



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

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS  
RELATED TO AMENDMENT NOS. 126 AND 125  
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 July 14, 2017, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17198A596), the Southern Nuclear Operating Company (SNC) requested that the Nuclear Regulatory Commission (NRC) amend Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Combined License (COL) Numbers NPF-91 and NPF-92, respectively. The License Amendment Request (LAR) 17-021 requests changes to plant-specific Tier 1 (and COL Appendix C) and Appendix A, Technical Specifications (TS), to revise the inspected volume for the spent fuel pool (SFP) and cask loading pit (CLP), and make corresponding changes to the minimum volumes. A new Tier 1 inspection is added for the cask washdown pit (CWP) with appropriate acceptance criteria for its volume. The LAR also proposes changes to the TS reactor decay heat limits and SFP decay heat limits which reflect when various safety-related makeup paths are required to be available for containment cooling or SFP makeup.

Pursuant to the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 52.63(b)(1), SNC also requested an exemption from the provisions of 10 CFR Part 52, Appendix D, "Design Certification Rule," Section III.B, "Scope and Contents." The requested exemption would allow a departure from the corresponding portions of the certified information in Tier 1 of the generic

DCD.<sup>1</sup> In order to modify the UFSAR (the plant-specific design control document (PS-DCD)) Tier 1 information, the NRC must find the licensee's exemption request included in its submittal for the LAR to be acceptable. The staff's review of the exemption request, as well as the LAR, is included in this safety evaluation.

## 2.0 REGULATORY EVALUATION

The requested amendment proposes to:

1. Revise COL Appendix A TS 3.6.6, "Passive Containment Cooling System (PCS)," to change the reactor decay heat limit identifying when air-only PCS capability is sufficient to provide the required reactor decay heat removal with the reactor in MODES 5 and 6, and reflect this change in TS Tables 3.3.9-1, "Engineered Safeguards Actuation System Instrumentation" and 3.3.19-1, "DAS Manual Controls."
2. Revise TS 3.7.9, "Spent Fuel Pool Makeup Water Sources," to change the notes to require operability of the fuel transfer canal (FTC), change the applicability when irradiated fuel assemblies are stored in the spent fuel pool, change the SFP decay heat levels for which the specified contingent of safety-related SFP makeup water sources are required to be operable, and add a new Surveillance Request (SR) 3.7.9.5 to verify the FTC is in communication with the SFP,
3. Revise the minimum required SFP, FTC, and CWP water storage volumes in COL Appendix C Table 2.3.7-4, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Item Nos. 2.3.07.07b.i and 2.3.07.07b.ii (and plant-specific Tier 1 Table 2.3.7-4, ITAAC items 7b.i and 7b.ii). The proposed changes to these ITAAC also redefine the measurement locations for the required SFP and SFP makeup water volumes, and
4. Add a new ITAAC item 7b.vii in COL Appendix C Table 2.3.7-4 (and plant-specific Tier 1 Table 2.3.7-4) to define the minimum volume of water in the CLP required as a safety-related SFP makeup water source and define the CLP volume measurement locations.

The NRC 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.

10 CFR 52, Appendix D, Section VIII.B.5.a allows an applicant or licensee who references this appendix to depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure from Tier 1 information, Tier 2\* information, or the TS, or requires a license amendment under paragraphs B.5.b or B.5.c of the section.

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<sup>1</sup> While the licensee describes the requested exemption as being from Section III.B of 10 CFR Part 52, Appendix D, the entirety of the exemption pertains to proposed departures from Tier 1 information in the plant-specific design control document (DCD). In the remainder of this evaluation, the NRC will refer to the exemption as an exemption from Tier 1 information to match the language of Section VIII.A.4 of 10 CFR Part 52, Appendix D, which specifically governs the granting of exemptions from Tier 1 information.

10 CFR Part 52, 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 application for amendment of license, construction permit, or early site permit. The proposed LAR requires changes in the TS, and therefore an LAR is required to be submitted for NRC approval.

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

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a COL. These activities involve a change to COL Appendix C Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) information, with corresponding changes to the associated PS-DCD Tier 1 information. Therefore, NRC approval is required prior to making the plant specific proposed changes in this LAR.

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 Part 50, Appendix A, general design criteria (GDC) 38, “Containment heat removal,” requires a system to remove heat from the containment be provided. The system safety function shall be to reduce rapidly, consistent with the functioning of other associated systems, the containment pressure and temperature following any loss-of-coolant accident and maintain them at acceptably low levels.

