



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 177 AND 176

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 September 6, 2019, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19249C739), and supplemented by letter dated January 31, 2020, (ADAMS Accession No. ML20031E665), Southern Nuclear Operating Company (SNC) requested that the Nuclear Regulatory Commission (NRC or Commission) 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) 19-017 requested changes to remove the preoperational passive residual heat removal (PRHR) heat exchanger natural circulation test from the scope of the VEGP Units 3 and 4 Initial Test Program (ITP). The proposed changes would revise licensing basis documents, including the Updated Final Safety Analyses Report (UFSAR) Subsections 1.9.4.2.1, "TMI Action Plan Issues"; 3.9.1.1.1.17, "Passive Residual Heat Removal Test"; 6.3.6.1.2, "Heat Transfer Testing"; and 14.2.9.1.3, "Passive Core Cooling System Testing." In addition, COL Appendix C (and plant-specific Tier 1) Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) 2.2.03.08b.01 (No. 175) would be revised to replace the PRHR heat exchanger natural circulation test with the PRHR heat exchanger forced flow test, which is described in UFSAR Subsection 14.2.9.1.3.

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 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.

The supplement dated January 31, 2020, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on February 11, 2020 (85 FR 7796).

2.0 REGULATORY EVALUATION

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.

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 Technical Specifications, or requires a license amendment under paragraphs B.5.b or B.5.c of the section.

10 CFR 52.63(b)(1) allows an applicant or 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 license amendment request.

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.

10 CFR 52.97(b) requires that the Commission identify within the combined license the inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's rules and regulations. Consequently, proposed changes to the ITAAC should continue to meet the requirements of 10 CFR 52.97(b).

10 CFR Part 50, Appendix B, Section XI, "Test Control," requires that a test program be established to ensure that structures, systems, and components will perform satisfactorily in service.

The specific NRC technical requirements applicable to LAR 19-017 are the general design criteria (GDC) in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." In particular, these technical requirements include the following GDC:

GDC 1, as it relates to the requirement 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 34, as it relates to the ability of residual heat removal systems to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded.

GDC 35, as it relates to the ability of the emergency core cooling system to provide abundant emergency core cooling to satisfy the emergency core cooling system safety function of transferring heat from the reactor core following any loss of reactor coolant at a rate that (1) fuel and clad damage that could interfere with continued effective core cooling would be prevented, and (2) clad metal-water reaction would be limited to negligible amounts.

GDC 36 requires that the emergency core cooling system shall be designed to permit appropriate periodic inspection of important components, such as spray rings in the reactor pressure vessel, water injection nozzles, and piping, to assure the integrity and capability of the system.

GDC 37 requires the emergency core cooling system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system.

In addition, Regulatory Guide (RG) 1.68, "Initial Test Programs for Nuclear Power Plants," Revision 2, describes the general scope and depth of an ITP acceptable to the NRC staff for light-water-cooled nuclear power plants.

3.0 TECHNICAL EVALUATION

3.1 TECHNICAL EVALUATION OF THE REQUESTED CHANGES

The AP1000 passive core cooling system (PXS) is designed to provide emergency core cooling during events involving increases and decreases in secondary side heat removal and decreases in reactor coolant system (RCS) inventory. Emergency core decay heat removal for non-Loss-of-Coolant-Accidents (LOCA) is performed by the passive residual heat removal (PRHR) system. The PRHR heat exchanger (HX), in conjunction with the in-containment refueling water storage tank and the passive containment cooling system, is designed to remove decay heat and maintain acceptable RCS conditions following a non-LOCA event.

In LAR 19-017, SNC proposes to remove the preoperational PRHR natural circulation test from the scope of the VEGP Units 3 and 4 ITP and revise ITAAC 2.2.03.08b.01 to replace the PRHR HX natural circulation test with the PRHR HX forced flow test, which is described in UFSAR Subsection 14.2.9.1.3. The proposed changes would revise licensing basis documents, including UFSAR Subsections 1.9.4.2.1, 3.9.1.1.1.17, 6.3.6.1.2, and 14.2.9.1.3. In addition, COL Appendix C (and plant-specific Tier 1) ITAAC 2.2.03.08b.01 (No. 175) would be revised to replace the PRHR heat exchanger natural circulation test with the PRHR heat exchanger forced flow test, which is described in UFSAR Subsection 14.2.9.1.3.

