



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

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS

RELATED TO AMENDMENT NOS. 148 AND 147

TO THE COMBINED LICENSE NOS. NPF-91 AND NPF-92

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MEAG POWER SPVM, LLC

MEAG POWER SPVJ, LLC

MEAG POWER SPVP, LLC

CITY OF DALTON, GEORGIA

VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4

DOCKET NOS. 52-025 AND 52-026

1.0 INTRODUCTION

By letter dated May 18, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18138A396), Southern Nuclear Operating Company, Inc. (SNC) requested that the U.S. Nuclear Regulatory Commission (NRC or the Commission) amend Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Combined License (COL) Nos. NPF-91 and NPF-92, respectively.

The License Amendment Request (LAR) 18-011 requested 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.

2.0 REGULATORY EVALUATION

The NRC staff considered the following requirements in reviewing the LAR that included the proposed changes.

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, Appendix D, Section VIII.B.5.a allows an applicant or licensee who references this appendix to depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure

from Tier 1 information, Tier 2* information, or the TS, or requires a license amendment under paragraphs B.5.b or B.5.c of the section.

10 CFR Part 52, Appendix D, VIII.C.6 states that after issuance of a license, “Changes to the plant-specific TS will be treated as license amendments under 10 CFR 50.90.” 10 CFR 50.90 addresses the application for amendment of license, construction permit, or early site permit. The proposed LAR requires changes in the TS, and therefore an LAR is required to be submitted for NRC approval.

10 CFR 50.36, “Technical specifications,” impose limits, operating conditions, and other requirements upon reactor facility operation for the public health and safety. The TS are derived from the analyses and evaluations in the safety analysis report. TS must contain: (1) safety limits and limiting safety system settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls.

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. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges. This regulatory requirement is applicable for the evaluation of this LAR because the proposed changes in this LAR are associated with the plant safety monitoring functions.

10 CFR 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. This regulatory requirement is also applicable for the review of this LAR because the proposed changes in this LAR are related to the plant safety protection functions.

3.0 TECHNICAL EVALUATION OF THE REQUESTED CHANGES

In LAR 18-011, SNC proposed the following changes to the COL Appendix A, plant-specific TS for VEGP Units 3 and 4:

- 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 shutdown margin (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.”

The staff’s review of each proposed TS change described above is provided in the following sections.

3.1 Safeguards Actuation

The Protection and Safety Monitoring System (PMS) monitors variables that provide indication of a significant plant transient and generates a safety actuation signal which is used in the initiation logic of several engineered safety features. The safeguards actuation signal is generated from Low-3 pressurizer pressure, Low-2 steam line pressure, Low-2 RCS cold leg temperature, High-2 containment pressure and manual initiation. In the LAR the licensee stated that 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) interlock. These signals are automatically unblocked when the pressurizer pressure is above the P-11 interlock.

The staff reviewed the proposed revisions to TS 3.3.8 and TS Table 3.3.8-1 “Engineered Safeguards Actuation System Instrumentation” and found that the revision of Required Action E.2, the addition to Required Action E.3, the revision of Footnote (c), and the addition of footnote (l), which apply to Functions 5, 11 and 24 do not change the initiation logic of these functions from the PMS. The proposed changes do not impact the design of the PMS and still support the ability of the PMS to monitor for steam line break events and automatically initiate systems to mitigate the effects of the event. The proposed changes to the TS were reviewed and continue to meet the operability requirements of Table 3.3.8-1 and Required Actions E.2 and E.3. Therefore, the staff finds that the proposed changes acceptable because the PMS will continue to meet the requirements of GDC 13 and 20.

As described in LAR 18-011, Westinghouse Electric Company's Nuclear Safety Advisory Letter, NSAL-02-14, raised an issue regarding a steam line break event that could occur when the plant is intentionally being cooled down and the low pressurizer pressure and/or low steam line pressure Safeguards Actuation signals would have been manually blocked. The recommendation by Westinghouse in NSAL-02-14 is to borate the RCS sufficiently to achieve the required 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.

Based on the results of the staff's audit (Accession No. ML18290A594), the implementation of NSAL-02-14 by the licensee would provide assurance when safeguards actuation has been blocked that the possibility for a return to criticality would be precluded. Return to criticality would be precluded since the RCS must be borated so subcriticality is maintained at 200°F. Implementation of the NSAL-02-14 recommendations would continue to support the mitigation of steam line break events when below the P-11 interlock during the Modes described in LAR 18-011 and therefore, the design continues to meet GDC 20.

Based on the above review, the staff finds that the proposed changes to VEGP Units 3 and 4 TS for the safeguards actuation to be acceptable.

