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

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS

RELATED TO AMENDMENT NOS. 159 AND 157

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 August 10, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18222A599), revised October 11, 2018 (ADAMS Accession No. ML18284A447), and supplemented February 15, 2019 (ADAMS Accession No. ML19046A172), the Southern Nuclear Operating Company (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) Numbers NPF-91 and NPF-92, respectively. License Amendment Request (LAR) 18-021 seeks departures from the generic AP1000 Design Control Document (DCD) Tier 1 in the VEGP COL plant-specific DCD (PS-DCD) with corresponding changes to the associated COL Appendix C, and the Updated Final Safety Analysis Report (UFSAR) to relocate the power operated relief valve (PORV) branch lines upstream of the main steam safety valves (MSSVs) in the main steam (MS) lines. In addition to the relocation of the PORV branch lines, the LAR seeks to change the PORV block valves from gate valves to globe valves in the UFSAR. Specifically, this amendment results in changes to COL Appendix C (plant-specific Tier 1) Figure 2.2.1-1 and Figure 2.2.4-1 (Sheets 1 and 2), and UFSAR Figure 10.3.2-1 (Sheets 1 and 2), UFSAR Figure 3E-1 (Sheets 1 and 2), UFSAR Table 3.9-16, UFSAR Table 6.2.3-1, and UFSAR Table 10.3.3-1. These changes are sought by SNC to reduce the noise contribution to the main control room (MCR) and improve human factors when the PORVs are in operation.

Pursuant to Section 52.63(b)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR), SNC also requested an exemption from the provisions of 10 CFR Part 52, Appendix D, “Design

Certification Rule for the AP1000 Design," Section III.B, "Scope and Contents." The requested exemption would allow a departure from the corresponding portions of the certified information in Tier 1 of the generic DCD.[1] In order to modify the UFSAR (the 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.

On September 19, 2018, the staff published a proposed no significant hazards consideration (NSHC) determination in the *Federal Register* (83 FR 47375) for the proposed amendment. Subsequently, by letter dated October 11, 2018, SNC provided additional information that expanded the scope of the amendment request as originally noticed in the *Federal Register*. The additional information provided in the October 11, 2018, revision related to structural and piping analyses that were not included in the original submittal. Accordingly, the NRC published a second proposed NSHC determination in the *Federal Register* on November 20, 2018 (83 FR 58607), which superseded the original notice in its entirety.

The supplement dated February 15, 2019, 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 second proposed NSHC determination as published in the *Federal Register* on November 20, 2018 (83 FR 58607).

2.0 REGULATORY EVALUATION

SNC summarized the proposed changes to plant-specific Tier 1 (and COL Appendix C) and the UFSAR related to relocating the PORV branch lines upstream of the MSSV branch connections, and changing the PORV block valves from gate valves to globe valves, as follows:

- COL Appendix C (plant-specific Tier 1) Figure 2.2.1-1 and Figure 2.2.4-1 (Sheets 1 and 2) are revised to move the PORV branch line upstream of the MSSVs.
- UFSAR Table 3.9-16, Table 10.3.3-1, Figure 10.3.2-1 (Sheets 1 and 2), and Figure 3E-1 (Sheets 1 and 2) are revised to change the MS line PORV block valves (SGS-PL-V027A/B) from gate valves to globe valves, to relocate the branch lines to the PORV and PORV block valve to upstream of the MSSVs, to resize the line from 6 to 12 inches, and to remove the reducer from downstream of the PORV block valve.
- UFSAR Table 6.2.3-1 is revised to change the pipe length from each containment penetration to valves SGS-PL-V027A and SGS-PL-V027B to 26 feet.
- Technical Specifications (TS) Bases B 3.7.10[2] is revised to remove the size of the branch line in which the PORV is installed.

The staff considered the following regulatory requirements in reviewing the LAR that included the proposed changes:

[1] While SNC 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 PS-DCD. In the remainder of this evaluation, the NRC will refer to the exemption as an 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.