SNC states in LAR 19-017 that the ITP is implemented in two phases, categorized as preoperational and startup testing. As described in UFSAR Section 14.2, "Specific Information to be Included in Standard Safety Analysis Reports," the objectives of preoperational testing include showing that the plant has been constructed as designed and that the systems perform consistent with plant design. The purpose of preoperational testing of the PXS, as described in UFSAR Subsection 14.2.9.1.3, is to verify that the as-installed components perform the safety functions described in UFSAR Section 6.3.1.1, "Safety Design Basis."

As stated in LAR 19-017, UFSAR Subsection 14.2.9.1.3 currently requires three preoperational tests to verify the PXS emergency core decay heat removal function through testing of the PRHR HX. First, during hot functional testing of the RCS, the temperature of the PRHR HX supply and return lines are to be recorded to verify natural circulation flow will initiate (i.e., UFSAR Subsection 14.2.9.1.3 item (e)). Secondly, the heat transfer capability of the PRHR HX is to be verified by measuring the natural circulation flow rate and the heat exchanger inlet and outlet temperatures while the RCS is cooled to $\leq 420^{\circ}\text{F}$ (i.e., UFSAR 14.2.9.1.3 item (f)). This testing is to be performed during hot functional testing with the RCS initial temperature $\geq 540^{\circ}\text{F}$ and the reactor coolant pumps (RCPs) not running. Lastly, proper operation of the PRHR HX and its heat transfer capability is to be verified by initiating and operating the PRHR HX with all four RCPs running (i.e., UFSAR 14.2.9.1.3 item (g)). This testing will be performed during hot functional testing with the RCS at an elevated initial temperature $\geq 350^{\circ}\text{F}$. The PRHR HX heat transfer is determined by measuring the heat exchanger flow rate and its inlet and outlet temperatures while the RCS is cooled to $\leq 250^{\circ}\text{F}$.

UFSAR Subsection 14.2.9.1.3 item (f), the preoperational PRHR HX natural circulation test, which SNC proposes to remove in LAR 19-017, is also required by ITAAC 2.2.03.08b.01. SNC states in LAR 19-017 that [

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In LAR 19-017, SNC provides its justification of the proposed changes under (1) changes to UFSAR Chapter 14 and COL Appendix C (and plant-specific Tier 1) and (2) associated changes to the UFSAR. SNC states in its submittal that the proposed changes have been reviewed to confirm that all applicable regulations will be met and the proposed changes do not affect conformance with the GDCs (identified in Section 2.0 of this report) or the intent of RG 1.68 as described in the plant-specific DCD or UFSAR. The staff documents in NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," Section 6.3.2.8.4, dated September 30, 2004 (ADAMS Accession No. ML043570339), that compliance with GDC 37 is met, in part, because of PXS preoperational tests included in UFSAR Section 14.2.9.1.3, which includes a natural circulation test of the PRHR system. In particular, PRHR natural circulation testing satisfies the portion of GDC 37 which specifies, testing of "...the operability of the system as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the system into operation..." Regarding RG 1.68, the staff notes that it prescribes the performance of natural circulation tests to confirm that design heat removal capability exists. Therefore, the proposed removal of the PRHR HX natural circulation test requested in the LAR is inconsistent with the guidance of RG 1.68. However, the staff views the proposed change to remove the PRHR HX natural circulation test, with appropriate UFSAR and COL Appendix C (plant-specific Tier 1) changes, as a proposed alternative to the guidance of RG 1.68.

The staff evaluation of SNC's justification and proposed changes to COL Appendix C (and plant-specific Tier 1) and associated changes to the UFSAR is provided in Sections 3.1.1 and 3.1.2 below. The staff also completed an audit of the supporting documents as described in its audit summary, dated March 17, 2020 (ADAMS Accession No. ML20080L927).

3.1.1 UFSAR Chapter 14 and COL Appendix C Changes

In LAR 19-017, SNC provides its justification for UFSAR Chapter 14 and COL Appendix C changes by describing performance of the tests as required by UFSAR Subsection 14.2.9.1.3 items e), f), and g); a PRHR subsystem line resistance measurement test; performance of the First Plant Only PRHR natural circulation test; tests performed as required by UFSAR Subsection 5.4.1.4.1, "Reactor Coolant System Flow Rate Verification"; and associated COL Appendix C ITAAC relevant to the PRHR subsystem. SNC's justification for the removal of the PRHR natural circulation test is based on [

] repeatability and standardization in the AP1000 design, and other PRHR tests that SNC will perform in the future as part of existing test programs. In addition to ensuring the design commitment of ITAAC 2.2.03.08b.01 is satisfied, the staff verified that the proposed changes continue to meet the original purpose of the combined PRHR system tests as well as the regulatory requirements described in Section 2.0 above. Therefore, the staff also performed a detailed review of the attributes and parameters related to the initiation of natural circulation of the PRHR system. The staff's evaluation is given below.

