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Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Request for License Amendment:
Engineered Safety Feature Safeguards Actuation
Technical Specifications Applicability Changes (LAR-18-011)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, requests an amendment to Combined License (COL) Numbers NPF-91 and NPF-92, for VEGP Units 3 and 4, respectively. The requested amendment proposes changes to COL Appendix A, Technical Specifications (TS).

The requested amendment proposes to change TS Limiting Condition for Operation (LCO) 3.3.8, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, related to Safeguard Actuation Functions. Various ESFAS Functions require Applicability and corresponding Actions changes to more accurately reflect their operation and related safety analysis assumptions.

Enclosure 1 provides the description, technical evaluation, regulatory evaluation (including the Significant Hazards Consideration Determination), and environmental considerations for the proposed changes.

Enclosure 2 provides the proposed markups depicting the requested changes to the VEGP Units 3 and 4 licensing basis documents.

Enclosure 3 provides conforming Technical Specification Bases changes for information only.

This letter contains no regulatory commitments. This letter has been reviewed and confirmed to not contain security-related information.

SNC requests NRC staff review and approval of the license amendment request (LAR) no later than November 15, 2018. Approval by this date will allow sufficient time to implement licensing basis changes necessary to support procedure development in relation to conducting the necessary operator training to support plant operations. SNC expects to implement the proposed amendment within 30 days of approval of the LAR.

In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia of this LAR by transmitting a copy of this letter and enclosures to the designated State Official.

Should you have any questions, please contact Mr. Wesley Sparkman at (205) 992-5061.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 18th of May 2018.

Respectfully submitted,



Brian H. Whitley
Director, Regulatory Affairs
Southern Nuclear Operating Company

- Enclosures:
- 1) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for License Amendment: Engineered Safety Feature Safeguards Actuation Technical Specifications Applicability Changes (LAR-18-011)
 - 2) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Proposed Changes to the Licensing Basis Documents (LAR-18-011)
 - 3) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Technical Specification Bases Changes (LAR-18-011) (For Information Only)

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Southern Nuclear Operating Company

ND-18-0537

Enclosure 1

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Request for License Amendment:

**Engineered Safety Feature Safeguards Actuation
Technical Specifications Applicability Changes**

(LAR-18-011)

(Enclosure 1 consists of 15 pages, including this cover page)

ND-18-0537

Enclosure 1

Request for License Amendment: Engineered Safety Feature Safeguards Actuation
Technical Specifications Applicability Changes (LAR-18-011)

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Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC, or the "Licensee") hereby requests an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

1. SUMMARY DESCRIPTION

The requested amendment proposes to change Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.3.8, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, related to Safeguard Actuation Functions. Various ESFAS Functions require Applicability and corresponding Actions changes to more accurately reflect their operation and related safety analysis assumptions.

The proposed amendment would revise the licensing basis information regarding the following:

- TS 3.3.8 Required Action E.2 is revised to state: "Reduce Reactor Coolant System (RCS) pressure below P-11 (Pressurizer Pressure) interlock."
- New TS 3.3.8 Required Action E.3 is added stating: "Establish RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F," with a Completion Time of 12 hours.
- TS 3.3.8 Required Action G.2 is revised to state: "Establish RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F," with a Completion Time of 12 hours.
- TS 3.3.8 Required Action G.3 is revised to state: "Block Steamline/Feedwater isolation and Safeguards actuations." The Completion Time for this Required Action is "1 hour from discovery of RCS boron concentration greater than or equal to that necessary to meet SDM at an RCS temperature of 200°F while in MODE 3."
- TS Table 3.3.8-1 Footnote (c) is revised to state: "Above the P-11 (Pressurizer Pressure) interlock."
- New Table 3.3.8-1 Footnote (l) is added, stating: "Below the P-11 (Pressurizer Pressure) interlock and RCS boron concentration is less than that necessary to meet the SDM requirements at an RCS temperature of 200°F."
- TS Table 3.3.8-1 Function 24 Applicability is revised to remove MODE 4.
- TS Table 3.3.8-1 updated Footnotes (c) and new Footnote (l) are applied to Table 3.3.8-1 Functions 5, 11, and 24, MODE 3 Applicability.
- TS Table 3.3.8-1 new Footnote (m) is added, stating: "Below the P-11 (Pressurizer Pressure) interlock when Steam Line Pressure - Low 2 is not blocked" and applied to Table 3.3.8-1 Function 24, Applicability MODE 3.
- TS Table 3.3.8-1 Footnote (k) is revised to state: "Below the P-11 (Pressurizer Pressure) interlock when Steam Line Pressure - Low 2 is blocked."

Conforming Bases revisions are provided for information. The TS Bases changes will be incorporated following NRC approval of the amendment request in accordance with TS 5.5.6, Technical Specification Bases Control Program.

