

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS
RELATED TO AMENDMENT NOS. 164 and 162
TO THE COMBINED LICENSE NOS. NPF-91 AND NPF-92, RESPECTIVELY
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 March 29, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19088A126), the Southern Nuclear Operating Company (SNC) requested that the Nuclear Regulatory Commission (NRC) amend Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Combined License (COL) Numbers NPF-91 and NPF-92, respectively. The License Amendment Request (LAR) 19-004 requested changes to address an inconsistency by revising the COLs to relocate the auxiliary steam header isolation valve from the same header as the turbine bypass valves to a new header in Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Figure 2.2.4-1 (Sheet 3) of COL Appendix C, and making a corresponding change to plant-specific Tier 1 information.

Pursuant to Section 52.63(b)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR), SNC also requested an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule for the plant-specific DCD Tier 1 material departures. The requested exemption would allow a departure from the corresponding portions of the certified information in Tier 1 of the generic design control document (DCD).¹ In order to modify the

¹ While the licensee describes the requested exemption as being from Section III.B of 10 CFR Part 52, Appendix D, the entirety of the exemption pertains to proposed departures from Tier 1 information in the plant-specific DCD. In the remainder of this evaluation, the NRC will refer to the exemption as an

Updated Final Safety Analysis Report (UFSAR) (the plant-specific design control document (PS-DCD)) Tier 1 information, the NRC must find SNC's exemption request included in its submittal for the LAR to be acceptable. The staff's review of the exemption request, as well as the LAR, is included in this safety evaluation.

2.0 REGULATORY EVALUATION

COL Appendix C Subsection 2.2.4 contains ITAAC for the steam generator system (SGS) and portions of the main and startup feedwater system (FWS), main steam system (MSS), and main turbine system (MTS). COL Appendix C Figure 2.2.4-1 (Sheet 3) shows portions of the FWS, MSS, and MTS piping in the turbine building. This figure currently depicts the auxiliary steam supply system header and header isolation valve as branching from the same header as the turbine bypass valves, which is inconsistent with the UFSAR Figure 10.3.2-2.

As described in the UFSAR Subsection 10.3.2.3.1, during normal power operation, the MSS supplies steam from the SGS to meet the demand of the MTS. The MSS also supplies steam as required to the auxiliary steam supply system, and reheating steam to the moisture separator reheater. The MSS also provides steam to the turbine gland seal system. The MSS does not perform any safety-related functions. Consistent with NUREG-0138, "Staff Discussion of 15 Technical Issues Listed in Attachment to November 3, 1976 Memorandum from Director NRR to NRR Staff," dated November 1976, and Standard Review Plan Section 10.3, "Main Steam Supply System," credit is taken for the nonsafety-related components in the MSS downstream of the SGS Main Steam Isolation Valves (MSIVs) to limit blowdown of a second steam generator in the event of a steam line break upstream of an MSIV concurrent with the failure of the other MSIV.

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

Appendix D, Section VIII.A.4 to 10 CFR Part 52 states that exemptions from Tier 1 information are governed by the requirements in 10 CFR 52.63(b)(1) and 10 CFR 52.98(f). It also states that the Commission will deny such a request if it finds that the design change will result in a significant decrease in the level of safety otherwise provided by the design.

10 CFR 52.63(b)(1) allows the licensee who references a design certification rule to request NRC approval for an exemption from one or more elements of the certification information. The Commission may only grant such a request if it determines that the exemption will comply with the requirements of 10 CFR 52.7, which, in turn, points to the requirements listed in 10 CFR 50.12 for specific exemptions. In addition to the factors listed in 10 CFR 52.7, the Commission shall consider whether the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. Therefore, any exemption from the Tier 1 information certified by Appendix D to 10 CFR Part 52 must meet the requirements of 10 CFR 50.12, 52.7, and 52.63(b)(1).

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a COL. Therefore, NRC approval is required prior to making the plant specific proposed changes in this license amendment request.

exemption from Tier 1 information to match the language of Section VIII.A.4 of 10 CFR Part 52, Appendix D, which specifically governs the granting of exemptions from Tier 1 information.