a) PRHR Supply and Return Line Temperatures (UFSAR Subsection 14.2.9.1.3 item e)

One important parameter related to the initiation and continued operation of the PRHR system under natural circulation conditions is an adequate temperature difference (ΔT) between the heat exchanger inlet and outlet. Sufficient ΔT combined with a difference in height between the upper channel head of the heat exchanger and hot leg, which will be verified by ITAAC 2.2.03.08b.02, provides the necessary driving head to initiate natural circulation flow through the PRHR heat exchanger. SNC states in LAR 19-017 that UFSAR Subsection 14.2.9.1.3 item e) requires that the temperatures of the PRHR HX supply and return line piping water temperatures be recorded (during hot functional testing of the RCS) to verify that natural circulation flow can be initiated, via the temperature measurements at the inlet and outlet of the PRHR HX. The test required by UFSAR Subsection 14.2.9.1.3 item e) is required to demonstrate that the temperature measured at the heat exchanger inlet is higher than the temperature measured in the return line.

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SNC states in LAR 19-017 that the PXS system specification and test specification require that the inlet temperature of the PRHR HX (prior to the cold trap) is $> 400^{\circ}\text{F}$ and the outlet temperature of the PRHR HX is $< 220^{\circ}\text{F}$. [

SNC states that proper performance of this test shows that the cold trap at the inlet of the PRHR HX is installed correctly and assures initiation of the PRHR HX and that the warmest water is at the highest elevation, ensuring that the driving head due to the temperature/density differences moves the flow downward through the PRHR HX once the outlet valves have been opened.

SNC states in LAR 19-017 that based on the temperature difference and the elevation difference in the supply and return lines (noting ITAAC 2.2.03.08b.02 requires verification of elevation difference between the upper channel head of the heat exchanger and hot leg), natural circulation flow can be initiated and the PRHR HX is capable of operating under natural circulation conditions, meeting its design requirement to initiate natural circulation flow.

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] ITAAC 2.2.03.08b.02, which requires verification of a difference in elevation of two specific points relative to the PRHR HX, the staff concludes the acceptance criteria of supply line temperature of $> 400^{\circ}\text{F}$ and return line temperature of $< 220^{\circ}\text{F}$ is adequate to demonstrate, in part, the ability of the PRHR system to initiate natural circulation.

b) Performance of the PRHR Natural Circulation Flow Tests during Preoperational Testing (UFSAR Subsection 14.2.9.1.3 item f)

In LAR 19-017, SNC states the following:

UFSAR Subsection 14.2.9.1.3 item f) requires that proper operation of the PRHR HX be demonstrated via a natural circulation test. The PRHR HX heat

transfer capability is verified by measuring natural circulation flow rate and the heat exchanger inlet and outlet temperatures while the reactor coolant system is cooled to $\leq 420^{\circ}\text{F}$. This testing is performed during hot functional testing with the RCS at an initial temperature of $\geq 540^{\circ}\text{F}$. The acceptance criteria for the PRHR heat transfer under natural circulation conditions are that the heat transfer rate is $\geq 1.78\text{E}+08$ Btu/hr based on a 520°F hot leg temperature and $\geq 1.11\text{E}+08$ Btu/hr based on 420°F hot leg temperature with 80°F IRWST temperature and the design number of tubes plugged. The PRHR HX heat transfer rate has been adjusted to account for these different conditions and the heat transfer rate measured during the test should be adjusted for differences in the hot leg and IRWST temperature and number of tubes plugged. This test demonstrates that the capability of the PRHR HX as a component meets the design requirements.

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] During its audit, the staff confirmed that these results are supported by audited documents (ADAMS Accession No. ML20080L927).

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- c) Performance of the PRHR Forced Flow Tests during Preoperational Testing (UFSAR Subsection 14.2.9.1.3 item g)

In LAR 19-017, SNC states the following:

UFSAR Subsection 14.2.9.1.3 item g) (and described in proposed ITAAC 2.2.03.08b.01) requires that proper operation of the PRHR HX be demonstrated via a forced flow circulation test. The PRHR HX heat transfer capability is verified by initiating and operating the heat exchanger with all four reactor coolant pumps running at a reduced speed during hot functional testing. The initial RCS temperature must be $\geq 350^{\circ}\text{F}$. The heat exchanger heat transfer is determined by measuring the PRHR heat exchanger flow rate and its inlet and outlet temperatures while the RCS is cooled to $\leq 250^{\circ}\text{F}$. This test demonstrates that the heat transfer capability of the PRHR HX as a component meets the design requirements.