2. DETAILED DESCRIPTION and TECHNICAL EVALUATION

A. Safeguards Actuation

As described in Updated Final Safety Analysis Report (UFSAR) Subsection 7.3.1.1, a safeguards actuation (S) signal is used in the initiation logic of many of the engineered safety features. The variables that are monitored and used to generate a safeguards actuation signal are typically those that provide indication of a significant plant transient that requires a response by several engineered safety features. The safeguards actuation signal is generated within the Protection and Safety Monitoring System (PMS) from Low-3 pressurizer pressure, Low-2 steam line pressure, Low-2 reactor coolant system (RCS) cold leg temperature, High-2 containment pressure and manual initiation.

To permit startup and cooldown, the safeguards actuation signals generated from Low-3 pressurizer pressure, Low-2 steam line pressure, or Low-2 RCS cold leg temperature can be manually blocked when pressurizer pressure is below the P-11 (pressurizer pressure permissive) setpoint. These signals are automatically unblocked when the pressurizer pressure is above the P-11 setpoint. Safeguards actuation signals on Low-3 pressurizer pressure, Low-2 steam line pressure, or Low-2 RCS cold leg temperature provide protection against several accidents, including an inside containment Steam Line Break (SLB). During an SLB, an automatic safeguards signal is credited for actuating the Core Makeup Tanks (CMTs), which provide borated water that injects into the RCS.

As described in UFSAR Subsection 19E.4.2.3, the credible steam line break (SLB) is analyzed in MODE 2, and the results are presented in UFSAR Subsection 15.1.4. The assumptions used in the analysis lead to a more severe, post-trip transient than will result from a load increase initiated in MODE 1. In MODE 3, results are expected to be better than the MODE 2 case because pressure, temperature, and flow conditions will be less limiting. Automatic safeguards actuation signals are available through MODE 3, until the RCS is borated and the automatic safeguards signals are blocked. Both CMTs continue to be available for automatic actuation on Low-2 pressurizer level or manual actuation through MODE 4 with the RCS not being cooled by the RNS (see Technical Specification 3.5.2). In MODE 4 with the RNS in operation, and in MODE 5 with the RCS pressure boundary intact, one CMT is available for actuation if needed.

A Westinghouse Nuclear Safety Advisory Letter (NSAL) 02-14, "Steam Line Break During Mode 3 for Westinghouse NSSS Plants," raised an issue regarding a SLB event that occurs when the plant is intentionally being cooled down and the low pressurizer pressure and/or low steam line pressure Safeguards Actuation signals have been manually blocked. The NSAL recommends that the RCS is borated sufficiently to achieve the required cold shutdown margin (SDM) concentration prior to the operator manually blocking safeguards actuation. This means that the RCS must be borated such that subcriticality is maintained at 200°F. This provides assurance that the Hot Zero Power (HZP) SLB licensing basis analysis remains bounding by precluding the possibility for a return to criticality when Safeguards Actuation has been blocked.

The requirement to borate the RCS to cold SDM concentration is currently reflected in the Technical Specifications as Footnote (c) for TS Table 3.3.8-1. The Footnote states that the applicable Functions must be OPERABLE "Above the P-11 (Pressurizer Pressure) interlock, when the RCS boron concentration is below that necessary to meet the SDM requirements at an RCS temperature of 200°F." This footnote is applied to TS

Table 3.3.8-1 Function 5 (Low-3 pressurizer pressure) and Function 11 (Low-2 RCS cold leg temperature), which both initiate automatic safeguards actuation. However, this note requires clarification because these Functions are required to be OPERABLE as credited in the safety analysis above P-11 regardless of whether RCS boration meets cold SDM requirements. With the change to remove MODE 4 Applicability for Function 24 (Low-2 steam line pressure), these modified footnotes must also be applied to Function 24 in MODE 3 (see “Power Operated Relief Valve and Block Valve Isolation” related sections for additional detail).

TS 3.3.8 Condition E is applicable to Functions 5 and 11. The Condition includes two Required Actions; Required Action E.1 requires the plant to be in MODE 3 within 6 hours, and Required Action E.2 requires the plant to be in MODE 4 within 12 hours. The Required Actions do not reflect that the Applicability for the related functions could also be exited by reducing pressure below P-11 and borating to the SDM requirements at an RCS temperature of 200°F. Furthermore, the current actions do not reflect the need to establish RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F. With the change to remove MODE 4 applicability for Function 24 (Low-2 steam line pressure), similar changes must be made to the Condition G actions (see “Power Operated Relief Valve and Block Valve Isolation” related sections for additional detail).

Description of Changes to Current Licensing Basis Documents

- TS Table 3.3.8-1 Footnote (c) is revised to state “Above the P-11 (Pressurizer Pressure) interlock” by deleting “when the RCS boron concentration is below that necessary to meet the SDM requirements at an RCS temperature of 200°F.”
- New footnote (l) is added, stating “Below the P-11 (Pressurizer Pressure) interlock and RCS boron concentration is less than that necessary to meet the SDM requirements at an RCS temperature of 200°F” and applied to Functions 5, 11, and 24, MODE 3 Applicability.
- TS 3.3.8 Required Action E.2 is revised to state: “Reduce Reactor Coolant System (RCS) pressure below P-11 (Pressurizer Pressure) interlock,” replacing the existing Required Action to “Be in MODE 4.”
- New Required Action E.3 is added, stating “Establish RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F.” This Required Action retains the current Completion Time of 12 hours to exit the Applicability.
- Required Action G.2 stating “Establish RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F” replaces the existing Required Action to “Be in MODE 4.”

