, which is based on W(Z). The adequacy of this W(Z) is discussed in the PWR Owners Group response to RAI 15.a (ADAMS Package Accession No. ML18053A269) during the NRC staff's review of the TR, WCAP-17661-P-A, Revision 1, as follows:

> [T]he option of using Method 1 to set Axy(Z) ... factor to unity (as discussed in Section 4.3.1 ... of the TR) will still be retained as an alternative to using Method

> 2 to explicitly calculate the Axy(Z) ... factor at the time of the surveillance. Setting the Axy(Z) ... factor to 1.0 is effectively the same as not using it at all. In this respect, using Method 1 is consistent with the current F_Q Surveillance methodology, which makes no correction for surveillances that are performed at conditions different than were assumed in generating the F_Q surveillance factors.

Section 4.3.1 of the TR states that setting Axy(Z) to 1.0, "is a reasonable option that will in all likelihood result in conservative surveillances at off-normal conditions."

The NRC staff's SE of November 2018 (page 18 of Section 4.1.1) (ADAMS Accession No. ML18298A320) approving WCAP-17661-P-A, Revision 1 states that:

> Several considerations justify an allowance to keep the RAOC surveillance uncorrected. First among these is the fact that the vast majority of surveillances are performed in a Hot Full Power (HFP), All Rods Out (ARO) configuration, such that there would be little deviation from the reference condition. Stated differently, in most cases, the Axy factor would seldom deviate from unity, and deviations are usually expected to be minor. Second, the existing methodology does not include this correction. Third, in response to RAI 15.e, several tables were provided for a demonstration plant with several successive surveillances completed slightly above 80-percent RTP, with a 14-percent D-bank control rod insertion. These tables show that the Axy factor removes a small amount of conservatism from the uncorrected surveillance, meaning that, in these conditions, a unity-value Axy is conservative.

Based on the above discussion for the information in WCAP-17661-P-A, Revision 1, the NRC staff finds that Method 1 of the new formulations is consistent with the current F_Q Surveillance methodology. Also, the licensee confirmed in its RAI-6 response that Seabrook operates essentially with ARO conditions, which further justifies the use of the current F_Q surveillance methodology. The proposed COLR formulations and criteria for $F_Q^W(Z)$ are essentially a relocation of the current LCO formulations and criteria for $F_Q(Z)$, which is proposed for deletion. The only difference is the addition of the penalty factor, Rj. Relocating the $F_Q(Z)$ formulations from the LCO to the COLR is acceptable, since the approach is consistent with the changes to TS LCO 3.2.1B of NUREG-1431 that were previously evaluated by the NRC staff in the review of WCAP-17661-P-A, Revision 1, and the revised LCO requires the COLR criteria to be met. The proposed COLR changes are provided in Attachment 4 of the licensee's LAR and are based on NRC-approved RAOC analysis methodologies and COLR recommendations in WCAP-17661-P-A, Revision 1. Therefore, the NRC staff concludes that use of the current F_Q surveillance formulations with an addition of a penalty factor of Rj and related criteria is acceptable.

3.1.2 $F_Q(Z)$ Required Actions (RAs)

3.1.2.1 TS 3.2.2, Action a.1

Current TS 3.2.2, Action a.1 requires that when $F_Q(Z)$ exceeds its limit:

> Reduce THERMAL POWER at least 1% for each 1% $F_Q(Z)$ exceeds the limit within 15 minutes and similarly reduce the Power Range Neutron Flux-High Trip Setpoints within the next 4 hours; POWER OPERATION may proceed for up to a total of 72 hours; subsequent POWER OPERATION my proceed provided the

> Overpower ΔT trip Setpoints have been reduced at least 1% for each 1% $F_Q(Z)$ exceeds its limit, and

The proposed change replaces Action a.1 for the condition of $F_Q(Z)$ exceeding its limit with the following Action 1 or Action 2 for the condition of $F_Q^W(Z)$ exceeding its limit.