[2] The staff notes that changes to TS Bases are not required to be reviewed and approved by the staff but are mentioned here for completeness.

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.

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 50.55a, "Codes and standards," incorporates by reference the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (BPV Code), and ASME *Operation and Maintenance of Nuclear Power Plants*, Division 1, OM Code: Section IST (ASME OM Code), including specific editions, addenda, and codes cases, for the design, inservice inspection, and inservice testing of nuclear power plant components. As guidance, the NRC endorses ASME Standard QME-1-2007, "Qualification of Active Mechanical Equipment Used in Nuclear Power Plants," in Regulatory Guide (RG) 1.100 (Revision 3), "Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants."

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. These activities involve a change to COL Appendix C inspections, tests, analyses, and acceptance criteria (ITAAC) information, with corresponding changes to the associated PS-DCD Tier 1 information. Therefore, NRC approval is required prior to making the plant specific proposed changes in this LAR.

The specific NRC technical requirements applicable to LAR 18-021 are the general design criteria (GDC) in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50. These technical requirements include the following GDC:

10 CFR Part 50, Appendix A, GDC 1, "Quality standards and records," requires that structures, systems, and components (SSCs) important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. A quality assurance program shall be established and implemented to provide adequate assurance that these SSCs will satisfactorily perform their safety functions. Appropriate records of the design, fabrication, erection, and testing of SSCs important to safety shall be maintained by or under the control of the nuclear power unit licensee throughout the life of the unit.

10 CFR Part 50, Appendix A, GDC 2, "Design Bases for Protection Against Natural Phenomena," requires that SSCs important to safety shall be designed to withstand the effects

of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions.

10 CFR Part 50, Appendix A, GDC 4, "Environmental and dynamic effects design bases," requires that nuclear power plant SSCs important to safety be designed to accommodate the effects of, and be compatible with, environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. These SSCs shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit. However, dynamic effects associated with postulated pipe ruptures in nuclear power units may be excluded from the design basis when analyses reviewed and approved by the Commission demonstrate that the probability of fluid system piping rupture is extremely low under conditions consistent with the design basis for the piping.

3.0 TECHNICAL EVALUATION

VEGP Units 3 and 4 COL, Appendix C, Subsection 2.2.4, contains ITAAC for the steam generator system (SGS). COL Appendix C, Figure 2.2.4-1 shows the SGS piping from the steam generators (SGs) through the auxiliary building and depicts the PORV as located downstream of the MSSVs. During plant operations, the PORVs are automatically controlled by steam line pressure, and modulate open and exhaust to the atmosphere whenever the steam line pressure exceeds an established setpoint. When needed for plant cooldown, the PORVs are automatically controlled by steam line pressure with remote manual adjustment of the pressure setpoint from the control room or remote shutdown workstation. To cool down the plant, the reactor operator manually adjusts the pressure setpoint downward in discrete steps or takes manual control of the valve position. Each PORV is installed in a branch line off the safety-related portion of the MS line upstream of the main steam isolation valve (MSIV). The PORV block valves perform the safety-related functions of containment isolation, SG isolation, and SG relief isolation. The PORV block valves also provide the capability to isolate a leaking or stuck-open PORV. The PORV block valves are AP1000 Safety Class B, and close automatically on a Low-2 steam line pressure signal generated in the Protection and Safety Monitoring System.

To reduce noise due to acoustic resonance, SNC proposes in LAR 18-021 to increase the size of the PORV block valves from 6 inches to 12 inches in diameter. SNC also proposes to increase the branch line in which each PORV block valve is installed from 6 inches to 12 inches. These changes will reduce the flow velocity in the PORV branch lines. In addition, SNC proposes to change the PORV block valve type from a gate valve to a globe valve to mitigate the potential for a Helmholtz or standing wave source developing in the valve body or seat. The globe valve will be qualified for the same environmental, pressure, and temperature conditions as the current valve type. Due to layout constraints, SNC proposes to move the location of the branch line for PORV block valves upstream of the MSSV branch connections.

