

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS
RELATED TO EXEMPTIONS AND AMENDMENT NOS. 104 AND 103
TO THE COMBINED LICENSE NOS. NPF-91 AND NPF-92
SOUTHERN NUCLEAR OPERATING COMPANY, INC.
GEORGIA POWER COMPANY
OGLETHORPE POWER CORPORATION
MEAG POWER SPVM, LLC
MEAG POWER SPVJ, LLC
MEAG POWER SPVP, LLC
CITY OF DALTON, GEORGIA
VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4
DOCKET NOS. 52-025 AND 52-026

1.0 INTRODUCTION

By letter dated July 14, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17195B047), as supplemented by letter dated October 3, 2017 (ADAMS Accession No. ML17276B537), Southern Nuclear Operating Company (SNC) submitted License Amendment Request (LAR) 17-022 requesting that the U.S. Nuclear Regulatory Commission (NRC or Commission) amend the combined licenses (COL) for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, COL Numbers NPF-91 and NPF-92, respectively.

The requested amendment seeks approval of changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the Plant-Specific Design Control Document (DCD) Tier 2 information and involves changes to plant-specific Tier 1 information (and corresponding changes to COL Appendices A and C), associated with the addition of a residual heat removal suction relief valve for low-temperature overpressure protection. Because the changes proposed in this LAR impact Tier 1 of the plant-specific DCD, Appendices A and C of the COL, this LAR has been determined to require prior NRC approval.

The requested amendment specifically proposed to add a second normal residual heat removal system (RNS) suction relief valve in parallel with the current RNS suction relief valve, with the necessary piping changes. Additionally, a change is proposed to Tier 1 Figure 2.2.1-1, for penetration P19, to accurately depict the orientation of the class break of containment isolation valve RNS-PL-V061. These proposed changes are reflected in the UFSAR and the related

COL Appendices A and C and plant-specific DCD Tier 1.

Pursuant to the provisions of 10 *Code of Federal Regulations* (10 CFR) 52.63(b)(1), SNC has also requested exemptions, one for each unit, from the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, Appendix D, "Design Certification Rule for the AP1000 Design," Section III.B, "Scope and Contents." The requested exemptions would allow a departure from the corresponding portions of the certified information in Tier 1 of the generic DCD.¹ The staff's review of the exemption request, as well as the LAR, is included in this safety evaluation (SE).

In letter dated October 3, 2017 (ADAMS Accession No. ML17276B537), SNC provided submittal information to supplement the initial submittal of this LAR. The supplemental information did not expand the scope of the original LAR, and did not change the staff's originally proposed no significant hazards consideration determination as published in the *Federal Register* on September 12, 2017 (82 FR 42844). The staff's review of the initial submittal, and supplemental information for this LAR is presented below in this SE.

2.0 REGULATORY BASES

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

Appendix D, VIII.C.6 states that after issuance of a license, "Changes to the plant-specific TS will be treated as license amendments under 10 CFR 50.90." 10 CFR 50.90 addresses the applications for amendments of licenses, construction permits, and early site permits.

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

10 CFR 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, and the special circumstances present 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).

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 generic 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.

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a COL, including any modification to, addition to, or deletion from the Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) contained in the license. Therefore, the Section 52.98(f) requires a license amendment for the proposed changes, and NRC approval is required prior to making the plant-specific proposed changes in this LAR.

10 CFR Part 50, Appendix A, General Design Criterion (GDC) 1, "Quality standards and records," requires that structures, systems, and components (SSCs) important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed.

GDC 2, "Design bases for protection against natural phenomena," requires that SSCs important to safety be maintained to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunamis, and seiches without loss of capability to perform their safety functions.

GDC 4, "Environmental and dynamic effects design bases," requires that structures, systems and components important to safety 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 loss-of-coolant accidents.

GDC 15, "Reactor coolant system design," requires that the reactor coolant system and associated auxiliary, control, and protection systems be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary (RCPB) are not exceeded during any condition of normal operation, including anticipated operational occurrences.

GDC 31, "Fracture prevention of reactor coolant pressure boundary," requires that the RCPB be designed with sufficient margin to assure that when stressed under operating, maintenance, testing, and postulated accident conditions (1) the boundary behaves in a nonbrittle manner and (2) the probability of rapidly propagating fracture is minimized.