3.1.2.1.1 TS 3.2.2 New Action 1

New Action 1 requires:

> Within 4 hours, implement a RAOC operating space if specified in the COLR that restores $F_Q^W(Z)$ to within limits, and within 72 hours, perform ... SR 4.2.2.2.b if control rod motion is required to comply with the new operating space.

With the associated changes of including RAOC operating space in the proposed Seabrook COLR (Attachment 4 of the LAR), the proposed Action 1 would provide an option to define a more restrictive RAOC operating space that further limits the range of non-equilibrium power shapes by means of smaller Axial Flux Difference (AFD) band and/or shallower control rod insertion limits. By letter dated March 24, 2021, the licensee clarified in its response to RAI-3 that the required limits on THERMAL POWER levels and required reductions on AFD limits would be determined using the standard RAOC methodology of WCAP-10216-P-A, Revision 1A, which is the current method used to analyze RAOC operating spaces. The WCAP-10216-P-A, Revision 1A methodology is referenced in the current Seabrook TS 6.8.1.6.b.14.

The 4-hour Completion Time is based on the time needed to provide a reasonable period of time to implement a new RAOC operating space. Also, the 72-hour Completion Time for SR 4.2.2.2.a and SR 4.2.2.2.b performance would provide a sufficient period of time for restoring equilibrium conditions in the event the control rod motions produce transient conditions.

The NRC staff finds that: (1) the proposed Action 1 requirement is limited by the more restrictive operating spaces in response to $F_Q^W(Z)$ being not within limit; (2) the determination of the restrictive operating spaces is based on the NRC-approved RAOC methodology documented in WCAP-10216-P-A, Revision 1A and would enhance overall safety; and (3) the changes in the Action requirements and the associated Completion Times are consistent with the changes to TS 3.2.1B, Required Actions B.1.1 and B.1.2, of NUREG-1431 that were previously evaluated by the NRC staff in the review of WCAP-17661-P-A, Revision 1. Therefore, the NRC staff finds that proposed Action 1 is acceptable.

3.1.2.1.2 TS 3.2.2, New Action 2.1

If the RAOC operating spaces required in Action 1 are insufficient to ensure margin to the $F_Q^W(Z)$ limits, the following new Actions 2.1 through 2.4 are entered.

New Action 2.1 states:

> Within 4 hours, limit THERMAL POWER to less than RATED THERMAL POWER and reduce the AFD limits as specified in the COLR ... .

By letter dated March 24, 2021, the licensee clarified in its response to RAI-4 that the sample data in Table 3 included in proposed COLR limiting the THERMAL POWER and reducing AFD limits is not representative of any Seabrook cycle design. For the Seabrook cycle-specific COLR, Seabrook core design specific data would continue to be generated using the WCAP-10216-P-A, Revision 1A RAOC methodology with the discrete maximum power levels and reduced AFD limits, as required, to quantify the margin improvements. The methodology used is the same as that used in the current RAOC analysis. If more than one operating space is specified in the COLR, cycle specific data similar to Table 3 of the sample COLR will be generated for each of the Operating Spaces. Since the NRC-approved WCAP-10216-P-A, Revision 1A RAOC methodology would be used by the licensee to determine the THERMAL POWER limits and AFD reduction shown in Table 3 for the cycle-specific COLR, the NRC staff finds that the licensee's proposed approach in determining the maximum power levels and reduced AFD limits is acceptable.

The NRC staff noted that the LAR (in paragraph 1 on page 7 of 35) states that "Should none of the COLR specified RAOC operating spaces provide sufficient margin to the $F_Q^W(Z)$ limit, the THERMAL POWER is limited to less than 50% RTP, or as specified in cycle specific COLR, to assure additional margin to the transient F_Q." The NRC staff requested the licensee to address the Seabrook applicability of LIMITATION 2 imposed in the NRC SE (ADAMS Accession No. ML18298A320) approving WCAP-17661-P-A, Revision 1. LIMITATION 2 requires a final power decrease to 50 percent. By letter dated March 24, 2021, the licensee in response to RAI-5 confirmed that LIMITATION 2 is applicable to Seabrook and the final power decrease to 50 percent will be specified in the Seabrook COLR based on the NRC staff's prior approval of this power level in WCAP-17661-P-A, Revision 1. The intent of the "as specified in cycle specific COLR" was to allow change in the event of any future NRC approved changes. For the COLR, upon implementing the changes proposed in this amendment request, Seabrook would comply with LIMITATION 2 imposed in the SE for WCAP-17661-P-A, Revision 1 to use 50 percent as the final power level reduction.