3.1 TECHNICAL EVALUATION OF THE REQUESTED CHANGES

The staff conducted a regulatory audit from November 5, 2018, to January 31, 2019, to review applicable documents provided by SNC in its electronic reading room (eRR) in support of the proposed changes described in LAR 18-021. As part of that audit, the staff conducted telephone conferences with SNC to clarify information in specific documents. The staff's

description of the audit is provided in an audit report dated March 12, 2019 (ADAMS Accession No. ML19065A239).

A. Stress Analysis of PORV Modification

The ASME BPV Code, Section III, "Rules for Construction of Nuclear Facility Components," incorporated by reference in 10 CFR 50.55a, requires that piping analysis consider combinations of various loadings, including deadweight, pressure, seismic, thermal expansion, and transient loads. In LAR 18-021 and the associated revision and supplement, SNC proposes changes to the MS branch line containing the PORV, including relocating where the PORV branch line connects to the MS line, increasing the size of the PORV branch line, reducing the PORV branch line length, and changing the PORV block valve size and type. SNC states in LAR 18-021 that the affected piping is revised in accordance with the UFSAR, and that the pipe stresses are within UFSAR described limits. As part of the staff audit, SNC also made available pipe stress analysis calculations and documents related to the LAR 18-021 proposed changes. Based on its review, the staff found that the MS PORV branch line had been initially decoupled from the MS line for the pipe stress analysis. LAR 18-021 proposes modification of the PORV branch line which has also been decoupled from the MS line pipe stress analysis not accounting for any stiffness and mass effect from the PORV revised branch line.

The staff reviewed applicable piping data in the eRR, as documented in the audit report, and based on that data concludes that decoupling of the proposed PORV branch line from the MS header is acceptable because it meets the UFSAR decoupling criteria. The staff also concludes that the revised PORV branch line stiffness and mass effect on the MS header were evaluated in accordance with the UFSAR Subsection 3.7.3.8.1, "Supporting Systems," method and have been found insignificant, which was also the case prior to the proposed changes in the LAR. Therefore, the staff has determined that it is acceptable not to revise the MS header analysis for the LAR 18-021 proposed changes.

As discussed in the LAR 18-021 audit report, the staff reviewed the effects of the changes proposed in LAR 18-021 on the structural integrity of the PORV line. The staff concludes that the PORV branch line pipe stresses remain within acceptable design limits found in the UFSAR and applicable ASME BPV Code, Section III limits, which are incorporated by reference in 10 CFR 50.55a. Based on its review, the staff finds that the LAR 18-021 proposed changes do not adversely affect the structural integrity of the MS line and the PORV branch line. Based on these findings, the staff concludes that there is reasonable assurance that the MS and PORV lines will remain structurally adequate to perform their intended design function and be in compliance with 10 CFR 50.55a following LAR 18-021 proposed changes.

The staff reviewed whether the proposed design changes would impact the conclusions of the previously approved SNC pipe rupture hazards analysis (PRHA) for VEGP Units 3 and 4. As indicated in the audit report, the staff reviewed information that showed the revised PRHA for the affected piping was performed in accordance with the respective UFSAR criteria described in UFSAR Subsection 3.6.2.1.1, "High-Energy Break Locations," and Subsection 3.6.2.1.1.2, "ASME Code, Section III – Class 2 and Class 3 Piping Systems," for break exclusion piping and for postulating pipe break for ASME Class 2 and 3 piping systems. In addition, staff noted that the revised calculations show that the subject piping meets the applicable UFSAR break exclusion criteria and the proposed changes do not result in any new postulated break locations. Therefore, the staff found that the proposed design changes as described in LAR 18-021 continue to support the approved PRHA methodology for VEGP Units 3 and 4. Based on the LAR meeting the approved PRHA methodology, the staff concludes that there is

reasonable assurance that the requirements of GDC 4 will continue to be met. Therefore, the staff finds the proposed change acceptable.