Technical Justification

The proposed revision to TS Table 3.3.8-1 Footnote (c) reflects the need for the protection function to be OPERABLE as credited in the safety analysis above P-11 regardless of whether RCS boration meets cold SDM requirements. The safeguards actuation signals generated from Low-3 pressurizer pressure, Low-2 steam line pressure, or Low-2 RCS cold leg temperature are automatically unblocked when the pressurizer pressure is above the P-11 setpoint, which assures the Functions are available as required by the revised Applicability.

The addition of new Footnote (l) to Functions 5, 11, and 24 MODE 3 Applicability captures the recommendations from NSAL-02-14. The NSAL recommends that the RCS is borated to the cold SDM concentration prior to the operator manually blocking the safeguards actuation signals. This provides assurance that the HZP (i.e., MODE 2) SLB licensing basis analysis remains bounding. Once in MODE 3 with pressurizer pressure below P-11, and the safeguards actuation signals blocked, the potential exists for a return to criticality without automatic protection features unless the RCS is sufficiently borated. Once RCS boron concentration is established greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F, the possibility for criticality when safeguards actuation has been blocked is precluded. Although the need for boration was addressed in existing Footnote (c), new Footnote (l) provides better clarity in enforcing this requirement. As discussed in UFSAR Subsection 19E.4.2.3, a MODE 3 SLB is bounded by the MODE 2 analysis. In addition, automatic safeguards actuation signals are available through MODE 3, until the RCS is borated and the automatic safeguards signals are blocked. In MODE 4, at least 1 CMT remains available for automatic actuation on low-2 pressurizer level or manual actuation. Therefore, with the application of revised Footnote (c) and new Footnote (l) to TS Table 3.3.8-1 Function 5 (Low-3 pressurizer pressure) and Function 11 (Low-2 RCS cold leg temperature), these Functions continue to support the mitigation of SLB events.

Revised Required Action E.2 and new Required Action E.3 are consistent with the revised Applicability of the related Functions in Table 3.3.8-1 and would provide the appropriate actions to exit the Applicability of the related functions. A Completion Time of 12 hours is applied to both actions, consistent with the Completion Time for the existing action to be in MODE 4. The intent of the two actions is consistent with the intent of the single action (i.e., exit the Applicability); therefore, the Completion Time of 12 hours is still considered to be appropriate. The change to remove MODE 4 Applicability for Function 24 (Low-2 steam line pressure), necessitates that the Condition G actions also be revised accordingly (see "Power Operated Relief Valve and Block Valve Isolation" related section below for additional detail).

B. Steam Line Isolation

As described in UFSAR Subsection 7.3.1.2.10, a signal to isolate the steam line is generated within the PMS on Manual initiation, High-2 containment pressure, Low-2 steam line pressure, High steam line pressure negative rate, and Low-2 cold leg temperature.

Steam line isolation for Low-2 steam line pressure and Low-2 cold leg temperature may be manually blocked when pressurizer pressure is below the P-11 setpoint and is

automatically unblocked when pressurizer pressure is above P-11. Steam line isolation on High steam line pressure negative rate is automatically blocked when pressurizer pressure is above P-11 and is automatically unblocked on the manual blocking of the steam line isolation for Low-2 steam line pressure and Low-2 cold leg temperature. During all of MODES 1, 2 and 3, steam line isolation is automatically provided on either Low-2 steam line pressure or Low-2 cold leg temperature, or High steam line pressure negative rate. Steam line isolation signals on Low-2 steam line pressure and High steam line pressure negative rate also provide protection against an inside containment SLB and stuck open steam generator (SG) relief or safety valves. Steam line isolation prevents steam release from more than one steam generator to limit the steam release and subsequent cooldown that could cause a return to criticality.

As described in UFSAR Subsection 19E.2.2.2.2, isolation of the main steam line on a high (large) negative rate of change in steam pressure provides safety-related actuation during shutdown MODES. This signal is OPERABLE during MODE 3 when a secondary side break or stuck open valve could result in the rapid depressurization of the steam line(s). This signal is placed into service below the setpoint that disables the Low-2 steam line pressure signal (P11) that actuates steam line isolation as discussed in Section 7.3. When the operator manually blocks the Low-2 steam line pressure signal, the steam line high pressure-negative rate signal is automatically enabled. In MODES 4, 5, and 6, this function is not needed for accident detection and mitigation.

