

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 181 AND 180

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

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VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4

DOCKET NOS. 52-025 AND 52-026

1.0 INTRODUCTION

By letter dated November 22, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19326D430), Southern Nuclear Operating Company (SNC) requested that the U.S. 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) 19-010 requested changes to the VEGP Tier 2 Updated Final Safety Analysis Report (UFSAR) and related changes to plant-specific Tier 1 information and the associated COL Appendix C. Specifically, the LAR requests a departure from current Tier 2 UFSAR information as well as changes to the plant-specific Tier 1 (and associated COL Appendix C) information in Table 2.2.5-4 identifying the heat loads for the auxiliary building rooms containing instrumentation and controls (I&C) and direct current (dc) power electrical equipment. The changes in this LAR apply only to auxiliary building rooms outside the main control room envelope (MCRE).

The LAR request is comprised of six individual but related changes:

1. The requested changes to Tier 2, UFSAR Table 6.4-3, "Loss of AC Power Heat Load Limits," (and associated plant-specific Tier 1 and COL Appendix C, Table 2.2.5-4) revise the heat loads for the auxiliary building instrumentation and control room and dc equipment room during a 72-hour loss of alternating current (ac) power event.
2. The requested changes to UFSAR Section 3.11.3, "Loss of Ventilation," and Tier 2 UFSAR, Appendix 3D, Table 3D.5-4, "Abnormal Operating Environments Outside Containment," remove the listed limiting event from listed zones in recognition that a loss

of heating, ventilation, and air conditioning (HVAC) may also result in a listed abnormal event temperature, and also change the abnormal event temperatures for zones 2, 6, and 7.

3. The requested changes clarify that loss of HVAC events in abnormal events have temperature durations of 8 hours.
4. SNC also requested changes to Tier 2 UFSAR, Appendix 3D, Table 3D.5-4 to separate zone 10 (auxiliary building room 12306) from zone 8 and the maximum conditions based on loss of normal ventilation, and revise the values for abnormal event room temperatures based on the finalized design details, instead of the preliminary studies that the current UFSAR table provide.
5. SNC proposed to add information to UFSAR Section 9.4.1.2.3.2 regarding duration and mitigation of loss of HVAC events. SNC also proposed a revision to Tier 2 UFSAR, Appendix 3D, Figure 3D.5-1, "Normal Operating Environments," sheet 2, to clarify the applicability of the temperature profile to the dc equipment rooms containing batteries.
6. The accident event temperatures in the auxiliary building rooms were re-evaluated based on the finalized design for the rooms and systems they contain to reflect the actual heat generation of equipment in the minimum temperature analyses considering a 72-hour loss of ac power coincident with minimum site temperatures as an initial condition. This includes updates to Tier 2 UFSAR, Appendix 3D, Table 3D.5-5, "Accident Environments," to split zones 2 and 4 and zones 6 and 11 into separate entries and then change the post-accident event temperatures for zones 2, 7, and 11.

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.<sup>1</sup> In order to modify the 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

NRC provided a summary of the changes proposed in the LAR in the Introduction section of this safety evaluation (SE) and SNC included a summary and detailed descriptions of the proposed changes in the LAR.

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

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.

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<sup>1</sup> 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 plant-specific design control document (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.

Appendix D, Section VIII.B.5.a to 10 CFR Part 52 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 Technical Specifications (TS), or requires a license amendment under paragraphs B.5.b or B.5.c of the section.

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.

Section 182a of the Atomic Energy Act (AEA) requires applicants for nuclear power plant operating licenses to include TS as part of the license. The U.S. NRC's requirements related to the content of the TS are contained in 10 CFR 50.36, which requires that the TS includes items in the following specific categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements (SR); (4) design features; and (5) administrative controls.

10 CFR 50.36(c)(2) requires limiting conditions for operation (LCOs) to list the lowest functional capability or performance levels of equipment required for safe operation of the facility and when the LCO is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition will be met.

10 CFR 50.36(c)(3) requires TS to include items in the category of surveillance requirements (SRs), which are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCO will be met.