The Completion Time of 4 hours would provide a reasonable time frame to reduce the THERMAL POWER and AFD limits in an orderly manner to preclude entering an unacceptable condition during future nonequilibrium operation.

The NRC staff finds that: the proposed Action 2.1 is limited by the THERMAL POWER levels and AFD reduction that are based on the NRC-approved RAOC analysis methodology in response to $F_Q^W(Z)$ being not within limit; the licensee would comply with LIMITATION 2 of the NRC staff SE requiring a final power decrease to 50 percent as the final power level reduction; and the changes in the Action requirements and the associated Completion Times are consistent with the changes to TS 3.2.1B, Required Action B.2.1, of NUREG-1431 that were previously evaluated by the NRC staff in reviewing WCAP-17661-P-A, Revision 1. As discussed in Section 3.2, below, the licensee also proposed to reference this license amendment in the TS COLR References contained in TS 6.8.1.6.b, meaning that the licensee will be obligated to implement its Required Actions consistent with this safety evaluation, including the stated adherence to the 50 percent power level decrease. For any changes that would not be conservative relative to a 50 percent power level decrease, the licensee would first need to obtain another license amendment from the NRC. Therefore, the NRC staff finds that the proposed Action 2.1 is acceptable.

3.1.2.1.3 TS 3.2.2, New Action 2.2 and New Action 2.3

New Action 2.2 states:

> Within 72 hours, reduce the Power Range Neutron Flux - High trip setpoints ≥1 % for each 1% that THERMAL POWER is limited below RATED THERMAL POWER required by Action 2.1... .

New Action 2.3 states:

> Within 72 hours, reduce Overpower ΔT trip setpoints to ≥1% for each 1% that THERMAL POWER is limited below RATED THERMAL POWER required by Action 2.1... .

The proposed Completion Time of 72 hours would provide a reasonable time frame to reduce the Power Range Neutron Flux - High setpoint and Overpower ΔT trip setpoint in an orderly manner to preclude entering an unacceptable condition. Given the steps taken in proposed Action 2.1 (reduction in THERMAL POWER limit and AFD limits within 4 hours, discussed above), along with the low likelihood of a severe transient occurring during the 72 hours is small, the NRC staff finds that the proposed Completion Time is reasonable.

The proposed Action 2.2 and Action 2.3 reduce the Power Range Neutron Flux - High and Overpower ΔT trip setpoints as conservative actions for protection against the consequences of transients with unanalyzed power distributions, and the changes in the Action requirements and the associated Completion Time are consistent with the changes to TS 3.2.1B, Required Action B.2.2 and Action B.2.3, of NUREG-1431 that were previously evaluated by the NRC staff in its review of WCAP-17661-P-A, Revision 1. Accordingly, the NRC staff finds that the proposed Actions 2.2 and 2.3 are acceptable.

3.1.2.1.4 TS 3.2.2, New Action 2.4 and the Note Preceding Actions 2.1 Through 2.4

New Action 2.4 states:

> Perform SR 4.2.2.2.a and 4.2.2.2.b prior to increasing THERMAL POWER above the limit of Required Action 2.1.

New Actions 2.1 through 2.4 are preceded by a new Note that states:

> Required Action 2.4 shall be completed whenever Required Action 2.1 is performed prior to increasing THERMAL POWER above the limit of Required Action 2.1.

SR 4.2.2.2.a requires determining if $F_Q(Z)$ is within its limits by using the incore detectors to obtain a power distribution map at any THERMAL POWER greater than 5 percent of RATED THERMAL POWER and satisfying the $F_Q(Z)$ relationship specified in the COLR.