The Applicability requirements for TS Table 3.3.8-1 Function 25 (High steam line pressure negative rate) is MODE 3, with footnote (k) clarifying "Below the P-11 (Pressurizer Pressure) interlock." As previously described, this function is only automatically enabled when Function 24 (Low-2 steam line pressure) is blocked. However, Function 24 is not automatically blocked below P-11; the P-11 permissive only designates the plant condition where Function 24 can be manually blocked. During a typical plant cooldown, there is a period of time below P-11 during the normal depressurization sequence, when Function 24 can remain enabled without a requirement to be blocked. As such, Function 25 is not OPERABLE during this period below P-11. OPERABILITY is established only when Function 24 is manually blocked. Also, Function 24 and 25 currently have overlapping applicability in MODE 3 below P-11; however, the PMS design does not allow both functions to be OPERABLE simultaneously.

This swap of actuation signals from Function 24 to Function 25 provides continuous protection to assure closure of the main steam isolation valves for a steam line break (SLB) in order to maintain at least one unfaulted steam generator as a heat sink for the reactor and to limit the mass and energy release to containment.

Description of Changes to Current Licensing Basis Documents

- TS Table 3.3.8-1 Footnote (k), which is applied to Function 25 MODE 3 Applicability, is revised to state "Below the P-11 (Pressurizer Pressure) interlock when Steam Line Pressure – Low 2 is blocked."
- New Footnote (m) is added, stating "Below the P-11 (Pressurizer Pressure) interlock when Steam Line Pressure - Low 2 is not blocked" and applied to Function 24 MODE 3 Applicability.

Technical Justification

The revision to TS Table 3.3.8-1 Footnote (k) reflects the PMS design and operation, because Function 25 (High steam line pressure negative rate) is not automatically enabled below P-11. Steam line isolation on High steam line pressure negative rate is automatically blocked when pressurizer pressure is above P-11. The operator is able to manually place the "Steam Line/feedwater isolation and safeguards actuation block" when below P-11, which blocks the steam line isolation for Low-2 steam line pressure and Low-2 RCS cold leg temperature and automatically unblocks steam line isolation on High steam line pressure negative rate.

The addition of new Footnote (m) provides assurance that Function 24 would remain Applicable until it is manually blocked, even if below P-11 and cold SDM boration is met. This change ensures the steam line isolation functionality until isolation on Low-2 steam line pressure is blocked, which then enables automatic isolation on High steam line pressure negative rate. These changes continue to support the SLB mitigation-related actuations initiated by the Low-2 steam line pressure signal.

Steam line isolation is provided on High steam line pressure negative rate during lower MODES and pressures because steam line pressures will ultimately decrease below the Low-2 steam line pressure setpoint during plant depressurization, which would result in inadvertent isolation of the steam line. Steam line isolation on High steam line pressure negative rate is not enabled during power operation (MODE 1) because sufficiently large changes in steam line pressure could occur which would inadvertently isolate the Steam Line. However, during a controlled cooldown sequence over the course of MODE 3, pressure changes greater than the High steam line pressure negative rate setpoint would not be anticipated.

During a normal cooldown sequence, inadvertent steam line isolation on Low-2 steam line pressure would not be expected immediately below P-11, because the P-11 setpoint is reached before the Low-2 steam line pressure setpoint. If an SLB event occurs in a condition below the P-11 setpoint and the operator has not blocked Low-2 steam line pressure, the steam line pressure will drop below the Low-2 setpoint and the steam line will be automatically isolated. Therefore, the revision to Footnote (k) still provides protection from an SLB event mitigation perspective. Once isolation on Low-2 steam line pressure is blocked, the requirement to maintain steam line isolation on High steam line pressure negative rate remains applicable for the duration of MODE 3.

C. Power Operated Relief Valve and Block Valve Isolation

As described in UFSAR Table 7.7-3, the ability to provide decay heat removal capability during shutdown operations by delivery of startup feedwater flow to the SG and venting of steam from the steam generators to the atmosphere via the power-operated relief valves (PORVs) is considered a Defense-in-Depth function for the SGS.

As described in UFSAR Subsection 7.3.1.2.24, a signal for closing the SG power operated relief valves and their block valves is generated within the PMS from manual initiation and Low-2 steam line pressure. The Low-2 steam line pressure signal closes the PORV and the associated block valve for the affected steam generator. Steam generator PORV isolation for Low-2 steam line pressure may be manually blocked when pressurizer

pressure is below the P-11 setpoint and is automatically unblocked when pressurizer pressure is above P-11.

The purpose of the SG PORV and block valve isolation function is to ensure that the SG PORV flow paths can be isolated during a steam generator tube rupture (SGTR) event. The PORV flow path is assumed to open due to high secondary side pressure, during the SGTR. Depressurization of the primary and secondary systems continues until the Low-2 steam line pressure setpoint is reached. As a result, the steam line isolation valves and intact and ruptured steam generator PORV block valves are closed.