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] During its audit the staff verified that these results are supported by audited documents (ADAMS Accession No. ML20080L927).

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d) PRHR Subsystem Line Resistance Measurement Test

Natural circulation systems operate with low driving forces. Under these conditions, line resistance and minor head loss can play a major role in natural circulation performance. As part of LAR 19-017, with the proposed removal of the PRHR HX natural circulation test, SNC also proposes to include line resistance measurements during PRHR forced flow testing. Specifically, SNC states the following:

With the proposed removal of the natural circulation test (UFSAR 14.2.9.1.3 item f), a PRHR flow resistance test is added to the UFSAR Subsection 14.2.9.1.3 item g) test. This is the line resistance from the PRHR inlet line (at the RCS hot leg connection) to the [steam generator] channel head where the PRHR subloop connects back to the RCS. Confirmation that the line resistance is below the value described in the design analysis demonstrates that the as-built plant meets the design requirements and the conditions for initiation of natural circulation flow. The line resistance used in the supporting analysis is 3.085E-06 ft/gpm² and is dependent on the number of plugged PRHR HX tubes, thus the measured resistance of the subloop must be less than or equal to that value. Even though the PRHR HX flow rates under natural circulation and forced flow are similar, differences in Reynolds number may impact the line flow resistance measurement.

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Based on its review of [] in LAR 19-017 and audited documents, the staff agrees that the measurement of the flow resistance during the PRHR forced flow resistance test will be representative of the flow resistance under natural circulation conditions. The staff notes that this comparison is only appropriate once natural circulation has been established and the fully developed flows are similar in magnitude. During the onset of natural circulation (when Reynolds numbers are very low), system friction factors are much larger than during fully developed flow conditions. Under these conditions during system initiation, the PRHR discharge isolation valves provide the dominant flow resistance, [

] Therefore, the staff agrees that the PRHR discharge isolation valves provide the dominant flow resistance during system initiation; and given sufficient ΔT , and similar configuration such that any minor variation would be indistinguishable from a flow and heat removal performance perspective, the PRHR system has a high propensity for establishing natural circulation.

e) Operating Experience from Performance of the First Plant Only PRHR Natural Circulation Test During Startup

In LAR 19-017, SNC states the following:

UFSAR Subsection 14.2.10.4.29 is a first plant only test that requires demonstration of the heat removal capability of the PRHR HX with the reactor coolant system at prototypic temperatures and natural circulation conditions. The performance criterion is that the measured PRHR HX heat removal rate is equal to or greater than the heat removal rate predicted by the methodology used in the safety analysis at the measured RCS hot leg and IRWST water temperatures.

The test is performed at elevated RCS temperature and pressure []. The RCS coolant flows through the PRHR subsystem after opening one of the PRHR HX discharge isolation valves when the RCPs are tripped. The driving head for this test is the gravity head due to the PRHR supply and return line temperature difference.

The staff reviewed the SNC evaluation of the first plant only PRHR natural circulation test performed at SM1 in a previous LAR and determined that it satisfied the first plant only test requirement for the same test at VEGP Units 3 and 4 (ADAMS Accession No. ML19322C321).

f) Associated Preoperational Startup Tests

SNC states in LAR 19-017 that in addition to the tests discussed above, several ITP tests confirm the PXS and RCS operate as designed and the following tests are relevant to PRHR operation during natural circulation mode: UFSAR Subsection 14.2.9.1.3 items a); b); c); and d); UFSAR Subsection 14.2.9.1.1, "Reactor Coolant System Testing," item r); and UFSAR Subsection 5.4.1.4.1.

LAR 19-017 states the following:

UFSAR Subsection 14.2.9.1.3 item a) requires that proper operation of the safety-related valves is verified by the performance of the baseline inservice tests (IST), as described in UFSAR Subsection 3.9.6. This includes the PRHR inlet and outlet valves, PXS-PL-V101 and PXS-PL-V108A/B. Implementation and performance of the IST program demonstrates that the valves operate as required.

UFSAR Subsection 14.2.9.1.3 items b), c), and d) require that calibration and operation of relevant PXS instrumentation (safety and non-safety related) be performed. This includes the PRHR HX flow rate instrumentation, the PRHR HX temperature and high point vent level instrumentation, and the PRHR HX supply line temperatures. The check confirms that the instruments required to monitor the PRHR HX for proper operation are calibrated and operate as designed. The instrument tests feed into continued testing of the PRHR HX and provide appropriate indications for the tests described in UFSAR Subsection 14.2.9.1.3 items e) and g).