3.2 Steam Line Isolation

A signal to isolate the steam line is generated within the PMS from manual initiation, High-2 containment pressure, Low-2 steam line pressure, High steam line pressure negative rate, and Low-2 cold leg temperature. In the LAR the licensee stated that 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 interlock and is automatically unblocked when pressurizer pressure is above the P-11 interlock. Steam line isolation on High steam line pressure negative rate is automatically blocked when pressurizer pressure is above the P-11 interlock 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.

The staff reviewed the proposed revisions to TS Table 3.3.8-1 and found that the revision of Footnote (k) to Function 25 and the addition of footnote (m) to Function 24 do not change the initiation logic of these functions from the PMS. The staff reviewed the proposed changes to the TS and found that the TS continue to meet the applicability requirements of Table 3.3.8-1. The proposed changes do not impact the design of the PMS and still support the ability of the PMS to detect secondary side break or stuck open valve events and automatically initiate systems to mitigate the effects of a rapid depressurization of the steam line. Therefore, the staff finds the proposed changes acceptable and the PMS continues to meet the requirements of GDC 13 and 20.

3.3 Power Operated Relief Valve and Block Valve Isolation

A signal for closing the steam generator power operated relief valves (PORVs) and their block valves is generated within the PMS from manual initiation and Low-2 steam line pressure. In the LAR the licensee stated that steam generator PORV isolation for Low-2 steam line pressure may be manually blocked when pressurizer pressure is below the P-11 interlock and is automatically unblocked when pressurizer pressure is above the P-11 interlock.

The staff reviewed the proposed revisions to TS 3.3.8 and TS Table 3.3.8-1 and found that the revision of Required Actions G.2, G.3 and the revision of the applicability of Functions 24 do not

change the initiation logic of these functions from the PMS. The proposed changes do not impact the design of the PMS and still support the ability of the PMS to monitor for steam generator tube rupture event and automatically initiate systems to mitigate the effects of the event. The proposed changes continue to meet the applicability requirements of Table 3.3.8-1 and Required Actions of TS 3.3.8 G.2 and G.3. Therefore, the staff finds the proposed changes acceptable and the PMS continues to meet the requirements of GDC 13 and 20.

As part of the staff's audit (Accession No. ML18290A594), the staff reviewed the steam generator tube rupture (SGTR) sensitivity analysis as applied by the licensee for the technical justification in support of the TS changes regarding the steam generator (SG) PORV and block valve isolation. The staff verified that the SGTR sensitivity analysis demonstrated that the full power SGTR evaluation from VEGP Units 3 and 4, Updated Final Safety Analysis Report (UFSAR) Chapter 15 bounds the sensitivity analysis results. The staff also found that the sensitivity analysis supports the conclusion that automatic PORV and Block Valve isolation is not required (e.g., not available) in MODE 3 (below the P-11 interlock) and MODE 4 (with RCS temperature greater than or equal to 350°F). As a result of the staff's audit and from reviewing the associated VEGP TS changes, the staff finds that plant operations for maintaining instrumentation and control along with the protection system functions as proposed in LAR 18-011 continue to meet GDCs 13 and 20.

Based on the above review, the staff finds the proposed changes to VEGP Units 3 and 4 TS for the SG PORV and block valve isolation to be acceptable.

3.4 Summary of Technical Evaluation

Based on the foregoing, the staff concludes the proposed TS changes in LAR 18-011 are acceptable, continue to meet the requirements of 10 CFR 50.36 and comply with GDCs 13 and 20, and do not change the safety analysis presented in the VEGP UFSAR. Therefore, the existing safety analysis remains applicable. Accordingly, the staff finds the changes proposed to the TS to be acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendment on October 17, 2018. The State official 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, "*Standards for Protection Against Radiation*" and changes surveillance requirements. The NRC staff has determined 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. Also, 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 (83 FR 33270, published on July 17, 2018). 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 staff has concluded, based on the considerations discussed in Section 3.0, that there is reasonable assurance that: (1) 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. Therefore, the staff finds the changes proposed in this license amendment acceptable.

7.0 REFERENCES

1. 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), dated May 18, 2018 (ADAMS Accession Number ML18138A396).
2. U.S. Nuclear Regulatory Commission, Audit Summary for the Regulatory Audit of Southern Nuclear Operating Company Vogtle Electric Generating Plant Units 3 and 4 Request for License Amendment Related to Engineered Safety Feature Safeguards Actuation Technical Specifications Applicability Changes (LAR 18-011), October 19, 2018 (ADAMS Accession No. ML18290A594)
3. Combined License NPF-91 for Vogtle Electric Generating Plant Unit 3, Southern Nuclear Operating Company (ADAMS Accession No. ML14100A106).
4. Combined License NPF-92 for Vogtle Electric Generating Plant Unit 4, Southern Nuclear Operating Company (ADAMS Accession No. ML14100A135).
5. Vogtle Electric Generating Company Units 3 and 4 Updated Final Safety Analysis Report, Revision 6 and Tier 1, Revision 4, June 15, 2017 (ADAMS Accession No. ML17172A218).