As described in UFSAR Subsection 19E.4.7.3, the SGTR analysis presented in UFSAR Chapter 15 is the limiting case with respect to offsite doses. The analysis was performed at full power because this results in the maximum offsite dose. The key inputs from the thermal-hydraulic SGTR analysis to the offsite dose analysis are the amount of flashed primary to secondary break flow and the steam released from the faulted steam generator. Both of these will be significantly reduced at lower power levels and in lower MODES of operation. In MODE 4 with an RCS temperature less than 350°F and in MODES 5 and 6, the RCS pressure and temperature are reduced; thus, an SGTR event is not considered credible.

TS Table 3.3.8-1 Function 24 requires the automatic actuation functions initiated by Steam Line Pressure Low-2 to be OPERABLE for all of MODES 1, 2, 3, as well as MODE 4 when the RCS is not being cooled by the Normal Residual Heat Removal System. This is driven by OPERABILITY of the PORV block valve isolation function, to support availability of this actuation for any MODES where SGTR is credible.

As noted in UFSAR 7.3.1.2.24, the automatic PORV and block valve isolation function on Low-2 steam line pressure can be blocked below P-11. The P-11 setpoint is reached during the MODE 3 portion of the cooldown and depressurization sequence. If the plant is being cooled down using the SG PORV flow path, the automatic isolation function must be blocked to prevent undesired closure of the cooling flow path. As currently written, the Function 24 applicability would not allow bypassing the isolation until the PORV and block valve isolation function on Low-2 steam line pressure (leading to subsequent isolation), which would not allow the defense-in-depth decay heat removal function of the PORV to be performed.

Description of Changes to Current Licensing Basis Documents

- The Applicability for TS Table 3.3.8-1 Function 24 is revised to remove MODE 4.
- TS Table 3.3.8-1 Footnote (c) is revised to state "Above the P-11 (Pressurizer Pressure) interlock" by deleting "when the RCS boron concentration is below that necessary to meet the SDM requirements at an RCS temperature of 200°F." This revised Footnote is applied to Table 3.3.8-1 Function 24 (Low-2 steam line pressure) MODE 3 Applicability.
- Existing TS 3.3.8 Required Actions G.2 and G.3 are replaced with new Required Action G.2, stating "Establish RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F" and new Required Action G.3 stating "Block Steamline/Feedwater isolation and Safeguards actuations." The actions are joined using an AND connector. Required Action G.2 Completion Time is retained as 12 hours while Required Action G.3 Completion Time is proposed as

“1 hour from discovery of RCS boron concentration greater than or equal to that necessary to meet SDM at an RCS temperature of 200°F while in MODE 3.”

Technical Justification

The revision to the Applicability for TS Table 3.3.8-1 Function 24 (Low-2 steam line pressure) to delete MODE 4 and to modify MODE 3 with footnote (c) allows blocking this automatic isolation of the PORVs and PORV block valves while below P-11 (except when RCS boron concentration is less than that necessary to meet the SDM requirements at an RCS temperature of 200°F per footnote (l)). This allowance to block the PORV isolation provides the capability to cool down the plant to shutdown conditions using the PORVs. However, the SG PORVs and block valves have a safety-related function to isolate the SG PORV flow paths during an SGTR event.

UFSAR Subsection 19E.4.7.3 states that in MODE 4 with an RCS temperature less than 350°F, and in MODES 5 and 6, the RCS pressure and temperature are reduced; thus, an SGTR event is not considered credible. Because an SGTR is considered credible between MODE 3 (below P-11) and MODE 4 (with RCS temperature greater than or equal to 350°F), an evaluation has been performed to demonstrate that an SGTR initiated during a post-shutdown cooldown, when the automatic SG PORV block and steam line isolation functions are not available (i.e., when pressurizer pressure is below the P-11 interlock), is not limiting with respect to offsite doses. By comparison of the main mass transfer data used in the dose analyses, i.e., total flashed break flow, break flow, and ruptured SG releases, the results demonstrate that the full power SGTR is limiting.

The analysis evaluated three cases, with variations in PORV position and operator action times (i.e., in cooldown mid-position with operator response at 30 minutes and 1 hour, and failed wide open with operator response at 30 minutes). The results of these cases were compared against the full power SGTR evaluation from UFSAR Chapter 15, and the full power SGTR evaluation bounded all three cases with respect to Total Flashed Break Flow, Total Break Flow and Total Ruptured Steam Generator Steam Releases. The analysis concludes that the times selected for the operator response to isolate the PORV flow path are not critical to the conclusion that the full power analysis is limiting. Therefore, the analysis supports the conclusion that automatic PORV and Block Valve isolation is not required in MODE 3 (below P-11) and MODE 4 (with RCS temperature greater than or equal to 350°F).

Applying revised Footnote (c) to Function 24 MODE 3 Applicability is consistent with the need for the protection function to be OPERABLE as credited in the safety analysis above P-11 regardless of whether RCS boration meets cold SDM requirements. Applying new Footnote (l) to Function 24 maintains the requirement to borate to cold shutdown conditions, which would still be required for the safeguards and steam line isolation actuations derived from the Low-2 steam line pressure signal. These changes continue to support the SLB mitigation-related actuations initiated by the Low-2 steam line pressure signal.