10 CFR 50.49, "Environmental qualification of electric equipment important to safety for nuclear power plants," identifies requirements for establishing a program for qualifying electric equipment that is important to safety as defined in 10 CFR 50.49(b). Section 50.49(e)(1) of 10 CFR requires that the time-dependent temperature and pressure at the location of the electric equipment important to safety must be established for the most severe design basis accident during and following which this equipment is required to remain functional. Section 50.49(b)(2) of 10 CFR requires qualification of non-safety-related electric equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety-related equipment.

The specific NRC technical requirements applicable to LAR 19-010 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:

10 CFR Part 50, Appendix A, GDC 4, "Environmental and dynamic effects design basis," requires that structures, systems, and components (SSCs) important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including LOCAs.

10 CFR Part 50, Appendix A, GDC 19, "Control Room," requires, in part, a control room from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents with adequate radiation protection permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body.

In addition, the staff reviewed the following specific NRC regulatory guidance documents applicable to LAR 19-010 related to this review:

NUREG-0800, Revision 3, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (SRP), Section 3.11, "Environmental Qualification of Mechanical and Electrical Equipment."

SRP Section 9.4.1, "Control Room Area Ventilation System," Revision 3.

SRP Section 9.4.3, "Auxiliary and Radwaste Area Ventilation System," Revision 3.

### 3.0 TECHNICAL EVALUATION

#### 3.1 TECHNICAL EVALUATION OF THE REQUESTED CHANGES

The proposed changes would revise the UFSAR to address potential effects within auxiliary building spaces following a loss of HVAC or loss of ac power events. The licensee noted that the primary impact of a loss of HVAC event in the auxiliary building is an increase in room temperature. In the LAR, the licensee noted that the final design information was used to analyze room heat-up rate for use in the auxiliary building environmental qualification (EQ) program. The licensee stated that the finalized design information is based on room sizes, equipment locations, detailed equipment design information, and heat loads affecting the room temperature under postulated loss of ac power or loss of HVAC events.

Plant-specific Tier 1 (and associated COL Appendix C) Table 2.2.5-4 and Tier 2 UFSAR Table 6.4-3, "Loss of AC Power Heat Load Limits," provide heat load limits during a loss of ac power event for a 72-hour period. These heat load limits are used to ensure that the temperatures within the rooms remain within their temperature/EQ limits. The duration for a loss of HVAC event is currently identified in Tier 2 UFSAR Subsection 3.11.3, "Loss of Ventilation," as 72 hours. As stated in Tier 2 UFSAR Subsection 3D.5.2, "Abnormal Operating Conditions," abnormal environments are defined to recognize possible plant service abnormalities that lead to short-term changes in environments. According to the licensee, in areas with safety-related equipment or with non-safety-related post-accident monitoring system equipment, area temperature monitoring and subsequent prompt restoration of adequate temperature control options are available. Furthermore, as design details for these systems and rooms were finalized, the licensee re-evaluated the room temperatures for both the loss of HVAC and the

loss of ac power (which leads to loss of HVAC) events and determined that changes to the UFSAR were necessary.

As a result of the above, the licensee proposed the following changes:

- Revise plant-specific Tier 1 and COL Appendix C Table 2.2.5-4 and UFSAR Table 6.4-3 to separate I&C and dc equipment rooms into details for each room in these areas and revise the heat load values for these rooms.
- Revise Tier 2 UFSAR Subsection 3.11.3, "Loss of Ventilation," to clarify that loss of HVAC events are evaluated as lasting for 8 hours rather than 72 hours and to replace the reference to Tier 2 UFSAR Section 6.4 with reference to Subsection 9.4.1.2.3.2, "Class 1E Electrical Room HVAC Subsystem."
- Revise Tier 2 UFSAR Subsection 9.4.1.2.3.2, "Class 1E Electrical Room HVAC Subsystem," regarding duration and mitigation of an extended loss of HVAC event.
- Revise Tier 2 UFSAR Table 3D.5-4, "Abnormal Operating Environments Outside Containment," to: 1) separate room 12306 (zone 10) into its own line item/section (previously grouped with zone 8) and include a change to the abnormal event temperature for zone 10; 2) reflect changes to abnormal event temperatures for zones 2, 6, and 7; 3) clarify in Note 3 that Sheet 2 refers to Tier 2 UFSAR Figure 3D.5-1 and that Note 3 applies to the dc equipment rooms with batteries (i.e., the passive Class 1E dc power system (IDS) battery rooms) and 4) remove identifiers of loss of ac power and loss of HVAC from each zone identified.
- Revise Tier 2 UFSAR Table 3D.5-5, "Accident Environments," to: 1) split zones 2 and 4 into separate entries; 2) split zones 6 and 11 into separate entries; and 3) change post-accident event temperatures in zones 2, 7, and 11.