GDC 56, "Primary Containment Isolation," requires that each line that connects directly to the containment atmosphere and penetrates containment shall be provided with containment isolation valves.

10 CFR 50.55a(d)(1) requires that Quality Group B components meet the requirements for Class 2 Components in Section III of the Code of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME BVP Code).

3.0 TECHNICAL EVALUATION

3.1 EVALUATION OF EXEMPTION REQUEST

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

Appendices A and 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 relates to the addition of a residual heat removal suction relief valve for low-temperature overpressure protection. The result of this exemption would be that SNC could implement modifications to Tier 1 information in the UFSAR as well as departures from a plant-specific DCD Tier 2 table, and a COL Appendices A and C table. 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 17-022, as supplemented. 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 the special circumstances 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. 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.

3.1.1 AUTHORIZED BY LAW

This exemption would allow SNC to implement changes to elements of the plant-specific Tier 1 DCD to depart from the AP1000 certified design (Tier 1) information. This exemption is a permanent exemption limited in scope to particular Tier 1 information. Subsequent changes to the plant-specific Tier 1 DCD 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. Based on 10 CFR Part 52, Appendix D, Section VIII.A.4, the staff has determined that granting of the SNC's proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations, as explained below in Section 3.2 of this safety evaluation. Therefore, as required by 10 CFR 50.12(a)(1), the exemption is authorized by law.

3.1.2 NO UNDUE RISK TO PUBLIC HEALTH AND SAFETY

The underlying purpose of Appendix D to 10 CFR Part 52 is to ensure that a licensee will construct and operate the plant based on the approved information found in the DCD incorporated by reference into a licensee's licensing basis. The exemption proposed by SNC from the requirements of 10 CFR Part 52, Appendix D, Section III.B would allow changes to elements of the plant-specific Tier 1 DCD to depart from the AP1000 certified (Tier 1) design information. The plant-specific DCD Tier 1 will continue to reflect the approved licensing basis for VEGP Units 3 and 4, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the DCD. Therefore, the affected plant-specific DCD Tier 1 ITAAC will continue to serve its required purpose. The specific changes proposed by SNC are related to the addition of a second RNS suction relief valve and associated piping in parallel to the current RNS suction relief valve, and the change to Tier 1 Figure 2.2.1-1, for penetration P19, to accurately depict the orientation of the class break of containment isolation valve RNS-PL-V061. The staff finds that all those changes do not represent any adverse impact to the design functions of the RNS, reactor coolant system (RCS), containment system (CNS) or SSCs therein and will continue to protect the health and safety of the public in the same manner.

The changes proposed by SNC add equipment as described in Tier 1 of the AP1000 DCD; these changes will not impact the ability of the systems or equipment to perform their design functions. Because they will not adversely affect the operation of any plant equipment or systems, as explained below in Section 3.2 of this safety evaluation, these changes do not present an undue risk from existing equipment or systems. The proposed changes do not introduce any new industrial, chemical, or radiological hazards that would represent a public health or safety risk, nor do they modify or remove any design or operational controls or safeguards intended to mitigate any existing on-site hazards. Furthermore, the proposed changes would not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in significant fuel cladding failures. Accordingly, these changes do not present an undue risk from any new equipment or systems, because there remains no challenge to containment integrity as a result of hydrogen generation due to the proposed changes. Therefore, as required by 10 CFR 50.12(a)(1), the staff finds that there is no undue risk to public health and safety.

3.1.3 CONSISTENT WITH COMMON DEFENSE AND SECURITY

The proposed exemption would allow the SNC to depart from elements of the plant-specific DCD Tier 1 design information. The proposed changes do 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 proposed 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.

3.1.4 SPECIAL CIRCUMSTANCES

Special circumstances, in accordance with 10 CFR 50.12(a)(2)(ii), are present 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. Special circumstances are present in the particular circumstances discussed in LAR-17-022 as

supplemented because the application of the specified Tier 1 information does not serve the underlying purpose of the rule. The underlying purpose of the Tier 1 information is to ensure that licensees 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's licensing basis. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D.