New Required Action G.2 is consistent with the Applicability of the related functions in Table 3.3.8-1 and would provide the appropriate actions to exit the Applicability of the related functions. Completing new Required Action G.3 to “Block Steamline/Feedwater isolation and Safeguards actuations” will result in steam line isolation on High steam line pressure negative rate to be enabled, which will continue to provide SLB mitigation. A

Completion Time of 12 hours is applied to Required Action G.2, consistent with the existing Required Action to be in MODE 4, and the Completion Time for action E.3. The Completion Time for Required Action G.3 is proposed as "1 hour from discovery of RCS boron concentration greater than or equal to that necessary to meet SDM at an RCS temperature of 200°F while in MODE 3." Deferral of the action allows establishing the cold SDM boration prior to requiring reducing pressurizer pressure and cooling down the RCS below P-11 to support blocking of Steamline/Feedwater isolation and Safeguards actuations, which maintains the necessary margins assumed for the SLB. One hour is deemed a reasonable time to accomplish the manual block of Steamline/Feedwater isolation and Safeguards actuations once MODE 3 is reached and RCS boron concentration is established greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F.

These Technical Specification changes do not result in a modification, addition to, or removal of a structure, system, or component (SSC) such that a design function is adversely affected, has no impact on plant operating procedures or a method of control that adversely affects a design function, does not result in an adverse change to a method of evaluation or use of an alternate method of evaluation, does not represent tests or experiments outside the reference bounds of the design basis, and does not alter the assumptions or results of the ex-vessel severe accident assessment.

The proposed changes do not adversely impact any functions associated with containing, controlling, channeling, monitoring, or processing radioactive or non-radioactive materials, nor do they diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. The types and quantities of expected plant effluents are not changed. No effluent release path is impacted by this change. Therefore, neither radioactive nor non-radioactive material effluents are affected by this activity.

The proposed changes have no adverse impact on the emergency plan or the physical security plan implementation, because there are no changes to physical access to credited equipment inside the Nuclear Island (including containment or the auxiliary building) and no adverse impact to plant personnel's ability to respond to any plant operations or security event.

3. TECHNICAL EVALUATION (included in Section 2)

4. REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 52.98(c) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a Combined License (COL). This amendment request involves a change to plant-specific Technical Specifications (COL Appendix A); and therefore, requires an amendment to the COL. Accordingly, NRC approval is required prior to making the plant-specific changes in this license amendment request.

10 CFR 52, Appendix D, Section VIII.C.6 states that after issuance of a license, "Changes to the plant-specific TS (Technical Specifications) will be treated as license amendments under 10 CFR 50.90." 10 CFR 50.90 addresses the application for amendments of licenses, construction permits, and early site permits. As discussed above, a change to COL Appendix A is requested, and thus a license amendment request (LAR) (as supplied herein) is required.

10 CFR Part 50, Appendix A, General Design Criterion (GDC) 13, "Instrumentation and Control," requires that instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. The proposed changes assure the continued ability of the PMS to monitor interacting variables and systems. Therefore, the proposed changes comply with the requirements of GDC 13.

10 CFR Part 50, Appendix A, GDC 20, "Protection System Functions," requires that the protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences, and (2) to sense accident conditions and to initiate the operation of systems and components important to safety. The proposed change supports the ability of the PMS to detect accident conditions and automatically initiate systems to mitigate the effects of the accident. Therefore, the proposed change complies with the requirements of GDC 20.

The proposed changes have been evaluated to determine whether applicable regulations continue to be met. It was determined that the proposed changes do not affect conformance with the GDC differently than described in the plant-specific Design Control Document (DCD) or Updated Final Safety Analysis Report (UFSAR).

4.2 Precedent

There are no identified precedents for the changes in this request.

4.3 Significant Hazards Consideration

The requested amendment proposes to change Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.3.8, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, related to Safeguard Actuation Functions. Various ESFAS Functions require Applicability and corresponding Actions changes to more accurately reflect their operation and related safety analysis assumptions.

An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

4.3.1 Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes do not involve changes to current plant design or safety analysis assumptions. These changes provide Technical Specifications consistency with the approved plant design and safety analysis assumptions. The changes do not affect the operation of any systems or equipment that initiate an analyzed accident or alter any structures, systems, and components (SSCs) accident initiator or initiating sequence of events. The proposed changes do not result in any increase in the probability of an analyzed accident occurring. Therefore, the requested amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

4.3.2 Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed changes do not involve changes to current plant design or safety analysis assumptions. These changes provide Technical Specifications consistency with the approved plant design and safety analysis assumptions. The proposed changes do not affect plant protection instrumentation systems, and do not affect the design function, support, design, or operation of mechanical and fluid systems. The proposed changes do not result in a new failure mechanism or introduce any new accident precursors. No design function described in the Updated Final Safety Analysis Report (UFSAR) is affected by the proposed changes. Therefore, the requested amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

4.3.3 Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed changes do not involve changes to current plant design or safety analysis assumptions. These changes provide Technical Specifications consistency with the approved plant design and safety analysis assumptions. No safety analysis or design basis acceptance limit/criterion is involved. Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) 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. Therefore, it is concluded that the requested amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5. ENVIRONMENTAL CONSIDERATIONS

The requested amendment proposes to change Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.3.8, Engineered Safety Feature Actuation System (ESFAS) Instrumentation, related to Safeguard Actuation Functions. Various ESFAS Functions require Applicability and corresponding Actions changes to more accurately reflect their operation and related safety analysis assumption.