B. Vibration and Valve Performance for PORV Modification

As documented in the audit report, the staff reviewed the PORV block valve datasheet to determine whether SNC evaluated the proposed plant modification to provide assurance that the allowable vibration levels from the PORV block valve and branch line will not be exceeded. The staff reviewed the valve datasheet that specifies the performance requirements for the new PORV block valves to be installed in the plant modification. As noted in the audit report, the staff discussed the provisions in valve datasheet for flow-induced vibration effects with SNC and Westinghouse Electric Company personnel during the audit. Based on its review of the PORV block valve datasheet, as documented in the audit report, the staff determined that SNC specified that the valve supplier will provide documentation showing that adverse flow effects will not result during operation of the PORV block valve.

In NUREG-2124, "Final Safety Evaluation Report related to the Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4," dated September 2012, the staff determined in Section 3.9.6.4, "Technical Evaluation," that the planned vibration testing program described in UFSAR Section 14.2.9, "Preoperational Test Descriptions," and Section 14.2.10, "Startup Test Procedures," which incorporated by reference the PS-DCD for the preservice testing (PST) and inservice testing (IST) programs, will confirm component installation in accordance with design requirements, and address the effects of steady-state (flow-induced) and transient vibration to ensure the operability of valves and dynamic restraints in the PST and IST programs. In NUREG-2124, the staff determined that the application of these provisions provides reasonable assurance that potential adverse flow effects will be addressed at VEGP. Based on the information reviewed in the audit and documented in the audit report, the staff confirmed that piping vibration will be monitored for the MS system and its PORV branch lines during plant startup in accordance with UFSAR Section 14.2.9.1.7, "Expansion, Vibration and Dynamic Effects Testing." Further, the staff confirmed that the piping vibration test will verify that vibrations caused by steady-state or dynamic effects do not result in excessive stress or fatigue on safety-related plant systems and equipment. Based on its review, the staff finds that potential adverse flow effects will not result from the proposed plant modification. Based on these findings, the staff concludes that there is reasonable assurance that the requirements of GDC 2 will continue to be met. Therefore, the staff finds the proposed changes acceptable.

The staff reviewed the SNC plans to satisfy the provisions in ASME Standard QME-1-2007 for the dynamic, environmental, and functional qualification of the new PORV block valves consistent with the VEGP Units 3 and 4 UFSAR. As described in the audit report, the staff reviewed the AP1000 equipment qualification methodology and documentation requirements for the new PORV block valves to be installed in the proposed plant modification. The staff found that the AP1000 valve qualification requirements specify that safety-related valves are to be qualified in accordance with ASME Standard QME-1-2007. In NUREG-2124, the staff specified in Section 3.9.6.4 that the use of ASME QME-1-2007 for the functional design and qualification of safety-related valves at VEGP Units 3 and 4 is acceptable based on the acceptance of ASME QME-1-2007 in RG 1.100 (Revision 3). Based on its review, the staff finds that the PORV block valves will be qualified in accordance with an NRC-accepted industry standard (ASME Standard QME-1-2007) referenced in RG 1.100 (Revision 3), and are therefore acceptable. As a result, the staff concludes that there is reasonable assurance that the requirements of GDC 1 will continue to be met.

As documented in the audit report, the staff reviewed the PORV block valve datasheet specifying the minimum and maximum stroke-time requirements for the PORV block valves. In LAR 18-021, SNC states that there will be “no change to the valve motor operator” and “no change to the valve stroke time” with the planned replacement of the original 6-inch gate valve with a new 12-inch globe valve for the PORV block valve application. As documented in the audit report, the staff evaluated the minimum and maximum stroke-time provisions for the new 12-inch globe valves. As also noted in the audit report, SNC clarified that the intent of its statement in LAR-18-021 is that the range of allowable stroke times for the PORV block valves will not be changed by the proposed PORV modification. Based on its review, the staff finds that LAR 18-021 provides for an acceptable stroke time for the PORV block valves to be used in the proposed plant modification by indicating no change will be made to these parameters.