The exemption proposed in this LAR would revise the ITAAC supporting Tier 1 tables related to the proposed changes of the addition of a second normal RNS suction relief valve in parallel to the current RNS suction relief valve, with the necessary piping changes, and a change to Tier 1 Figure 2.2.1-1 to accurately depict the orientation of the class break of a containment isolation valve in the normal residual heat removal system.

The above proposed changes, assessed in detail in Section 3.2 of this SE below, maintain the required design functions. The changes proposed do not adversely affect any function or feature used for the prevention and mitigation of accidents or their safety analyses. The proposed changes do not involve nor interface with any SSCs accident initiator or initiating sequence of events related to the accidents evaluated and, therefore, do not have an adverse effect on any SSCs' design function. Accordingly, this exemption from the certification information will enable the licensee to safely construct and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR Part 52, Appendix D.

Because application of the current generic certified design information in Tier 1 as required by 10 CFR Part 52, Appendix D, Section III.B, in the particular circumstances discussed in this LAR does not serve the underlying purpose of the rule, 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.

3.1.5 SPECIAL CIRCUMSTANCES OUTWEIGH REDUCED STANDARDIZATION

Based on the nature of the changes to the plant-specific DCD Tier 1 information and the understanding that these changes support the design functions of the RNS, RCS, and CNS, it is expected that this exemption may be requested by other AP1000 licensees and applicants. However, a review of the reduction in standardization resulting from the departure from the standard DCD determined that even if other AP1000 licensees and applicants do not request this same departure, the special circumstances will continue to outweigh any decrease in safety from the reduction in standardization because the key design functions of the components associated with this request will continue to be maintained. Furthermore, the justification provided in this LAR and this exemption request and the associated mark-ups demonstrate that there is a limited change from the standard information provided in the generic AP1000 DCD, which is offset by the special circumstances identified above.

3.1.6 NO SIGNIFICANT REDUCTION IN SAFETY

The proposed changes to the RNS do not adversely interface with or adversely affect safety-related equipment or a fission product barrier, and do not adversely impact the functional capabilities of the RNS. The proposed addition of a second normal RNS suction relief valve with the necessary piping, in parallel to the current RNS suction relief valve are similar in function and qualification to many safety-related systems and components already performing similar safety functions. No system or design function or equipment qualification is adversely

affected by the proposed changes. Because the changes related to this exemption request will continue to meet existing codes and standards and methodologies described in the UFSAR, there are no new failure modes introduced by these changes and the level of safety provided by the current SSCs remains unchanged. Because the proposed changes to the SSCs will not affect the ability of the SSCs to perform their design functions and the level of safety provided is unchanged, the staff concludes that the changes associated with the proposed exemption will not result in a significant decrease in the level of safety.

3.2 TECHNICAL EVALUATION OF PROPOSED CHANGES

In LAR-17-022, SNC proposes to add a second normal RNS suction relief valve (RNS-PL-V020) in parallel to the current RNS suction relief valve (RNS-PL-V021). RNS-PL-V020 is a 1 inch relief valve with a nominal flow capacity of 50 gallons per minute (gpm) at a set pressure of 470 pounds per square inch (psig). The existing relief valve, RNS-PL-021, has a nominal relieving capacity of 850 gpm at a set pressure of 500 psig. SNC is proposing to add RNS-PL-V020 because RNS-PL-V021 is designed with a higher rated capacity than any low temperature overpressure protection (LTOP) event or overpressure transient, which leads to a potential for valve chatter. Excessive valve chatter is a mechanism for valve wear and ultimately failure. SNC is proposing no changes to the design parameters of RNS-PL-V021.

To accommodate the installation of RNS-PL-020, SNC proposes to move the current RNS-PL-V021 to the main 10-inch RNS suction line. In order to limit the flowrate of the chemical and volume control system (CVS) to within the capacity of RNS-PL-V020, SNC proposes a change to TS limiting condition for operations (LCO) 3.4.14a to require the closure of Valve CVS-PL-V091 (see UFSAR Figure 9.3.6-1), which will direct CVS flow through flow-restricting Orifice CVS-PY-R10.