### 3.1.1 ENVIRONMENTAL QUALIFICATION

The staff evaluated whether those electrical equipment and components, affected by the changes proposed in the LAR, would remain bounded by the existing environmental qualification EQ due to the changes to the heat load limits identified in the proposed Tier 2 UFSAR tables provided in the LAR. During the LAR review, the staff determined that an audit, in accordance with LIC-111, "Regulatory Audits," Revision 1, was necessary to verify the key assumptions, analyses, and test procedures the licensee used to support the basis for the changes proposed in the LAR. The staff selected a representative sample of electrical components in the licensee's EQ program to audit, in part, using a risk-informed approach. The representative sample of electrical components was selected from a list of components affected by the proposed changes based on system risk significance, importance to defense-in-depth, and the regulatory treatment of non-safety systems "RTNSS" program. The sample was also selected to include a range of different component types, also affected by the proposed changes. These selected components included various motor-operated valves, electrical penetration assemblies, transmitters, battery chargers, and inverters. Based on its review of the revised heat load limits in the LAR-proposed Tier 2 UFSAR tables, the staff confirmed that, other than temperature, no other EQ parameters (e.g., radiation, humidity, chemical spray, etc.) are affected by this LAR. The staff audited the supporting information and calculations showing how the licensee addressed temperature changes in the auxiliary building following loss of

HVAC or loss of ac power events, as it relates to the EQ of the electrical components associated with the changes in the proposed LAR. As documented in the audit report dated April 8, 2020, (ADAMS Accession No. ML20085G699), the staff review of the calculations described in the audit report enabled the staff to confirm that the electrical components associated with the requested LAR remain qualified (from a temperature standpoint) as a result of the proposed changes.

Based on its evaluation of the information in the LAR, as well as the staff's confirmation during an audit that existing calculations support that the EQ of electrical equipment remain bounded, the staff concludes that the proposed changes to the heat load limits (i.e., room/area temperature limits for equipment) in the proposed Tier 2 UFSAR tables will continue to meet the requirements of 10 CFR 50.49 and GDC 4 of Appendix A to 10 CFR Part 50 and are acceptable.

### 3.1.2 TECHNICAL SPECIFICATIONS

To ensure that the changes proposed in the LAR do not adversely affect the current TS, the staff reviewed the TS applicable to this LAR. The changes proposed in this LAR are related to TS 3.7.6, "Main Control Room Emergency Habitability System (VES)." One of the major functions of the VES is to limit the temperature increase of the MCRE equipment and facilities that must remain functional during an accident. To support Operability of the VES, passive heat sink air temperatures must be maintained  $\leq 85^{\circ}\text{F}$ . This temperature requirement applies to certain required room-pairs (i.e., 12201/12301, 12203/12302, 12205/12305, and 12207/12304) and individual rooms (i.e., 12202, 12204, 12300, 12313, 12412, and 12501). The passive heat sinks limit the temperature rise inside each room and the MCRE during the 72 hour period following VES actuation. On page 16 of Enclosure 1 of the LAR the licensee stated:

The proposed changes are adequately addressed by the existing Technical Specifications. Specifically, the Bases for SR 3.7.6.2 identify that the 24 hour frequency is acceptable based on the availability of automatic VBS temperature controls, and the alarms and indication available in the main control room.