UFSAR Subsection 14.2.9.1.1 item r) requires that pressure drops across major components of the RCS be measured and recorded using temporary instrumentation during flow testing. A verification is performed of the measurements to the design specifications.

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Initial verification of the reactor coolant system flow rate is made during the plant initial test program as described in UFSAR Subsection 5.4.1.4.1. Reactor coolant system flow rates are measured during the pre-core load hot functional tests, and during the startup tests. The objective of these tests is to verify that the reactor coolant system flow rate meets the flow rate range of Technical Specification 3.4.1.

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The staff concludes that UFSAR Subsection 14.2.9.1.3 items a), b), c), and d), UFSAR Subsection 14.2.9.1.1 item r), and UFSAR Subsection 5.4.1.4.1 tests would confirm PXS components and RCS operate as designed [

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g) Associated ITAAC

SNC states the following in LAR 19-017:

COL Appendix C ITAAC in Table 2.2.3-4 require components in the PXS, including those involved in PRHR HX testing and other related PXS SSCs be evaluated, acceptance criteria met, and ITAAC closed, prior to operation. The ITAAC include construction, design, and testing requirements. ITAAC 2.2.03.02a requires the PRHR HX (PXS-ME-01) and associated components; including the inlet isolation valve and the outlet control valves meet the associated ASME Code requirements. ITAAC 2.2.03.05a.i requires the PRHR HX and associated components meet seismic Category 1 requirements. ITAAC 2.2.03.08b.02 requires that the PXS provides core decay heat removal during design basis events by confirming the elevation of the PRHR HX centerline of the heat exchanger's upper channel head is greater than 26.3 feet relative to the centerline of the hot leg. The elevation difference provides assurance that natural circulation flow will work as designed when initiated because the physical configuration of the PRHR HX

relative to the RCS piping is correct. The completion of the ITAAC verifies that the PRHR installations at Vogtle Units 3 & 4 are within the standard plant AP1000 design as described in the Vogtle Units 3 & 4 UFSAR and will perform its safety-related design function. Proposed [revision to replace] ITAAC 2.2.03.08b.01 will require a heat removal performance test of the PRHR HX under forced flow conditions [instead of natural circulation flow conditions as currently exists].

Table 9 of Enclosure 6 to the supplement to the LAR lists how the PRHR design parameters (inlet and outlet line design and sloping requirements, inlet and outlet valve requirements, HX elevation, and HX ASME and seismic requirement) will be verified with as-built conditions using the following ITAAC:

- ITAAC 2.2.03.02a (Index No. 159)
- ITAAC 2.2.03.05a.i (Index No. 165)
- ITAAC 2.2.03.07b (Index No. 172)
- ITAAC 2.2.03.08b.01 (Index No. 175)
- ITAAC 2.2.03.08b.02 (Index No. 176)
- ITAAC 2.2.03.08c.iii (Index No. 182)
- ITAAC 2.2.03.08c.iv.04 (Index No. 186)
- ITAAC 2.2.03.10 (Index No. 206)
- ITAAC 2.2.03.11a.i (Index No. 207)
- ITAAC 2.2.03.11b.i (Index No. 209)
- ITAAC 2.2.03.11c.i (Index No. 212)
- ITAAC 2.2.03.11c.ii (Index No. 213)

The as-built conditions confirmed by ITAAC for PRHR inlet and outlet valve requirements include ASME code compliance; seismic categorization; availability of 1E power; display, monitoring and control from the main control room; protection and safety monitoring system control; the diverse actuation system control, and testing requirements.

The staff review concludes that completion of ITAAC in COL Appendix C identified above will verify that the PRHR system component installations at VEGP Units 3 and 4 are within the standard plant AP1000 design as described in the VEGP Units 3 and 4 UFSAR and will perform its safety-related design function. The staff evaluation of proposed changes to ITAAC 2.2.03.08b.01 is described below.

3.1.2 Associated changes to COL and UFSAR

The staff evaluation of proposed changes to COL and UFSAR associated with the proposed removal of the preoperational PRHR HX natural circulation test from the scope of the VEGP Units 3 and 4 ITP is provided below.

a) COL Appendix C, Subsection 2.2.3, Table 2.2.3-4

SNC proposes in LAR 19-017 to revise COL Appendix C, Subsection 2.2.3, Table 2.2.3-4, ITAAC 2.2.03.08b.01 to change from a PRHR HX natural circulation flow test to a forced flow test. As part of the change, SNC proposes to modify the test method and acceptance criteria to account for expected forced flow conditions; this includes changes to the initial and final hot leg

temperatures and acceptable PRHR HX heat transfer rate. The exemption request associated with this change is evaluated in Section 3.2 below.