As identified in LAR-17-022, RNS-PL-V020 is constructed in accordance with ASME BVP Code Section III, Class 2 requirements and is classified as AP1000 Class B equipment. AP1000 Class B equipment is described in UFSAR Section 3.2.2 (Reference 3) as safety-related equipment that limits leakage of radioactive material from the containment following a design basis accident.

The associated changes to the licensing basis are evaluated below.

3.2.1 Evaluation of COL Appendix A, Technical Specification 3.4.14 Markups

SNC proposed COL Appendix A TS markups to reflect the change from a single LTOP relief valve to multiple (two) relief valves. SNC proposed to revise LCO 3.4.14 to address the addition of RNS-PL-V020 which includes changing “valve” to “valves” and revising grammar to identify verification of each valve, changing “the” to “two.” These conforming changes are editorial changes reflecting the change from a single valve to multiple (two) valves. The staff finds these proposed changes to TS LCO 3.4.14 acceptable.

The description “with a list setting within the limit specified in the Pressure and Temperature Limits Report (PTLR)” will be removed from LCO 3.4.14 and replaced with a reference to the Inservice Testing Program (IST) for the lift settings in revised Surveillance Requirement (SR) 3.4.14.5 (previously SR 3.4.14.4). This change is proposed to correct the incorrect reference to the location where the settings are specified. SNC states that the PTLR does not specifically identify the lift settings of the relief valves. The staff reviewed the changes and determined that the lift settings of each RNS suction relief valve will be correctly referenced in SR 3.4.14.5, in

accordance with the IST, including the addition of the smaller RNS relief valve. The IST is located in Section 5.5.3 of the TS and provides control for inservice testing of ASME Code Class 1, 2, and 3 components. The frequency of the surveillance will remain unchanged and is in accordance with the IST program for both of the existing and added valves, and class 1, 2, and 3 components. The staff confirmed that the lift settings of all relief valves will continue to be verified within TS. Therefore, the staff finds the changes to SR 3.4.14.5 acceptable.

SNC proposed to revise TS LCO 3.4.14 Condition B to identify closure of Valve CVS-PL-V091 for LCO 3.4.14a. Also, a note is added to state, "not applicable when an RCS vent of ≥ 4.15 square inches is established." The staff reviewed the changes to LCO 3.4.14.b and determined that the revision supports LTOP functions and reduces potential chatter by closing Valve CVS-PL-V091 to direct CVS flow to the flow-restricting orifice, which limits flow to the 50 gpm capacity of the smaller RNS relief valve, RNS-PL-V020. The existing LTOP method to depressurize the RCS and establish an RCS vent of greater or equal to 4.15 square inches to mitigate a limiting overpressure transient is not impacted by this change. Therefore, the staff finds the revision acceptable.

SNC proposed to add new SR 3.4.14.3 to verify that the CVS makeup line containment isolation Valve CVS-PL-V091 is closed. Also, a note is added to clarify that the surveillance is only required to be met when complying with LCO 3.4.14.a. The staff reviewed this change and determined that the addition of SR 3.4.14.a limits the potential for an LTOP event by limiting mass and heat injection capabilities to the capacity of the smaller RNS relief valve, RNS-PL-V020 and reducing chatter of the current RNS relief valve. Also, the proposed frequency of 12 hours is reasonable considering indications and alarms available to the operator in the main control room and similar SRs required to be performed for LCO 3.4.14.a. Therefore, the staff finds the addition of SR 3.4.14.3 acceptable.

3.2.2 Evaluation of COL Appendix C (and corresponding Tier 1) Markups

SNC proposed COL Appendix C (and plant-specific Tier 1) markups to reflect the change from a single LTOP relief valve to multiple (two) relief valves in the following:

- Figure 2.2.1-1, "Containment System"
- Figure 2.3.6-1, "Normal Residual Heat Removal System"
- Table 2.3.6-1, "Normal Residual Heat Removal System Valves"
- Table 2.3.6-2, "Normal Residual Heat Removal System Piping"
- Table 2.3.6-4, "Normal Residual Heat Removal System ITAAC"

SNC's proposed markup to Figure 2.3.6-1 reflects the addition of RNS-PL-V020 and the location change to RNS-PL-V021. SNC's proposed markup to Table 2.3.6-4, ITAAC Nos. 2.3.06.09a.i and ii, are conforming editorial changes reflecting the change from a single valve to multiple (two) valves. The technical evaluation for the change is provided in Section 3.2.3.3 of this SE. Based on the findings established in Section 3.2.3.3 of this SE, staff finds SNC's proposed markups to Figure 2.3.6-1 and Table 2.3.6-4 acceptable.