The staff reviewed TS 3.7.6, which the licensee has not proposed to change with this LAR. TS 3.7.6 requires that the licensee verify the thermal mass of required heat sinks at a frequency of 24 hours. Also per the existing TS requirements in Actions Condition C, the licensee is required to place the plant in Mode 3 within 24 hours if the thermal mass of one or more required heat sinks is not within limits. The staff found that the regulatory requirements of 10 CFR 50.36(c)(2) will continue to be met because the limiting condition for operation (LCO) statement for TS 3.7.6 will continue to list the lowest functional capability or performance levels of the VES required for safe operation of the facility and when the LCO is not met, the licensee will continue to be required to shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met. Therefore the staff concluded that no changes to the LCO for TS 3.7.6 are required for this LAR.

The staff also reviewed TS SR 3.7.6.2, which the licensee has not proposed to change with this LAR. SR 3.7.6.2 requires the licensee to verify that the required adjacent rooms and room pairs provide adequate thermal mass to limit the temperature rise in the main control room. The staff determined the initial conditions for the analysis to support the revised loss of ac power heat loads in LAR 19-010 assume that these rooms start at the maximum temperature, consistent with SR 3.7.6.2. That is, the rooms are initially at  $85^{\circ}\text{F}$ , which meet the limits of TS SR 3.7.6.2. The staff found that the regulatory requirements of 10 CFR 50.36(c)(3) will continue to be met

for SR 3.7.6.2 because the SR will continue to provide assurance that the necessary quality of systems and components is maintained and that the LCO will be met. Therefore the staff concluded that no changes to SR 3.7.6.2 are required for this LAR.

### 3.1.3 HVAC SYSTEMS

#### 3.1.3.1 Revise Heat Loads for I&C Rooms and DC Equipment Rooms

The proposed changes would revise heat loads in auxiliary building I&C rooms (i.e., 12301, 12302, 12304, and 12305) and dc equipment rooms (i.e., 12201, 12203, 12205, and 12207). All of the above rooms are within environmental zone 2D.

The staff audited the heat-up calculations to verify that Tier 1, COL Appendix C, and Tier 2 UFSAR are revised to reflect updated heat loads and temperatures. The staff confirmed during the audit that statements made in the LAR are supported by calculations indicating that for environment zone 2D the Abnormal Operating Conditions are 40°F-120°F and the Accident and Post-Accident Conditions are 60°F-120°F as described in the audit report dated April 8, 2020, (ADAMS Accession No. ML20085G699). The staff confirmed that with the proposed heat loads for the I&C rooms or dc equipment rooms, the 120°F maximum temperature limit following a 72-hour loss of ac event is not exceeded.

For Protection and Safety Monitoring System (PMS) I&C rooms (i.e., 12301, 12305), heat loads generated in PMS cabinets are reduced by disconnecting the IDS batteries at 24 hours in the event of loss of ac power. Appropriate procedures will provide directions to operators for responding to a prolonged loss of ac power event. A 21-hour alert is based on a loss of IDS battery chargers.

Based on the above discussion, the staff concludes that the design functions of the equipment in the affected rooms and the rooms themselves are not changed. The staff found that there are no adverse effects due to the changes of the estimated heat loads and room temperatures on the SSCs important to safety and therefore, the changes evaluated in this subsection are acceptable.

#### 3.1.3.2 Loss of HVAC Event as an Abnormal Condition

A loss of HVAC is identified as a possible plant service abnormality that could lead to short-term changes in the local environment of affected rooms. The duration for this abnormal event is currently identified in UFSAR Subsection 3.11.3, "Loss of Ventilation," as 72 hours.

The licensee stated:

In UFSAR Subsection 3D.5.2, abnormal environments are defined to recognize possible plant service abnormalities that lead to short-term changes in environments. Area temperature monitoring and subsequent prompt restoration of adequate temperature control in areas with safety-related equipment or with non-safety post-accident monitoring system (PAMS) equipment make consideration of a 72-hour event unnecessarily restrictive and thus, the loss of HVAC event durations are revised to be no greater than eight (8) hours.