Based on its review of the SNC documentation, the staff concludes that SNC has established an approach for evaluating the proposed MS PORV modification in LAR 18-021 to provide reasonable assurance that the stress, vibration, and valve performance will remain within acceptable parameters during operation of VEGP Units 3 and 4 in accordance with the NRC regulations in 10 CFR 50.55a and GDC 1 and 2.

C. Structural Changes

To perform the structural evaluation, the staff considered VEGP UFSAR Section 3.8, “Design of Category I Structures.” The staff also examined the portions of NUREG–1793, Supplement 2, “Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design” (ADAMS Accession No. ML112061231), and the “Final Safety Evaluation Report for the Vogtle Electric Generating Plant Units 3 and 4 Combined License Application” (ADAMS Accession No. ML110450302) documenting the staff’s technical evaluation of the AP1000 DCD and VEGP COL applications, respectively.

In LAR 18-021, SNC proposes changes to plant-specific DCD Tier 2 information in the UFSAR that involve changes to COL Appendix C, and corresponding changes to plant-specific Tier 1 information. To mitigate noise level in the MCR, SNC proposes a change to the size of the branch line, where the PORV block valves are installed, from 6 inches to 12 inches. These lines are located in the VEGP auxiliary building Room Nos. 12404 and 12406.

The structural concrete floors and walls which make up the boundary of the rooms were reviewed for any load increases due to the proposed changes. These walls and floors are designed to withstand loads such as the dead load, live load, seismic load, and the thermal load. The MSIV compartments are break exclusion areas, but the design also considered the compartment pressurization load associated with a one square foot pipe rupture in the MSIV compartments. Wall 11 in the east MSIV compartment is also designed to withstand the jet loads and the reactions at the pipe anchors for MS and main feedwater line breaks assumed to occur in the east MSIV compartment. SNC states that the acceptance criteria of UFSAR Subsection 3.8.4.2, specifically American Concrete Institute (ACI) ACI 349-01, “Code Requirements for Nuclear Safety-Related Concrete Structures,” were met. All applicable load combinations shown in UFSAR Table 3.8.4-2 were considered and remain unchanged along with the typical reinforcement configuration presented in UFSAR Figure 3H.5-12.

SNC states that the updated analyses confirmed that the integrity of the wall adjacent to the MCR is unaffected by a postulated MS line break that causes the PORV line to impact the wall. SNC also states that the structural concrete floors and walls which make up the bounds of Room Nos. 12404 and 12406 were analyzed for the downstream impacts due to the proposed

changes and the results concluded that the acceptance criteria of UFSAR Subsection 3.8.4.2, specifically ACI 349-01, are met.

During the review, the staff applied the guidance of Standard Review Plan (SRP) Section 3.8, with references to related industry standards and the criteria used to approve the AP1000 DCD, Revision 19, and VEGP COL application (Revision 5) (ADAMS Accession No. ML11180A100). The staff's technical evaluation of the LAR focused on verifying whether the proposed changes will affect the integrity of the structural concrete floors and walls which make up the bounds of Room Nos. 12404 and 12406.

The staff reviewed UFSAR Subsection 3.8.4.5.4 and applicable ACI 349-01 code provisions pertaining to concrete, critical sections, and loads. UFSAR Section 3H.5, "Structural Design of Critical Connections," describes the structural design of AP1000 critical connections. The north wall of the MSIV east compartment, at column line 11 (Wall 11) between elevation 117' 6" and elevation 153' 0", has been identified as a critical section. SNC states that all structural evaluations by the proposed changes were within the bounds of the acceptance criteria and met the licensing requirements imposed in UFSAR Chapter 3. Therefore, the staff concludes that the SNC met design bases commitment per UFSAR Section 3.8.4.2, specifically ACI 349-01 code requirements.