The staff reviewed SNC's proposal to revise COL Appendix C (and plant-specific Tier 1) Table 2.3.6-1 to add RNS-PL-V020, and indicate that RNS-PL-V020 will be subject to ASME BPV Code, Section III and will be seismic Category I. Further, SNC proposed to revise Table 2.3.6-2 to add the associated relief valve piping RNS-L090, and indicate the applicability of ASME BPV Code, Section III to this piping. ITAAC Nos. 2.3.06.02a and b specify that components identified

in Tables 2.3.6-1 and 2 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. In addition, ITAAC Nos. 2.3.06.03a and b specify that pressure boundary welds in components identified in Tables 2.3.6-1 and 2 as ASME Code Section III meet ASME Code Section III requirements. Similarly, ITAAC Nos. 2.3.06.05a.i, ii, and iii specify that seismic Category I equipment identified in Table 2.3.6-1 can withstand seismic design basis loads without loss of safety function and ITAAC No. 2.3.06.05b specifies that lines identified in Table 2.3.6-2 can withstand seismic design basis loads without loss of safety function. As a result, the staff finds that the proposed revisions to Tables 2.3.6-1 and 2 will provide assurance that the RNS-PL-V020 and associated piping, RNS-L090, will be designed, constructed, and tested in accordance with ASME BPV Code, Section III requirements, and will satisfy the seismic Category I requirements. ASME BPV Code, Section III, NC-7000 contains requirements specific to relief valves used for overpressure protection. For RNS-PL-V020 and RNS-L090, this satisfies the GDC 1 requirements for SSCs quality standards, as the valve and piping will be designed, constructed, and tested to the standards of ASME BPV Code, Section III requirements and also satisfies the requirements of GDC 2 to withstand the effects of natural phenomenon, including earthquakes, as the valve and piping will meet seismic Category I requirements.

The staff reviewed SNC's proposal to revise the class break in Tier 1 Figure 2.2.1-1, for penetration P19, to identify Valve RNS-PL-V061 as Class 2 and the connected CVS piping as nonsafety. The staff finds this proposed change acceptable because it correctly identifies the class break between Class 2 Valve RNS-PL-V061 and the nonsafety connected CVS piping. This change is consistent with existing terminology in Tier 1 Figure 2.3.6-1, "Normal Residual Heat Removal System" and UFSAR Table 3.2-3, "AP1000 Classification of Mechanical and Fluid Systems, Components, and Equipment," that identify Valve RNS-PL-V061 as an ASME Code Section III, Class 2 component. The connected CVS piping is also identified as nonsafety in UFSAR Tier 2, Figure 9.3.6-1, "Chemical and Volume Control System Piping and Instrumentation Diagram." Accordingly, the staff finds this change acceptable.

3.2.3 Evaluation of Updated Final Safety Analysis Report (UFSAR) Markups

3.2.3.1 UFSAR Chapter 1

SNC proposed UFSAR Chapter 1 markups to reflect the change from a single LTOP relief valve to multiple (two) relief valves in the following:

- Table 1.6-1, "Material Referenced"
- Subsection 1.9.4.2.3, "New Generic Issues"
- Subsection 1.9.6, "References"
- WCAP-15993, Rev.1, Section 3.1.2, "Design Evaluation"
- WCAP-15993, Rev. 1, Section 3.2.2, "Design Evaluation"
- WCAP-15993, Rev. 1, Figure 3-1, "Normal Residual Heat Removal System"

The technical basis for these changes is evaluated in Section 3.2.3.3 of this SE. Staff finds these updates acceptable because they are editorial and conform to the changes evaluated in Section 3.2.3.3 of this SE.