The staff evaluated the change, and given the discussion in Section 3.1.1(d) above regarding flow similarities of fully developed flow characteristics between forced circulation and natural circulation flow, the staff finds that changing the ITAAC from a PRHR HX natural circulation test to a forced flow test is a suitable surrogate for demonstrating the PRHR HX heat removal capability is acceptable, and the proposed heat transfer acceptance criteria is appropriate. Because the capability of the PRHR system to initiate natural circulation is no longer being tested as part of ITAAC 2.2.03.08b.01, the staff acceptability of the proposed changes to the ITAAC is also based on proposed changes to preoperational tests identified in UFSAR Subsection 14.2.9.1.3 which is described in more detail below. Therefore, within the scope of this license amendment, the staff finds that 10 CFR 52.97(b) is satisfied.

b) UFSAR Subsection 1.9.4.2.1, TMI Action Plan Issues

SNC proposes in LAR 19-017 to remove the PRHR natural circulation test from UFSAR Subsection 1.9.4.2.1, Subsection I.G.1. SNC states the following in LAR 19-017:

Regulatory Guide (Reg. Guide) 1.68, Initial Test Program for Water-Cooled Nuclear Power Plants, describes the general scope and depth that the NRC considers acceptable for demonstrating compliance with NRC regulations as they pertain to Initial Test Programs; the AP1000 design has conformance statements for Revisions 2 and 3. The AP1000 design conformance statement for Appendix A.4.t of the Reg. Guide discusses how the requirements are met, including; "... provisions to perform pre-operational tests of the passive RHR heat exchanger..." The requirement and compliance statement will be met by the remaining PRHR HX tests. The physical aspects required to initiate natural circulation flow are confirmed by the preoperational test described in UFSAR Section 14.2.9.1.3 item e) and the heat transfer capability of the PRHR HX is confirmed by the preoperational test described in UFSAR Section 14.2.9.1.3 item g). Demonstrations of the layout of primary components as well as heat transfer measurements are confirmed during the ITAAC closure process and initial test program.

While SNC's position is that the proposed changes as part of LAR 19-017 do not alter conformance with RG 1.68 because the AP1000 conformance statements for Appendix A.4.t are satisfied due to remaining PRHR component testing and construction verification inspections, the staff cannot make such a determination due to the extent of changes to the ITAAC and preoperational tests of the PRHR system being proposed. As discussed in Section 3.1 above, absent performance of a PRHR system natural circulation test, the guidance of RG 1.68, specifically Appendix A.4.t which specifies performance of a natural circulation test, cannot be met. However, the staff views the proposed changes to PRHR tests included in the LAR, such as the preoperational tests described in UFSAR Section 14.2.9.1.3 item e), UFSAR Section 14.2.9.1.3 item g), and ITAAC 2.2.03.08b.01, combined with analysis of data from [] as an acceptable alternative to the guidance prescribed in RG 1.68. This staff determination is also based on extensive []

[] discussed above and confirmed for VEGP Units 3 and 4 by the additional ITAAC described in Section 3.1.1(g) above. []

] as

described in Section 3.1 above) which could impact the ability of the PRHR to perform its intended safety function. Therefore, the staff concludes that the requirement of GDC 37 regarding testing of the ECCS system as a whole can be satisfied by the first plant only test described in Section 3.1.1.(e) above as long as the as-built plant has a similar configuration to SM1. The staff finds that changes to the TMI Action Plan Issues are consistent with the proposed removal of the PRHR natural circulation test from the preoperational test program, and therefore, acceptable.

c) UFSAR Subsection 3.9.1.1.1.17, Passive Residual Heat Removal Test

In LAR 19-017, SNC stated that:

UFSAR Subsection 3.9.1.1.1 lists the RCS transients which are considered normal operating transients and analyzed using Level A service limits (i.e., tests which do not require a pressure which is greater than the component design pressure). One of these transients, the PRHR test, is described in UFSAR Subsection 3.9.1.1.1.17. The subsection is proposed to be revised as the transient caused by the preoperational PRHR heat exchanger natural circulation test will be removed.

UFSAR Subsection 3.9.1.1.1.17, would be revised as shown below.