The specific NRC technical requirements applicable to LAR 19-004 are the general design criteria (GDC) in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." In particular, these technical requirements include the following GDC:

GDC 34, "Residual heat removal," states that a system to remove residual heat shall be provided. The system safety function shall be to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded. GDC 34 further requires that such residual heat removal (RHR) systems are designed with redundancy so that they can accomplish their safety functions, assuming a single failure in either the onsite or offsite electric power system. The main steam supply system (MSSS) may be used for safety functions such as removing decay heat or supplying steam to engineered safety feature pumps. The design of such MSSS safety functions must support the meeting of fuel and reactor coolant pressure boundary design limits by providing adequate cooldown capacity and suitable power supply and redundancy to assure functionality during a loss of offsite power. Therefore, staff's evaluation of compliance with GDC 34 is based on the following guidance: (1) the positions in Branch Technical Position 5-4, "Design Requirements of the Residual Heat Removal System" as they relate to the design requirements for RHR and (2) Issue Number 1 of NUREG-0138, as it relates to credit being taken for all valves downstream of the MSIVs to limit blowdown of a second steam generator if a steamline were to break upstream of the MSIV.

3.0 TECHNICAL EVALUATION

3.1 TECHNICAL EVALUATION OF THE REQUESTED CHANGES

In LAR 19-004, SNC proposed a change to the COL Appendix C and to plant-specific Tier 1 information. The proposed change would relocate the auxiliary steam system header isolation valve from the same header as the turbine bypass valves to a new header in ITAAC Figure 2.2.4-1 (Sheet 3) of COL Appendix C.

The reason for the change is to make Figure 2.2.4-1 (Sheet 3) of COL Appendix C piping configuration consistent with UFSAR Figure 10.3.2-2 that shows the auxiliary steam header isolation valve on a separate branch line. The proposed change does not impact the design configuration or components of the MSS. Therefore, the revised ITAAC Figure 2.2.4-1 does not change the design of the auxiliary steam header isolation air operated globe valve that provides isolation at the system interface between the MSS and the auxiliary steam system. The staff concludes the proposed change does not add or delete systems or equipment as described in Tier 1 and this change will not impact the ability of these systems or equipment to perform their design function.

Since the proposed change does not result in a modification, addition to, or removal of a structure, system, or component, the maximum steam flow presented in UFSAR Table 10.3.2-4 remains the same. Therefore, this proposed change does not affect the summation of flow limits of the various flow paths in the MSS assumed in the steamline break analysis purposes. The staff's prior evaluation of UFSAR Sections 10.3, "Main Steam Supply System" and 10.4.10, "Auxiliary Steam System" is not impacted by the proposed change. Therefore, the staff finds the change proposed in this license amendment acceptable.

3.2 EVALUATION OF EXEMPTION

The regulations in Section III.B of Appendix D to 10 CFR Part 52 require a holder of a COL referencing Appendix D to 10 CFR Part 52 to incorporate by reference and comply with the requirements of Appendix D, including certified information in Tier 1 of the generic AP1000 DCD. Exemptions from Tier 1 information are governed by the change process in Section VIII.A.4 of Appendix D of 10 CFR Part 52. Because the licensee has identified changes to plant-specific Tier 1 information, with corresponding changes to the associated COL Appendix C information resulting in the need for a departure, an exemption from the certified design information within plant-specific Tier 1 material is required to implement the LAR.

The Tier 1 information for which a plant-specific departure and exemption was requested is described above. The result of this exemption would be that the licensee could implement modifications to Tier 1 information to the UFSAR as well as change Tier 1 (and associated COL Appendix C) Figure 2.2.4-1 (Sheet 3) to relocate the auxiliary steam header isolation valve from the same header as the turbine bypass valves to a new header. Pursuant to the provisions of 10 CFR 52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is requested for the involved Tier 1 information described and justified in LAR 19-004. This exemption is a permanent exemption limited in scope to the Tier 1 information specified.