3.2.3.2 UFSAR Chapter 3

SNC proposed the following UFSAR Chapter 3 markups to reflect the change from a single LTOP relief valve to multiple (two) relief valves:

- Table 3.2-3, add relief valve, RNS-PL-V020, and design information as ASME Code Sections III, Class 2, Seismic Category 1, and AP1000 Class B;
- Table 3.9-12, add relief valve, RNS-PL-V020, and design information as ASME Code Sections III;
- Table 3.9-16, add relief valve, RNS-PL-V020, and design and inservice testing information as Safety-Related Mission is Maintain Close, Transfer Open, Transfer Close; Safety Functions are Active, Containment Isolation, Safety Seat Leakage; ASME Class/IST Category is Class 2 and Category AC; Inservice Testing Type and Frequency is Containment Isolation Leak Test every 2 Years. Class 2/3 Relief Valve Tests every 10 years and 20 percent in 4 years;
- Table 3.11-1, add relief valve, RNS-PL-V020, and environmental qualification information including submergence and spray; and
- Table 3I.6-3, add relief valve, RNS-PL-V020, to the not high frequency list of safety-related equipment

Staff reviewed SNC's proposal to revise UFSAR Tier 2 Table 3.2-3 and Table 3.9-12 and determined that these revisions correctly specify the design and testing information for RNS-PL-V020 and are consistent with COL Appendix C (and plant-specific Tier 1) proposed revisions described in LAR 17-022. Therefore, the staff finds these revisions to be acceptable. Classification of RNS-PL-V020 as ASME Code Sections III, Class 2 is acceptable because Class 2 is consistent with Regulatory Guide (RG) 1.26, Quality Group B.

The proposed revision to UFSAR Table 3.9-16, "Valve Inservice Test Requirements," specifies IST provisions in accordance with the ASME Operations and Maintenance (OM) Code as incorporated by reference in 10 CFR 50.55a, "Codes and standards." For example, Table 3.9-16 will be revised to include RNS-PL-V020 as an active valve with the inservice testing type and frequency listed as containment isolation leak test every 2 years and class 2/3 relief valves tests every 10 years and 20 percent in 4 years, consistent with ASME OM Code, Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," paragraph I-1350, "Test Frequency, Classes 2 and 3 Pressure Relief Devices Except PWR Main Steam Safety Valves." The proposed revision to Table 3.9-16 is acceptable because conducting IST in accordance with the OM Code satisfies the applicable requirements in 10 CFR 50.55a.

The proposed revision to UFSAR Tables 3.11, "Environmentally Qualified Electrical and Mechanical Equipment," and 3I.6-3, "List of AP1000 Safety-Related Electrical and Mechanical Equipment Not High Frequency Sensitive," specify environmental qualification parameters for RNS-PL-V020. The valve will be included in the UFSAR Environmental Qualification Program for VEGP Units 3 and 4 and the staff verified the valve is correctly identified as not high frequency sensitive. The staff concludes that the VEGP Environmental Qualification Program will ensure that RNS-PL-V020 will 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 loss-of-coolant accidents. Therefore, the staff finds that the design of RNS-PL-V020 satisfies the requirements of GDC 4, and finds the revisions to UFSAR Tables 3.11 and 3I.6-3 acceptable.

Based on the discussion in this section, staff finds that the provisions for the design, qualification, and inservice testing for relief valve RNS-PL-V020 and associated piping, RNS-L090, are acceptable. Based on these findings, the staff concludes that there is reasonable assurance that the requirements of 10 CFR Part 50, Appendix A, GDC 1, GDC 2, and GDC 4, and 10 CFR 50.55a will continue to be met. Therefore, the staff finds the proposed markups to UFSAR Chapter 3 acceptable.