In UFSAR, Subsection 9.4.1.2.3.2, "Class 1E Electrical Room HVAC Subsystems," licensee will add a new paragraph, as shown below:

In the unlikely event that the nuclear island nonradioactive ventilation subsystems are disabled for more than 8 hours (for other than a loss of ac event), doors of the affected rooms may be opened to mitigate heat-up until HVAC is restored. Ancillary or portable fans also may be utilized in the event of an extended loss of HVAC in order to maintain the ambient temperature below the qualification temperature of the equipment.

SNC stated that the loss of HVAC event is more limiting because the ac power energized equipment would add heat into surrounding rooms. The staff verified that the relevant results of the analysis are the temperatures at the end of 8 hours for loss of HVAC and 72 hours for loss of ac power. The temperatures at the end of an 8-hour loss of HVAC abnormal event are appropriately considered for environmental qualification purposes.

SNC proposed in the new paragraph to be added to UFSAR Subsection 9.4.1.2.3.2, that mitigative actions would be taken on an unlikely event that the nuclear island nonradioactive ventilation subsystems are disabled for more than 8 hours. The staff accepts that a loss of HVAC event can be observed by operators within 8 hours of the event initiation. The plant design and procedures require operator response and allow for restoring adequate ventilation and cooling by opening doors and putting portable fans in appropriate locations at the appropriate time. This is also consistent with the current UFSAR Subsection 3D.5.2 description of "abnormal environments." The staff concludes that the changes will not impair the operation of equipment in the affected rooms and finds that the licensee taking operator action 8 hours into the loss of HVAC scenario is justified. Therefore, the staff concludes the changes are acceptable.

### 3.1.3.3 Abnormal Events in Environmental Zone 10

Environmental zone 10, room 12306, originally had the same zone temperature listed for normal operating conditions and abnormal events. As a result of influence from the external environment, the maximum temperature under abnormal operating conditions (in the case of long-term loss of ac power) is  $\leq 140^{\circ}\text{F}$ . Temperature values are based upon consideration of a 4-hour loss of ac power event. The duration is specified for equipment qualification in abnormal environments purposes as 10 occurrences of four hours each (i.e., 10x4 hrs). The proposed abnormal event temperatures are within the limits as defined for the SSCs in that zone.

The staff concludes, based on the review of the LAR for environmental zone 10 that no design function of an SSC important to safety is affected. Therefore, the staff concludes that there is no adverse effect to an SSC design function described in the UFSAR, because the EQ and thermal analysis provide assurance that SSCs will perform their design functions in the anticipated accident environments to which the SSCs are exposed. Therefore, the staff finds the changes to be acceptable.

### 3.1.3.4 Abnormal Event Temperature in Auxiliary Building Rooms

The loss of HVAC event is considered in defining EQ parameters for safety-related equipment and non-safety-related PAMS equipment. The peak temperature of environmental zones 2, 6, 7, and 10 in the auxiliary building are revised using GOTHIC runs assuming the identified operator actions occur at or before 8 hours into the loss of HVAC event.

Battery rooms are in auxiliary building environmental zone 2C. The staff confirmed during the audit that statements made in the LAR are supported by calculation that IDS battery rooms (i.e.,



12101, 12102, 12103, 12105, 12202, and 12204) have an abnormal temperature range of 60° F-120° F as described in the associated audit report dated April 8, 2020, (ADAMS Accession No. ML20085G699). The staff confirmed that the temperature ranges for the IDS battery rooms are not affected by the proposed changes.

The staff finds that the temperature changes to Tier 2 UFSAR Table 3D.5-4 bound the results of the heat-up analyses at the end of either 8 hours for loss of HVAC or 72 hours for loss of ac power, whichever results in a higher temperature. Therefore, the staff concludes that the EQ and thermal analysis provide assurance that SSCs important to safety perform their design functions in the anticipated normal, abnormal, and accident environments to which the SSCs are exposed, and finds the changes to be acceptable.