The proposed Action 2.4 and the proposed Note would assure that $F_Q^W(Z)$ is within the limit before increasing core power above the THERMAL POWER reduction imposed by Action 2.1, and the changes in the Action requirements and the associated Completion Times are consistent with the changes to TS 3.2.1B, Required Action B.2.4 and the Note preceding Action(s) B.2.1 through B.2.4, of NUREG-1431 that were approved by NRC staff in the review of

Westinghouse WCAP-17661-P-A, Revision 1. Accordingly, the NRC staff finds that the proposed Action 2.4 and the proposed Note are acceptable.

3.1.2.2 TS 3.2.2, ACTION a.2

Current TS 3.2.2, ACTION a.2 states:

> THERMAL POWER may be increased, provided $F_Q(Z)$ is demonstrated through incore mapping to be within its limit.

The proposed change deletes Action a.2.

The NRC staff finds that deletion of Action a.2 is acceptable, since new Action 2.4 will require SR 4.2.2.2.a and SR 4.2.2.2.b performance prior to increasing THERMAL POWER above the limit imposed by Action 2.1 and SR 4.2.2.2.a and SR 4.2.2.2.b require verification that $F_Q(Z)$ is within its limit using the incore detectors. Therefore, the NRC staff finds that TS 3.2.2, Action 2.a is no longer necessary, and the proposed deletion is acceptable.

3.1.2.3 Conclusion for TS 3.2.2, Proposed Required Actions

In summary, the proposed Required Action changes are consistent with the intent of the changes to TS 3.2.1B, Action B, of NUREG-1431 that were previously evaluated by the NRC staff in its review of WCAP-17661-P-A, Revision 1. The proposed changes deviate from NUREG-1431 by establishing the $F_Q(Z)$ Required Actions without introducing a new LCO for the non-transient component of $F_Q(Z)$. The NRC staff finds that the changes with the identified NUREG-1431 deviation are acceptable, since the proposed changes adequately resolve the non-conservatism documented in Westinghouse NSAL-09-5 by implementing a new RAOC operating space or by lowering THERMAL POWER in order to restore $F_Q(Z)$ to within limit. Further, the NRC staff finds that the regulatory requirements of 50.36(c)(2) will continue to be met because the TS, as amended by the proposed changes, will continue to require the licensee to shut down the reactor or follow any remedial action permitted by the TS until the LCO can be met.

3.1.3 $F_Q(Z)$ Surveillance Requirements (SRs)

3.1.3.1 SR 4.2.2.2.b

Current SR 4.2.2.2.b states:

> Increasing the measured $F_Q(Z)$ component of the power distribution map by 3% to account for manufacturing tolerances and further increasing the value by 5% to account for measurement uncertainties.

The proposed change replaces the existing SR 4.2.2.2.b requirement with a new requirement:

> Satisfying the $F_Q(Z)$ relationships specified in the COLR.

The NRC staff finds that the proposed change is acceptable, since (1) the requirement to account for manufacturing tolerances and measurement uncertainties is being relocated to the $F_Q^W(Z)$ formulations in the COLR; (2) the proposed COLR formulations are provided in Attachment 4 of the LAR and are based on RAOC analysis methodologies that were previously

evaluated by the NRC staff in its review of Westinghouse WCAP-17661-P-A, Revision 1; and (3) the proposed COLR formulations for $F_Q^W(Z)$ are a function of $F_Q^M(Z)$, the measured $F_Q(Z)$ increased by allowances for manufacturing tolerances (3 percent) and measurement uncertainty (5 percent), and thereby adequately account for the $F_Q(Z)$ considerations required by current SR 4.2.2.2.b. Therefore, the NRC staff finds that the proposed SR 4.2.2.2.b is acceptable.