3.2.3.3 UFSAR Chapter 5

SNC's proposed UFSAR Chapter 5 markups to reflect the change from a single LTOP relief valve to multiple (two) relief valves in the following:

- Subsection 5.2.2, "Overpressure Protection"
- Subsection 5.2.2.1, "Design Bases"
- Subsection 5.2.2.2, "Design Evaluation"
- Subsection 5.2.2.3, "Piping and Instrumentation Diagrams"
- Subsection 5.2.2.4, "Equipment and Component Description"
- Subsection 5.3.6.1, "Pressure-Temperature Limit Curves"
- Subsection 5.4.7.2, "System Description"
- Subsection 5.4.7.6.1.1, "Valve Inspection and Testing"
- Subsection 5.4.9, "Reactor Coolant System Pressure Relief Devices"
- Subsection 5.4.9.1, "Design Bases"
- Subsection 5.4.9.2, "Design Description"
- Subsection 5.4.9.3, "Design Evaluation"
- Subsection 5.4.9.4, "Tests and Inspections"
- Subsection 5.4.11, "Pressurizer Relief Discharge"
- Table 5.4-17, "Pressurizer Safety Valves – Design Parameters"
- Figure 5.4-6, "Normal Residual Heat Removal System"
- Figure 5.4-7, "Simplified Normal Residual Heat Removal System Piping and Instrument Diagram"

SNC's proposed markups add an additional LTOP relieve valve (RNS-PL-V020) that opens at a lower pressure than the existing relief valve (RNS-PL-V021) and is intended to reduce the potential for challenges to the existing relief valve. SNC's proposed updates make no changes to the existing LTOP relief valve design parameters, but does move the existing LTOP relief valve to the 10-inch main suction line. Because there are no changes to the existing LTOP relief valve design parameters and both LTOP relief valves comply with applicable codes and standards (as described in Section 3.2.2 of this SE), staff finds that the additional installed relief capacity does not adversely impact the performance of the LTOP system. Accordingly, staff finds that the existing LTOP analyses supporting the conclusions on GDC 15 and GDC 31, provided in Section 5.2.2.2 of NUREG-1793, Volume 1, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design," September, 2004 (Reference 7) remain applicable, and the UFSAR Chapter 5 markups are acceptable.

3.2.3.4 UFSAR Chapter 6

SNC proposed UFSAR Chapter 6 markups to reflect the change from a single LTOP relief valve to multiple (two) relief valves. The proposed markups also reflect that the relief valves perform a containment isolation function. Markups are provided in the following areas:

- Table 6.2.3-1, “Containment Mechanical Penetrations and Isolation Valves”
- Section 6.3.3.4.2, “Loss of Normal Residual Heat Removal Cooling with the Reactor Coolant System Boundary Intact”
- Associated with the UFSAR Chapter 6 changes, SNC also proposes changes to COL Appendix C (and plant-specific Tier 1) Figure 2.2.1-1, “Containment System” to reflect the addition of relief valve RNL-PL-V020.

As identified in COL Appendix C (and plant-specific Tier 1) Figure 2.2.1-1, “Containment System,” SNC is adding a relief valve (RNS-PL-V020) to the normal residual heat removal system piping located inside containment and connected to piping penetration 19. SNC identifies RNL-PL-V020 as an added containment isolation valve in UFSAR Table 6.2.3-1, “Containment Mechanical Penetrations and Isolation Valves.” UFSAR Table 6.2.3-1 identifies the pressurization direction for this relief valve when performing a containment isolation function as “high pressure on the containment side.” In addition, in a markup to UFSAR Tier 2 Figure 5.4-6, “Normal Residual Heat Removal System,” the added relief valve discharges to the containment atmosphere via the liquid waste system containment sump, located inside containment.

GDC 56 specifies regulatory requirements related to containment isolation valves serving containment piping penetrations. RG 1.141, “Containment Isolation Provisions for Fluid Systems,” provides guidance for the containment isolation of fluid systems that penetrate the primary containment. Regarding containment isolation provisions, RG 1.141 position C.2 states, “The licensee, may use relief valves in the backflow direction (terminates inside primary containment).” Based on the markups discussed above, the staff finds SNC’s proposed use of a relief valve (i.e., RNS-PL-V020) that terminates inside containment as a containment isolation valve conforms to staff regulatory guidance. Conforming to staff guidance is acceptable to satisfy the regulatory requirement associated with containment isolation for the added relief valve.