The staff has reviewed SNC's analysis provided in the LAR, specifically Section 2 of its submittal dated October 11, 2018, and has determined that the proposed changes will not affect the integrity of the structural concrete floors and walls which make up the bounds of Room Nos. 12404 and 12406. Based on the staff's review and determination that the proposed changes will not affect the integrity of structural floors and walls, the staff concludes that there is reasonable assurance that the requirements of the GDC 2 and GDC 4 are met. Therefore, the staff finds the proposed changes are 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 SNC 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 and 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 SNC could implement modifications to Tier 1 information to the UFSAR as well as COL Appendix C (plant-specific Tier 1) Figure 2.2.1-1 and Figure 2.2.4-1 (Sheets 1 and 2), and UFSAR Figure 10.3.2-1 (Sheets 1 and 2), UFSAR Figure 3E-1 (Sheets 1 and 2), UFSAR Table 3.9-16, UFSAR Table 6.2.3-1, and UFSAR Table 10.3.3-1. 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 18-021. This exemption is a permanent exemption limited in scope to the particular 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 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 for the NRC to consider granting an exemption request. SNC stated that the requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii). That subparagraph defines special circumstances as when "[a]pplication 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 SSCs 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 bases. The proposed changes described in the above technical evaluation do not impact the ability of any SSCs to perform their functions and do not negatively impact safety.

Special circumstances are present in the particular circumstances discussed in LAR 18-021 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. 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 COL Appendix C that are being proposed in the LAR. The justification provided in LAR 18-021, 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 MS system. 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 MS system 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 March 1, 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 (83 FR 47375 and 83 FR 58607 dated August 10, and November 20, 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.

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 SNC’s facility. Therefore, the staff grants SNC an exemption from the Tier 1 information as requested by SNC.

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. Vogtle Electric Generating Plant, Units 3 and 4, “Request for License Amendment and Exemption: Power Operated Relief Valve (PORV) Noise Mitigation (LAR-18-021),” letter from Southern Nuclear Operating Company, dated August 10, 2018, (ADAMS Accession No. ML18222A599).

2. Vogtle Electric Generating Plant, Units 3 and 4, “Request for License Amendment and Exemption: Power Operated Relief Valve (PORV) Noise Mitigation (LAR-18-021R1),” letter from Southern Nuclear Operating Company, dated October 11, 2018, (ADAMS Accession No. ML18284A447).

3. Vogtle Electric Generating Plant, Units 3 and 4, “Request for License Amendment and Exemption: Power Operated Relief Valve (PORV) Noise Mitigation (LAR-18-021R1S1),” letter from Southern Nuclear Operating Company, dated February 15, 2018, (ADAMS Accession No. ML19046A172).

4. U.S. Nuclear Regulatory Commission, “Audit Report Related to License Amendment Request (LAR) 18-021 – Power Operated Relief Valve Noise Mitigation,” dated March 12, 2019 (ADAMS Accession No. ML19065A239).

5. American Society of Mechanical Engineers, Standard QME-1-2007, “Qualification of Active Mechanical Equipment Used in Nuclear Power Plants.”

6. American Society of Mechanical Engineers, *Boiler and Pressure Vessel Code*, Section III.

7. American Society of Mechanical Engineers, *Operation and Maintenance of Nuclear Power Plants*, Division 1, OM Code: Section IST.

8. American Concrete Institute, ACI-349-01, “Building Code Requirements for Nuclear Safety-Related Concrete Structures.”

9. Vogtle Electric Generating Plant, Units 3 and 4 Updated Final Safety Analysis Report, Revision 7 and Tier 1, Revision 6 dated August 9, 2018, (ADAMS Accession No. ML18179A227).

10. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.100, “Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants,” Revision 3 (ADAMS Accession No. ML091320468).

11. U.S. Nuclear Regulatory Commission, NUREG-2124, Volume 1, “Final Safety Evaluation Report Related to Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4,” September 30, 2012 (ADAMS Accession No. ML12271A045)

12. U.S. Nuclear Regulatory Commission, NUREG-1793, Supplement 2, “Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design,” dated August 5, 2011 (ADAMS Accession No. ML112061231).

13. AP1000 Design Control Document, Revision 19, dated June 13, 2011, (ADAMS Accession No. ML11171A500).