A review has determined that the proposed changes require an amendment to the COL. However, a review of the anticipated construction and operational effects of the requested amendment has determined that the requested amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

(i) *There is no significant hazards consideration.*

As documented in Section 4.3, Significant Hazards Consideration, of this license amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment." The Significant Hazards Consideration determined that (1) the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the proposed amendment does not involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

(ii) *There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.*

The proposed changes are unrelated to any aspect of plant construction or operation that would introduce any change to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents) or affect any plant radiological or non-radiological effluent release quantities. Furthermore, the proposed changes do not affect any effluent release path or diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. Therefore, it is concluded that the proposed amendment does not involve a significant

change in the types or a significant increase in the amounts of any effluents that may be released offsite.

(iii) *There is no significant increase in individual or cumulative occupational radiation exposure.*

The proposed changes in the requested amendment do not affect or alter any walls, floors, or other structures that provide shielding. Plant radiation zones and controls under 10 CFR 20 preclude a significant increase in occupational radiation exposure. Therefore, the proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above review of the proposed amendment, it has been determined that anticipated construction and operational effects of the proposed amendment do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6. REFERENCES

None.

Southern Nuclear Operating Company

ND-18-0537

Enclosure 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

**Proposed Changes to the Licensing Basis Documents
(LAR-18-011)**

Note:

Added text is shown as Blue Underline

Deleted text is shown as ~~Red Strikethrough~~

Omitted text is shown as three asterisks (*...*)

(Enclosure 2 consists of 5 pages, including this cover page)

COL Appendix A, Technical Specifications 3.3.8

...

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| E. As required by Required Action C.1 and referenced in Table 3.3.8-1. | E.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> | |
| | E.2 <u>Reduce Reactor Coolant System (RCS) pressure below P-11 (Pressurizer Pressure) interlock.</u> Be in MODE 4. | 12 hours |
| | <u>AND</u> | |
| | <u>E.3 Establish RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F.</u> | <u>12 hours</u> |
| F. As required by Required Action C.1 and referenced in Table 3.3.8-1. | F.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> | |
| | F.2 Be in MODE 4 with the Reactor Coolant System (RCS) cooling provided by the Normal Residual Heat Removal System (RNS). | 24 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|---|
| G. As required by Required Action C.1 and referenced in Table 3.3.8-1. | G.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> G.2 <u>Establish RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F. Be in MODE 4.</u> | 12 hours |
| | <u>AND</u> G.3 <u>Block Steamline/ Feedwater isolation and Safeguards actuations. Establish RCS cooling provided by RNS</u> | <u>1 hour from discovery of RCS boron concentration greater than or equal to that necessary to meet SDM at an RCS temperature of 200°F while in MODE 3 24 hours</u> |

...

Table 3.3.8-1 (page 1 of 2)
 Engineered Safeguards Actuation System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS |
|--|--|----------------------|------------|
| * ... * 5. Pressurizer Pressure – Low 3 | 1,2,3 ^{(c)(l)} | 4 | E |
| * ... * 11. RCS Cold Leg Temperature (T _{cold}) – Low 2 | 1,2,3 ^{(c)(l)} | 4 per loop | E |

* ... *

(c) Above the P-11 (Pressurizer Pressure) interlock, ~~when the RCS boron concentration is below that necessary to meet the SDM requirements at an RCS temperature of 200°F.~~

* ... *

(l) Below the P-11 (Pressurizer Pressure) interlock and RCS boron concentration is less than that necessary to meet the SDM requirements at an RCS temperature of 200°F.

Table 3.3.8-1 (page 2 of 2)
 Engineered Safeguards Actuation System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS |
|--|--|----------------------|------------|
| * * * * | | | |
| 24. Steam Line Pressure – Low 2 | 1,2,3 ^{(c)(l)(m)} ,4 ^(b) | 4 per steam line | G |
| 25. Steam Line Pressure – Negative Rate – High | 3 ^(k) | 4 per steam line | I |

* * * *

[\(c\) Above the P-11 \(Pressurizer Pressure\) interlock](#)

* * * *

(k) Below the P-11 (Pressurizer Pressure) interlock [when Steam Line Pressure – Low 2 is blocked](#).