3.1.3.2 SR 4.2.2.2.c

Current SR 4.2.2.2.c requires that the $F_Q^M(Z)$ formulations specified in the following equations are satisfied.

$$F_Q^M(Z) \leq [F_Q^{RTP} \times K(Z)] / [P \times W(Z)] \text{ for } P > 0.5$$

$$F_Q^M(Z) \leq [F_Q^{RTP} \times K(Z)] / [0.5 \times W(Z)] \text{ for } P \leq 0.5$$

The proposed change would delete SR 4.2.2.2.c.

As discussed in Section 3.1.1 above, the $F_Q^M(Z)$ formulations are being replaced by the proposed COLR formulations which define limits on $F_Q^W(Z)$, the transient portion of $F_Q(Z)$. The COLR formulations for $F_Q^W(Z)$ are a function of THERMAL POWER, $F_Q^M(Z)$, F_Q^{RTP}, K(Z) and W(Z) with an additional inclusion of a penalty factor, Rj, which accounts for the potential decrease in the $F_Q^W(Z)$ margin between flux map surveillances. The proposed COLR formulations are provided in Attachment 4 of this LAR and are based on RAOC analysis methodologies that were previously evaluated by the NRC staff in its review of WCAP-17661-P-A, Revision 1.

The NRC staff finds that replacing the formulations for $F_Q^M(Z)$ specified in SR 4.2.2.2.c with the COLR specified formulations for $F_Q^W(Z)$ is acceptable, since the proposed COLR formulations for $F_Q^W(Z)$ are based on the NRC previously approved RAOC analysis methodologies, and the formulations would continue to limit the core power distributions that define acceptable operation by the imposition of a penalty factor in the $F_Q^W(Z)$ formulations for all applicable power levels. Therefore, the NRC staff concludes that the existing SR 4.2.2.2.c is no longer necessary, and the proposed deletion is acceptable.

3.1.3.3 SR 4.2.2.2.d

Current SR 4.2.2.2.d states:

> Measuring $F_Q^M(Z)$ according to the following schedule:
>
> 1) Upon achieving equilibrium conditions after exceeding by 20% or more of RATED THERMAL POWER, the THERMAL POWER at which $F_Q(Z)$ was last determined, or
>
> 2) In accordance with the Surveillance Frequency Control Program, whichever occurs first.

The proposed change would replace “Measuring $F_Q^M(Z)$” with “Verifying $F_Q^W(Z)$ to be within its limits” (which is specified by the formulations in the COLR). The proposed change would also modify SR 4.2.2.2.d.1 to replace “$F_Q(Z)$” with “$F_Q^W(Z)$.” SR 4.2.2.2.d.2 remains unchanged.

The proposed changes reflect the fact that the formulations for $F_Q^M(Z)$ are being replaced by the COLR formulations for $F_Q^W(Z)$. The proposed COLR changes of the formulations for $F_Q^W(Z)$ presented in Attachment 4 of the LAR are based on RAOC analysis methodologies that were previously evaluated by the NRC staff in its review of WCAP-17661-P-A, Revision 1.

The NRC staff finds that: (1) the proposed requirement to verify $F_Q^W(Z)$ to be within limit is acceptable, since the COLR formulations for $F_Q^W(Z)$ are based on the NRC approved RAOC analysis methodologies and the formulations would continue to limit the core power distributions that were considered in the NRC safety analysis for the WCAP-17661-P-A, Revision 1; (2) the proposed SR 4.2.2.2.d.1 requiring the surveillance based on when $F_Q^W(Z)$ was last determined rather than when $F_Q(Z)$ was last determined is acceptable, since the surveillance frequency remains effectively unchanged; and (3) the proposed SR 4.2.2.2.d is essentially equivalent to the current SR 4.2.2.2.d, and is revised only to be consistent with the new $F_Q(Z)$, i.e., $F_Q^W(Z)$. Therefore, the NRC staff concludes that the proposed SR 4.2.2.2.d is acceptable.