From UFSAR Subsection 3.9.1.1.1.17:

During hot functional testing with the reactor coolant system in hot standby condition, the passive residual heat removal flow and heat transfer rates are tested. Passive residual heat removal flow is initiated by opening the passive residual heat removal isolation valves. The passive residual heat removal cools the reactor coolant system for up to 30 minutes.

The above paragraph is revised as follows:

During the initial test program, the passive residual heat removal flow and heat transfer rates are tested. Passive residual heat removal flow is initiated by opening the passive residual heat removal isolation valves. For component design purposes, the temperature and pressure responses to this testing are based on a conservative definition of the test conditions with a total of 5 occurrences.

The staff finds the proposed changes to UFSAR Subsection 3.9.1.1.1.17 are acceptable because the test transient of 5 occurrences is consistent with the passive residual heat removal test and does not adversely affect the safety-related function of the design of RCS components.

UFSAR Subsection 6.3.6.1.2, Heat Transfer Testing

SNC proposes in LAR 19-017 to revise UFSAR Subsection 6.3.6.1.2 to replace the PRHR HX natural circulation test with the revised forced flow test as described in UFSAR Subsection 14.2.9.1.3 item g). The staff finds the changes consistent with the proposed removal of the PRHR HX natural circulation test from the preoperational test program which the

staff evaluated above. Therefore, the staff finds that the proposed revision to UFSAR Subsection 6.3.6.1.2 acceptable.

d) UFSAR Subsection 14.2.9.1.3, Passive Core Cooling System Testing

SNC proposes in LAR 19-017 to revise test descriptions of UFSAR Subsection 14.2.9.1.3 items e), f), and g). UFSAR Subsection 14.2.9.1.3 item e) is to be revised 1) to state that natural circulation flow “can initiate” instead of “initiates” as currently exists and 2) to provide limits for the measured PRHR HX supply line and return line temperatures. UFSAR Subsection 14.2.9.1.3 item f) is to be removed and item g) is to be revised to add a PRHR HX flow resistance test to the currently existing PRHR HX heat transfer test under forced circulation conditions.

The staff finds that UFSAR Subsection 14.2.9.1.3 item e) change from “initiates” to “can initiate” acceptable as it provides the ability to initiate PRHR HX natural circulation flow with temperature and elevation differences between supply and return lines. The staff finds that limits for the measured PRHR HX supply line and return line temperatures are given in test specifications and supported by audited documents, and therefore, acceptable.

With removal of UFSAR Subsection 14.2.9.1.3 item f), SNC proposes to revise UFSAR Subsection 14.2.9.1.3 item g) by adding PRHR HX flow resistance test to confirm that natural circulation flow can be established by verifying that the line resistance of the as-built plant is below the value used in the design analysis as evaluated in Section 3.1.1 item d) above. The staff finds the proposed changes to UFSAR Subsection 14.2.9.1.3 consistent with the proposed removal of the PRHR HX natural circulation test from the preoperational test program as evaluated above.

3.1.3 Conclusions

The staff finds SNC’s proposal in LAR 19-017 to remove the preoperational PRHR HX natural circulation test from the scope of the VEGP Units 3 and 4 ITP and revise ITAAC 2.2.03.08b.01 to replace the PRHR HX natural circulation test with the PRHR HX forced flow test acceptable based on a combination of preoperational tests and analysis of data from [

]

Specifically, the staff finds:

- [
-]
- the measurement of the flow resistance during preoperational test in UFSAR Subsection 14.2.9.1.3 item g), and the addition of temperature acceptance criteria to preoperational test in UFSAR Subsection 14.2.9.1.3 item e) would demonstrate a high propensity for the PRHR system to initiate natural circulation;
- UFSAR Subsection 14.2.9.1.3 items a), b), c), and d), UFSAR Subsection 14.2.9.1.1 item r), and UFSAR Subsection 5.4.1.4.1 tests would confirm PXS components and RCS are installed or operate as designed;
- the proposed changes to ITAAC 2.2.03.08b.01 would verify that the PRHR HX performance at VEGP Units 3 and 4 is within the standard plant AP1000 design as

described in the VEGP Units 3 and 4 UFSAR and would perform its safety-related design function;

[

] Based on its review, the staff concludes that changes to the above preoperational tests, and existing COL Appendix C ITAAC, combined with analysis of data from operating experience, provides reasonable assurance the PRHR system would perform its safety-related design function and continue to satisfy the requirements of 10 CFR 52.97(b) as well as GDCs 1, 34, 35, 36, and 37.