(l) [Below the P-11 \(Pressurizer Pressure\) interlock and RCS boron concentration is less than that necessary to meet the SDM requirements at an RCS temperature of 200°F.](#)

(m) [Below the P-11 \(Pressurizer Pressure\) interlock when Steam Line Pressure - Low 2 is not blocked.](#)

Southern Nuclear Operating Company

ND-18-0537

Enclosure 3

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Technical Specification Bases Changes

(LAR-18-011)

(For Information Only)

Note:

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Omitted text is shown as three asterisks (*...*...*)

(Enclosure 3 consists of 4 pages, including this cover page)

Technical Specification Bases 3.3.8

BASES

APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY (continued)

...

5. Pressurizer Pressure – Low 3

This signal provides protection against the following accidents:

- *...*

...

The LCO requires four channels of Pressurizer Pressure – Low 3 to be OPERABLE in MODES 1 ~~and 2~~, ~~and~~ Additionally, they are required to be OPERABLE in MODE 3 (above P-11, ~~when or in a condition below P-11 where~~ the RCS boron concentration is below that necessary to meet the SDM requirements at an RCS temperature of 200°F), to mitigate the consequences of a high energy line rupture inside containment. *...*

This Function is not required to be OPERABLE in MODE 3 below the P-11 setpoint (as long as the boron concentration is greater than that necessary to meet the SDM requirements at an RCS temperature of 200°F). Other ESF Functions are used to detect accident conditions and actuate the ESF systems in this MODE. In MODES 4, 5, and 6, this Function is not needed for accident detection and mitigation.

...

11. RCS Cold Leg Temperature (T_{cold}) – Low 2

This signal provides protection against the following accidents:

- *...*

...

The LCO requires four channels of T_{cold} – Low 2 to be OPERABLE in MODES 1 and 2, Additionally, they are required to be OPERABLE ~~and~~ in MODE 3 with any main steam isolation valve open and above P-11 or in a condition below P-11 where ~~when~~ the RCS boron concentration is below that necessary to meet the SDM requirements at an RCS temperature of 200°F. *...*

BASES

APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY (continued)

...

24. Steam Line Pressure – Low 2

Steam Line Pressure – Low 2 provides protection against the following accidents:

- *...*

...

The LCO requires four channels per steam line of Steam Line Pressure – Low 2 Function to be OPERABLE in MODES 1, ~~and 2,~~ and 3 above P-11 or in a condition below P-11 where the RCS boron concentration is below that necessary to meet the SDM requirements at an RCS temperature of 200°F, or in a condition below P-11 where Steam Line Pressure – Low 2 is not blocked, ~~and MODE 4 with the RCS cooling not being provided by the RNS.~~ This Function is not required to be OPERABLE in MODE 3 below the P-11 setpoint as long as the boron concentration is greater than that necessary to meet the SDM requirements at an RCS temperature of 200°F and the Function is blocked.

25. Steam Line Pressure-Negative Rate – High

Steam Line Pressure-Negative Rate – High provides closure of the MSIVs for an SLB, when less than the P-11 setpoint, *...*

...

The LCO requires four channels of Steam Line Pressure-Negative Rate – High instrumentation per steam line to be OPERABLE in MODE 3 when less than the P-11 setpoint and Steam Line Pressure – Low 2 is blocked, when a secondary side break or stuck open valve could result in the rapid depressurization of the steam line(s). Four channels are provided in each steam line to permit one channel to be in trip or bypass indefinitely and still ensure no single random failure will disable this trip Function. In MODES 1 and 2, and in MODE 3 when above the P-11 setpoint ~~with the RCS boron concentration below that necessary to meet the SDM requirements at an RCS temperature of 200°F~~, this signal is automatically-disabled and the Steam Line Pressure – Low 2 signal is automatically enabled.

...

...

BASES

ACTIONS (continued)

E.1 and, E.2 and E.3

If the Required Action and associated Completion Time of Condition A or B is not met or if three or more channels are inoperable, the plant must be placed in a MODE in which the LCO does not apply. This is accomplished by placing the plant in MODE 3 within 6 hours and ~~in~~ MODE 4 by reducing reactor pressure below the P-11 (Pressurizer Pressure) interlock and establishing RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner without challenging plant systems.

F.1 and F.2

...

G.1, G.2, and G.3

If the Required Action and associated Completion Time of Condition A or B is not met or if three or more channels are inoperable, the plant must be placed in a MODE in which the LCO does not apply. This is accomplished by placing the plant in MODE 3 within 6 hours, and establishing RCS boron concentration greater than or equal to that necessary to meet the SDM requirements at an RCS temperature of 200°F ~~MODE 4~~ within 12 hours, ~~and establish the RCS being cooled by the RNS within 24 hours.~~ The Required Action G.3 requirement to block Steamline/Feedwater isolation and Safeguards actuations is not required until 1 hour from discovery of RCS boron concentration greater than or equal to that necessary to meet SDM at an RCS temperature of 200°F while in MODE 3. Establishing SDM prior to reducing pressurizer pressure and cooling down the RCS maintains the necessary margins assumed for the SLB. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner without challenging plant systems.