3.1.3.4 SR 4.2.2.2.e and SR 4.2.2.2.f

Current SR 4.2.2.2.e states:

> With measurements indicating that the maximum over the elevation Z of $F_Q^M(Z)/K(Z)$ has increased since the previous determination of $F_Q^M(Z)$ one of the following actions shall be taken:
>
> 1) Increase $F_Q^M(Z)$ by the appropriate factor specified in the COLR prior to confirming the relationship specified in Specification 4.2.2.2.c, or
>
> 2) $F_Q^M(Z)$ shall be measured at least once per 7 EFPD until two successive maps indicate that the maximum over the elevation Z of $F_Q^M(Z)/K(Z)$ is not increasing.

Current SR 4.2.2.2.f requires for the condition of SR 4.2.2.2.c being not met, calculate the percentage by which $F_Q(Z)$ exceeds its limit by the following expression:

> $\{\text{Max. over Z } ([F_Q^M(Z) \times W(Z)]/[(F_Q^{RTP}/P) \times K(Z)]) - 1\} \times 100$ for $P \geq 0.5$, or
>
> $\{\text{Max. over Z } ([F_Q^M(Z) \times W(Z)]/[(F_Q^{RTP}/0.5) \times K(Z)]) - 1\} \times 100$ for $P < 0.5$,
>
> Place the core in an equilibrium condition where the limit in Specification 4.2.2.2.c. is satisfied within 2 hours. Power level may then be increased provided the AFD limits of Specification 3.2.1 are reduced 1 percent AFD for each percent $F_Q(Z)$ exceeds it limit.

The proposed changes would delete SR 4.2.2.2.e and SR 4.2.2.2.f.

The penalty factor imposed by SR 4.2.2.2.e and actions specified in SR 4.2.2.2.f addressed the Westinghouse NSAL-15-1 concerns that the surveillance may not be sufficient to assure $F_Q(Z)$ is within limit during periods between flux map surveillances and thereby F_Q could potentially exceed the value assumed plant safety analyses without being identified.

As discussed in Section 3.1.3.3 above, the proposed changes to SR 4.2.2.2.d require the COLR specified formulations for $F_Q^W(Z)$ to be met. The formulations contain a penalty factor, Rj, to account for the potential decrease in the $F_Q^W(Z)$ margin between flux map surveillance. In

addition, the penalty factor, Rj, relies on the predicted margin to the transient portion of $F_Q(Z)$, i.e. $F_Q^W(Z)$, resolving the non-conservatism discussed in NSAL-15-1. Also, the proposed deletion of SR 4.2.2.2.e and SR 4.2.2.2.f is consistent with changes to TS 3.2.1B, SR 3.2.1.2 of the NUREG-1431 that were previously evaluated by the NRC staff in its review of WCAP-17661-P-A, Revision 1. Therefore, the NRC staff finds that SR 4.2.2.2.e and SR 4.2.2.2.f are no longer necessary, and the proposed deletion is acceptable.

3.1.3.5 SR 4.2.2.2.g

Current SR 4.2.2.2.g states:

> The limits specified in Specifications 4.2.2.2.c, 4.2.2.2.e, and 4.2.2.2.f above are not applicable in the following core regions:
>
> 1) Lower core region from 0 percent to 10 percent, inclusive.
>
> 2) Upper core region from 90 percent to 100 percent, inclusive.

The proposed change would delete SR 4.2.2.2.g.

The NRC staff finds that: (1) the Note for the proposed $F_Q(Z)$ surveillance formulations in COLR Section 2.10 of Attachment 4 of this LAR provide the same lower and upper core surveillance exclusion zone limits as those being removed in the current SR 4.2.2.2.g; (2) the proposed deletion reflects the removal of the specification of the proposed $F_Q(Z)$ surveillance formulations and the associated exclusion zones to the COLR; and (3) the change is consistent with changes to TS 3.2.1B and SR 3.2.1.2 of the NUREG-1431 that were previously evaluated by the NRC staff in its review of WCAP-17661-P-A, Revision 1. Therefore, the NRC staff finds that SR 4.2.2.3.2.g is no longer necessary, and the proposed SR deletion is acceptable.