As stated in Section VIII.A.4 of Appendix D to 10 CFR Part 52, an exemption from Tier 1 information is governed by the requirements of 10 CFR 52.63(b)(1) and 10 CFR 52.98(f). Additionally, Section VIII.A.4 of Appendix D to 10 CFR Part 52 provides that the Commission will deny a request for an exemption from Tier 1 if it finds that the requested change will result in a significant decrease in the level of safety otherwise provided by the design. Pursuant to 10 CFR 52.63(b)(1), the Commission may grant exemptions from one or more elements of the certification information, so long as the criteria given in 10 CFR 52.7, which, in turn, references 10 CFR 50.12, are met and that the special circumstances, which are defined by 10 CFR 50.12(a)(2), outweigh any potential decrease in safety due to reduced standardization.

Pursuant to 10 CFR 52.7, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 52. As 10 CFR 52.7 further states, the Commission's consideration will be governed by 10 CFR 50.12, "Specific exemptions," which states that an exemption may be granted when: (1) the exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security; and (2) special circumstances are present. Specifically, 10 CFR 50.12(a)(2) lists six circumstances for which an exemption may be granted. It is necessary for one of these bases to be present in order for the NRC to consider granting an exemption request. The licensee stated that the requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii). That subsection defines special circumstances as when "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." The staff's analysis of these findings is presented below:

3.2.1 AUTHORIZED BY LAW

The requested exemption would allow SNC to implement the amendment described above. This exemption is a permanent exemption limited in scope to particular Tier 1 information. Subsequent changes to this plant-specific Tier 1 information, and corresponding changes to Appendix C, or any other Tier 1 information would be subject to the exemption process specified in Section VIII.A.4 of Appendix D to 10 CFR Part 52 and the requirements of 10 CFR 52.63(b)(1). As stated above, 10 CFR Part 52, Appendix D, Section VIII.A.4 allows the NRC to grant exemptions from one or more elements of the Tier 1 information. The staff has determined that granting of SNC's proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, as required by 10 CFR 50.12(a)(1), the exemption is authorized by law.

3.2.2 NO UNDUE RISK TO PUBLIC HEALTH AND SAFETY

As discussed above in the technical evaluation, the proposed changes comply with the NRC's substantive safety regulations. Therefore, there is no undue risk to the public health and safety.

3.2.3 CONSISTENT WITH COMMON DEFENSE AND SECURITY

The proposed exemption would allow changes as described above in the technical evaluation, thereby departing from the AP1000 certified (Tier 1) design information. The change does not alter or impede the design, function, or operation of any plant structures, systems, or components associated with the facility's physical or cyber security and, therefore, does not affect any plant equipment that is necessary to maintain a safe and secure plant status. In addition, the changes have no impact on plant security or safeguards. Therefore, as required by 10 CFR 50.12(a)(1), the staff finds that the common defense and security is not impacted by this exemption.

3.2.4 SPECIAL CIRCUMSTANCES

Special circumstances, in accordance with 10 CFR 50.12(a)(2), are present, in part, whenever application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. The underlying purpose of the Tier 1 information is to ensure that a licensee will safely construct and operate a plant based on the certified information found in the AP1000 DCD, which was incorporated by reference into the VEGP Units 3 and 4 licensing basis. The proposed changes described in the above technical evaluation do not impact the ability of any SSCs to perform their functions or negatively impact safety.

Special circumstances are present in the particular circumstances discussed in LAR 19-004 because the application of the specified Tier 1 information is not necessary to achieve the underlying purpose of the rule. The proposed changes are equal or provide additional clarity to the existing requirement. The proposed changes do not affect any function or feature used for the prevention and mitigation of accidents or their safety analyses, and no safety-related SSC or function is involved. This exemption request and associated revisions to the Tier 1 information and corresponding changes to Appendix C demonstrate that the applicable regulatory requirements will continue to be met. Therefore, for the above reasons, the staff finds that the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption from the Tier 1 information exist.