### 3.1.3.5 Accident Event temperatures in Auxiliary Building Rooms

As design details were finalized and actualized in the construction of the VEGP Units 3 and 4, the post-accident event room temperatures in the auxiliary building were re-evaluated based on finalized design details. The results of GOTHIC analyses were updated and used to revise post-accident temperatures listed in Tier 2 UFSAR Table 3D.5-5 for environmental zones 2, 7 and 11. Because of the loss of additional electrical heat loads, the loss of ac power event is limiting from a minimum temperature and room cool-down perspective. The minimum temperature analyses considered a 72-hour loss of ac power coincident with minimum site temperatures as an initial accident condition.

The staff reviewed whether the MCRE, under accident conditions, could meet the requirements of GDC 19, "Control Room," in the period 72 hours after a postulated loss of ac power and subsequent loss of HVAC event. Tier 2 UFSAR Section 9.4.1.2.3.2 states in part:

When complete ac power is lost, division B and C instrumentation and control room temperature is maintained by operating their respective ancillary fans to supply outside air to the I&C rooms. It is expected that outside air will be supplied within 72 hours following a radiological release. The outside air pathway to the ancillary fans is through the nonradioactive ventilation system outside air intake opening located on the roof, the mechanical room at floor elevation 135'-3", stairway No. 1 doors at elevation 135'-3" and 82'-6", the access corridor at floor elevation 82'-6", and the divisional battery rooms. The warm air is vented to the annex building through the clean access corridor at elevation 100'-0". The outside air supply provides cooling and maintains room temperature below the qualification temperature of the I&C equipment. The ancillary fans and flow path are located within the auxiliary building which is a Seismic Category I structure.

Taking credit for the operation of ancillary fans as described in Tier 2 UFSAR Section 9.4.1.2.3.2, the licensee states in the LAR:

The normal temperatures and maximum abnormal temperatures for rooms surrounding the MCRE are not changed...There is no impact to the initial temperatures assumed in the Main Control Room Envelope heat-up analysis.

The staff verified supporting information in the regulatory audit as described in the associated audit report dated April 8, 2020, (ADAMS Accession No. ML20085G699), and confirmed that there is no impact to the EQ considerations because the temperatures previously considered for

equipment qualification envelope the revised higher temperatures, and safety-related equipment in these areas of the auxiliary building were already qualified for more severe accident conditions due to similar equipment being in areas with harsher environmental conditions. The staff confirms that for the auxiliary building's main control room that the Vestibule Abnormal Conditions and Accident conditions are not affected. Therefore, the staff concludes that there is no adverse effect to an SSC design function described in the UFSAR.

Based on its review of the information in the LAR, as well as the staff's confirmation during the regulatory audit of related calculations that the EQ of mechanical equipment remain bounded as described in the associated audit report dated April 8, 2020, (ADAMS Accession No. ML20085G699), the staff finds that the proposed changes to the heat load limits (i.e., room/area temperature limits for equipment) in the proposed Tier 2 UFSAR tables will continue to meet the requirements of 10 CFR 50.49, GDC 4, and GDC 19 of Appendix A to 10 CFR Part 50, and the 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 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 as well as the associated COL Appendix C and UFSAR information. Specifically, this would include changes to heat loads in Tier 1 Table 2.2.5-4 and UFSAR Table 6.4-3. 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 19-010. 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 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 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 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 19-010 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 the COL Appendix C that are being proposed in the LAR. The justification provided in LAR 19-010, 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 auxiliary building. 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 auxiliary building and related equipment 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 26, 2020. 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 (85 FR 2158) January 14, 2020. 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: Auxiliary Building Room Heat-up (LAR-19-010)," November 22, 2019 (ADAMS Accession No. ML19326D430).
2. U.S. Nuclear Regulatory Commission, "Regulatory Audit of Vogtle Units 3 and 4 License Amendment Request LAR-19-10, Auxiliary Building Room Heat-up," April 8, 2020 (ADAMS Accession No. ML20085G699/Package ML20087J393).
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 Units 3 and 4 Updated Final Safety Analysis Report, Chapter 9, Revision 8 (ADAMS Accession No. ML19171A068).