3.1.3.6 SR 4.2.2.3

Current SR 4.2.2.3 states that when $F_Q(Z)$ is measured for reasons other than meeting the requirements of Specification 4.2.2.2, an overall measured $F_Q(Z)$ shall be obtained from a power distribution map, increased by 3 percent to account for manufacturing tolerances and further increased by 5 percent to account for measurement uncertainty. The proposed change would delete SR 4.2.2.3.

The NRC staff finds that: (1) the only means for obtaining a $F_Q(Z)$ measurement is by the revised $F_Q(Z)$ formulations provided in the COLR; and (2) the requirement to account for manufacturing tolerances and measurement uncertainties is being relocated to the $F_Q(Z)$ formulations in Section 2.10 of the COLR. Therefore, the NRC staff finds that SR 4.2.2.3 is no longer necessary, and the proposed SR deletion is acceptable.

Further, the NRC staff finds that the regulatory requirements of 50.36(c)(3) will continue to be met because the SRs, as amended by the proposed changes, will continue to provide assurance that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met

3.2 Proposed Changes to TS 6.8.1.6.b

GL 88-16 outlines a process that a licensee can use to move cycle-specific parameters from the plant specific TSs to a licensee-controlled document entitled COLR. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC and documented in the TR(s).

In the LAR, the licensee proposes to apply a burnup-dependent correction factor, Rj, to the formulation for the transient heat flux hot channel factor surveillance parameter (i.e., $F_Q^W(Z)$). The NRC staff notes the following, concerning this parameter:

- The formulation of the Rj factor is not described in WCAP-10216-P-A, Revision 1A.
- The Rj factor, as described in WCAP-17661-P-A, Revision 1 is applied to a $F_Q^W(Z)$ surveillance parameter that is based on a planar-radial (i.e., F_{XY}) surveillance, which the licensee has not proposed to adopt.

The NRC staff requested the licensee to justify the validity of the adoption of the Rj factor in light of the fact that doing so will result in COLR specifications that do not adhere to the methods referenced in Seabrook TS 6.8.1.6.b.14.

By letter dated March 24, 2021, in the response to RAI-1, the licensee stated:

> The penalty factor, Rj, is generated in the same manner as for the current F_Q TS surveillance, except for the elimination of 2% minimum penalty….WCAP-10216-P-A, Revision 1A, is listed as an approved COLR methodology in TS 6.8.1.6.b. To implement the proposed methodology related to the elimination of minimum penalty of 2% and the application of the Rj penalty based on the predicted margin trends, the license amendment proposed by this amendment request will be added to the listing of COLR approved methodologies referenced in Seabrook TS 6.8.1.6.b….Attachment 1 [of the RAI-1 response] provides the existing TS 6.8.1.6.b page marked up to show the change proposed in this RAI response.

In Attachment 1 of the RAI response, the licensee proposed a new item to add to TS 6.8.1.6.b as follows:

> 17. License Amendment 169 issued 09/22/21 (ADAMS Accession No. ML21190A177)
>
> Methodology for Specification:
>
> 3.2.2 - Heat Flux Hot Channel Factor

In Section 3.1.1 of this SE, the NRC staff found the use of the Rj factor to be acceptable. The NRC staff finds that the added item 17 to TS 6.8.1.6.b meets the intent of GL 88-16, since the reference to this License Amendment and associated SE provides the technical basis explaining the application of the Rj penalty factor and determining that it is acceptable for use. Therefore, the NRC staff finds that the added TS item is acceptable and that the regulatory requirements of 10 CFR 50.36(c)(5) will continue to be met because the TS, as amended by the proposed change, will continue contain the provisions relating to organization and management, procedures,

recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Hampshire and Massachusetts State officials were notified of the proposed issuance of the amendment on July 19, 2021. The State officials had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff finds that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (November 3, 2020; 85 FR 69655). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Sun
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Date of Issuance: September 22, 2021

SUBJECT: SEABROOK STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT NO. 169 RE: NON-CONSERVATIVE HEAT FLUX HOT CHANNEL FACTOR REQUIREMENTS (EPID L-2020-LLA-0187) DATED SEPTEMBER 22, 2021

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ADAMS Accession No.: ML21190A177 ***via memorandum**

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