The description of the “Loss of Normal Residual Heat Removal Cooling with the Reactor Coolant System Pressure Boundary Intact” event, presented in UFSAR Section 6.3.3.4.2 is qualitative. SNC’s proposed markup to UFSAR Section 6.3.3.4.2 changes the singular LTOP relief valve to multiple (two) relief valves. Staff finds the remaining description is not impacted because the loss of fluid is driven by the rate of fluid expansion, which is unchanged as a result of adding the second LTOP relief valve. Accordingly, staff finds the conforming markups to UFSAR Section 6.3.3.4.2 acceptable because they are editorial and have no technical impact on the description of the event.

3.2.3.5 UFSAR Chapter 14

SNC proposed a markup to UFSAR Section 14.2.9.2.4, “Normal Residual Heat Removal System Testing,” under heading “General Test Acceptance Criteria and Methods,” bullet g, to reflect the change from a single LTOP relief valve to multiple (two) relief valves. The staff finds

this conforming update acceptable because it is editorial and has no technical impact on the content of Chapter 14.

3.2.3.6 UFSAR Chapter 19

SNC proposed Chapter 19 updates to reflect the change from a single LTOP relief valve to multiple (two) relief valves in the following:

- Table 19.59-18, “AP1000 PRA-Based Insights,” Item 82
- Section 19E.2.2.2.3, “Steam Generator Cooling in Shutdown Modes”
- Section 19E.2.4.2.7, “Normal Residual Heat Removal System Relief Valve”
- Section 19E.3.1.3.1, “General Shutdown”
- Section 19E.4.6, “Increase in Reactor Coolant Inventory”
- Section 19E.4.10.1, “Low Temperature Overpressure Protection”

The technical basis for these changes is evaluated in Section 3.2.3.3 of this SE.

The staff finds these conforming updates acceptable because they are editorial and have no adverse technical impact on the content of UFSAR Chapter 19.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations in 10 CFR 50.91(b)(2), the Georgia State official was notified of the proposed issuance of the amendment on November 24, 2017. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20, “Standards for Protection Against Radiation.” 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. Also, there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (82 FR 42844, published on September 12, 2017). 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) is a special circumstance that outweighs the reduction in standardization, and (5) does not significantly reduce the level of safety at SNC's facility. Therefore, the staff grants SNC an exemption from the Tier 1 information specified by SNC.

The Commission has concluded, based on the considerations discussed in Section 3 of this safety evaluation and staff's confirmation that the changes proposed in this LAR do not change an analysis methodology or assumptions, 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: Addition of a Residual Heat Removal Suction Relief Valve for Low-Temperature Overpressure Protection (LAR-17-022)," July 14, 2017 (ADAMS Accession No. ML17195B047).
2. Southern Nuclear Operating Company, Vogtle Electric Generating Plant Units 3 and 4, "Supplement to Request for License Amendment and Exemption: Addition of Residual Heat Removal Suction Relief Valve for Low-Temperature Overpressure Protection (LAR-17-022S1)," October 3, 2017 (ADAMS Accession No. ML17276B537).
3. Vogtle Units 3 and 4 Updated Final Safety Analysis Report, Revision 4 and Tier 1, Revision 3, July 13, 2015 (ADAMS Accession No. ML15194A443).
4. AP1000 Design Control Document, Revision 19, June 13, 2011 (ADAMS Accession No. ML11171A500).
5. Combined License NPF-91 for Vogtle Electric Generating Plant Unit 3, Southern Nuclear Operating Company (ADAMS Accession No. ML14100A106).
6. Combined License NPF-92 for Vogtle Electric Generating Plant Unit 4, Southern Nuclear Operating Company (ADAMS Accession No. ML14100A135).
7. NUREG-1793, Volume 1, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design," September, 2004 (ADAMS Accession No. ML043450344).
8. U.S. Nuclear Regulatory Commission, Regulatory Guide, 1.26, Revision 4, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Water-Containing Components of Nuclear Power Plants", November 2006, (ADAMS Accession No. ML070290283).

9. U.S. Nuclear Regulatory Commission, Regulatory Guide, 1.141, Revision 1, "Containment Isolation Provisions for Fluid Systems", July 2010, (ADAMS Accession No. ML092850042).
10. American Society of Mechanical Engineers (ASME) Code for Operations and Maintenance of Nuclear Power Plants, ASME, 2012 Edition, April 8, 2013.