3.2.5 SPECIAL CIRCUMSTANCES OUTWEIGH REDUCED STANDARDIZATION

This exemption would allow the implementation of changes to Tier 1 information in the plant-specific DCD and corresponding changes to Appendix C that are being proposed in the LAR. The justification provided in LAR 19-004, the exemption request, and the associated licensing basis mark-ups demonstrate that there is a limited change from the standard information provided in the generic AP1000 DCD. The design functions of the system associated with this request will continue to be maintained because the associated revisions to the Tier 1 information support the design function of the SGS and the MSS. Consequently, the safety impact that may result from any reduction in standardization is minimized, because the proposed design change does not result in a reduction in the level of safety. Based on the foregoing reasons, as required by 10 CFR Part 52.63(b)(1), the staff finds that the special circumstances outweigh any decrease in safety that may result from the reduction of standardization of the AP1000 design.

3.2.6 NO SIGNIFICANT REDUCTION IN SAFETY

This exemption would allow the implementation of changes discussed above. The exemption request proposes to depart from the certified design by allowing changes discussed above in the technical evaluation. The changes for consistency will not impact the functional capabilities of this system. The proposed changes will not adversely affect the ability of the SGS and the MSS to perform its design functions, and the level of safety provided by the current systems and equipment therein is unchanged. Therefore, based on the foregoing reasons and as required by 10 CFR 52.7, 10 CFR 52.98(f), and 10 CFR Part 52, Appendix D, Section VIII.A.4, the staff finds that granting the exemption would not result in a significant decrease in the level of safety otherwise provided by the design.

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 July 3, 2019. 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. The 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, 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 (*Federal Register*, 84 FR 25832, dated June 4, 2019). 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.

Because the exemption is necessary to allow the changes proposed in the license amendment, and because the exemption does not authorize any activities other than those proposed in the license amendment, the environmental consideration for the exemption is identical to that of the license amendment. Accordingly, the exemption 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 needs to be prepared in connection with the issuance of the exemption.

6.0 CONCLUSION

The staff has determined that pursuant to Section VIII.A.4 of Appendix D to 10 CFR Part 52, the exemption (1) is authorized by law, (2) presents no undue risk to the public health and safety, (3) is consistent with the common defense and security, (4) presents special circumstances, and (5) does not reduce the level of safety at the licensee's facility. Therefore, the staff grants the licensee an exemption from the Tier 1 information requested by the licensee.

The staff has concluded, based on the considerations discussed in Section 3.1 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 and Exemption: Update to Tier 1 Figure for Steam Generator System and Main Steam System," dated March 29, 2019 (ADAMS Accession No. ML19088A126).
2. Vogtle Electric Generating Plant, Units 3 and 4 Updated Final Safety Analysis Report, Revision 4, dated March 17, 2015, Chapter 10, "Steam and Power Conversion" (ADAMS Accession No. ML15194A465).
3. Vogtle Electric Generating Plant, Units 3 and 4, Tier 1, Revision 3, dated March 17, 2015 (ADAMS Accession No. ML15194A446).
4. AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A500).
5. Combined License NPF-91 for Vogtle Electric Generating Plant Unit 3, Southern Nuclear Operating Company, Revised June 25, 2019 (ADAMS Accession No. ML14100A106).
6. Combined License NPF-92 for Vogtle Electric Generating Plant Unit 4, Southern Nuclear Operating Company Revised June 25, 2019 (ADAMS Accession No. ML14100A135).
7. Vogtle Electric Generating Plant's Final Safety Evaluation Report, NUREG-2124, Volume 2, "Final Safety Evaluation Report Related to the Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4," dated September 30, 2012 (ADAMS Accession No. ML12271A048).

8. NUREG-1793, Volume 2, Supplement 2, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design," dated September 30, 2011 (ADAMS Accession No. ML11293A073).
9. NUREG-0800, Standard Review Plan, Section 10.3, Revision 4, "Main Steam Supply System," dated March 2007, (ADAMS Accession No. ML070380206).
10. NUREG-0138, "Staff Discussion of 15 Technical Issues Listed in Attachment to November 3, 1976 Memorandum from Director NRR to NRR Staff," dated November 1976, and
11. Branch Technical Position 5-4, "Design Requirements of the Residual Heat Removal System" (ADAMS Accession No. ML070850123)