3.2 EVALUATION OF EXEMPTION

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

The Tier 1 information for which a plant-specific departure and exemption was requested is described above. The result of this exemption would be that the licensee could implement modifications to Tier 1 information to the UFSAR as well as departures from UFSAR Tier 2 information in UFSAR Chapters 1, 3, 6, and 14. 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 19-017. 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 19-017 because the application of the specified Tier 1 information is not necessary to achieve the underlying purpose of the rule. Taken together, the proposed changes described in the LAR [] are equivalent 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 COL Appendix C that are being proposed in the LAR. The justification provided in LAR 19-017, 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 PXS. 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 PRHR 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 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION

The NRC's regulation in 10 CFR 50.92(c) states that the NRC may make a final determination, under the procedures in 10 CFR 50.91, that a license amendment involves no significant hazards consideration if operation of the facility, in accordance with the amendment, would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

An evaluation of the issue of no significant hazards consideration is presented below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed changes do not affect the operation of any systems or equipment that initiates an analyzed accident or alter any structures,

systems, or components (SSC) accident initiator or initiating sequence of events. The proposed changes remove the requirement to perform the preoperational PRHR heat exchanger natural circulation test and revise ITAAC which demonstrates the heat removal capability of the PRHR heat exchanger. The remaining preoperational testing and ITAAC will confirm the PRHR heat exchanger can perform its design and licensing bases functions. The changes do not adversely affect any methodology which would increase the probability or consequences of a previously evaluated accident.

The changes do not impact the support, design, or operation of mechanical or fluid systems. There is no change to plant systems or the response of systems to postulated accident conditions. There is no change to predicted radioactive releases due to normal operation or postulated accident conditions. The plant response to previously evaluated accidents or external events is not adversely affected, nor does the proposed change create any new accident precursors.

Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of a previously evaluated accident.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed changes do not affect the operation of any systems or equipment that may initiate a new or different kind of accident, or alter any SSC such that a new accident initiator or initiating sequence of events is created.

The proposed changes remove the requirement to perform the preoperational PRHR heat exchanger natural circulation test and revise ITAAC related to the PRHR heat exchanger. The remaining tests will demonstrate the heat removal capabilities of the PRHR heat exchanger. The remaining preoperational testing and ITAAC will confirm the PRHR heat exchanger can perform its design and licensing bases functions. The proposed changes do not adversely affect any design function of any SSC design functions or methods of operation in a manner that results in a new failure mode, malfunction, or sequence of events that affect safety-related or non-safety-related equipment. This activity does 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 result in significant fuel cladding failures.

Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The proposed changes maintain the existing safety margin and provide adequate protection through continued application of the existing requirements in the UFSAR. The proposed changes satisfy the same design functions in accordance with the same codes and standards as stated in the UFSAR. The changes do not adversely affect any design code, function, design analysis, safety analysis input or result, or design/safety margin. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the proposed change.

Since no safety analysis or design basis acceptance limit/criterion is changed, the margin of safety is not reduced.

Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above evaluation, the staff concludes that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the staff has made a final determination that no significant hazards consideration is involved for the proposed amendment and that the amendment should be issued as allowed by the criteria contained in 10 CFR 50.91.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendment on February 11, 2020. The State official had no comments.

6.0 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, 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 7796, dated February 11, 2020). The Commission has made a final determination that no significant hazards consideration is involved for the proposed amendment as discussed in Section 4.0 of this SE. 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.

7.0 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.

8.0 REFERENCES

1. Southern Nuclear Operating Company, Vogtle Electric Generating Plant Units 3 and 4, "Request for License Amendment: Removal of the Preoperational Passive Residual Heat Removal Heat Exchanger Natural Circulation Test (LAR-19-017)," September 6, 2019 (ADAMS Accession No. ML19249C738).
2. Southern Nuclear Operating Company, Vogtle Electric Generating Plant Units 3 and 4, "Revision to Request for License Amendment: Removal of the Preoperational Passive Residual Heat Removal Heat Exchanger Natural Circulation Test (LAR-19-017R1)," January 31, 2020 (ADAMS Accession No. ML20031E665).
3. Vogtle Electric Generating Plant Units 3 and 4, Updated Final Safety Analysis Report, Revision 8 and Tier 1, Revision 7, June 14, 2019 (ADAMS Accession No. ML19171A096).
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. Summary of Audit for Vogtle Electric Generating Plant Units 3 and 4, Request for License Amendment: Removal of the Preoperational Passive Residual Heat Removal Heat Exchanger National Circulation Test (LAR 19-017), dated March 17, 2020, U.S. Nuclear Regulatory Commission (ADAMS Accession No. ML20080L927).