10 CFR 50, Appendix A, GDC 61, “Fuel storage and handling and radioactivity control,” requires that the fuel storage system be designed to ensure adequate safety under normal and postulated accident conditions. The system shall be designed with the capability to permit appropriate periodic inspection and testing of components important to safety; suitable shielding for radiation protection; appropriate containment, confinement and filtering capability; residual heat removal that reflects the importance to safety of decay heat and other residual heat removal; and the capability to prevent a significant reduction in fuel storage coolant inventory under accident conditions.

NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” (SRP) Section 6.2.2, “Containment Heat Removal Systems,” and Section 9.1.3, “Spent Fuel Pool Cooling and Cleanup System,” provide guidance to staff for reviewing containment heat removal and the SFP cooling and cleanup systems.

### 3.0 TECHNICAL EVALUATION

#### 3.1.1 TECHNICAL EVALUATION OF PROPOSED CHANGES FROM CONTAINMENT ANALYSIS PERSPECTIVE

In LAR 17-021 SNC proposes to revise COL Appendix A, TS 3.6.6 to change the reactor decay heat limit identifying when with air cooling alone PCS (air-only PCS cooling) capability is sufficient to provide the required reactor decay heat removal with the reactor in Modes 5 and 6, and reflect this change in TS Tables 3.3.9-1 and 3.3.19-1. The specific technical changes proposed in this LAR by the licensee are as follows:

- revise TS 3.6.6 applicability for Modes 5 and 6 from 6.0 MWt to 7.0 MWt
- revise TS Table 3.3.9-1 Note (f) from 6.0 MWt to 7.0 MWt
- revise TS Table 3.3.19-1 Note (b) from 6.0 MWt to 7.0 MWt

SNC states that the requested change to TS 3.6.6 is supported by a revision of the applicable containment cooling analysis that reevaluated when air-only PCS cooling was credited. The previous analyses supporting the existing 6.0 MWt limit assumed air-only PCS cooling for the entire 7 day period following a loss of normal shutdown cooling. The revised analysis assumed air-only PCS cooling for the first 72 hours following a loss of normal shutdown cooling, followed by 50 gpm cooling water supplied via the passive containment cooling ancillary water storage tank (PCCAWST) for the remainder of the 7-day period. The 72 hour time period is specified as the safety-related mission time of the PCS; thereafter, nonsafety-related equipment is used, consistent with the current licensing basis and that the credit of nonsafety-related cooling water sources after the initial 72 hours following an abnormal event is consistent with the AP1000 licensing basis.

SNC states that the reason for TS 3.6.6 change is to enable the PCCWST to be available to support SFP cooling as required in TS 3.7.9 earlier in a refueling outage, and consequently, enhance refueling outage efficiency. With this change, the PCS can be available to support SFP cooling in the event of a seismic event concurrent with a station blackout when the reactor has a higher level of reactor decay heat (7.0 MWt vs. 6.0 MWt).

The staff conducted an audit of SNC's documents supporting the application as stated in the audit summary report, dated May 31, 2018, (ADAMS Accession No. ML18136A876). The staff audited the following documents:

- DCP\_DCP\_008777, "Determination of the Impact of DCP 4441 on the AP1000 WGOthic Air Only Cooling Analysis of Record to Support LAR-107," June 16, 2017
- APP-SSAR-GSC-193, Revision 2, "Scaling Calculation for Time To Steady State PCS Film Coverage for the AP1000 Containment Pressure and Temperature Response Analysis," June 2011
- APP-SSAR-GSC-749, Revision 0, "AP1000 Dry PCS Heat Removal Capability," July 2010

SNC prepared DCP\_DCP\_008777 to support LAR 17-021 and APP-SSAR-GSC-193 and APP-SSAR-GSC-749 to provide the current containment cooling analysis when air-only PCS cooling was credited. As stated in DCP\_DCP\_008777, SNC first performed a re-run of the design basis containment peak pressure analysis for air-only PCS cooling (i.e., for over 7 days with an initial

core decay heat of 6 MWt) with the updated WGOthic code, which corrected the identified code errors. This resulted in lowering the containment peak pressure from design basis peak pressure which is below the containment design pressure. SNC then used the updated WGOthic code to run a case with an initial core decay heat of 7 MWt and air-only PCS cooling for the first 72 hours following a loss of normal shutdown cooling. This involved increasing the initial core decay heat from 6 MWt in the current design basis analysis to 7 MWt and reducing the analysis time from 7 days to 3 days to determine the peak pressure before PCS water is applied, which turns the transient around. SNC did not model the 50 gpm cooling water supplied via PCCAWST for the remainder of the 7-day period. SNC stated the results showed that the containment peak pressure for 3 days remained well below the containment design pressure. During the audit, the staff confirmed that the results of the analysis showed the containment peak pressure remained well below the containment design pressure.

Figure 5-1 of APP-SSAR-GSC-749 provides containment pressure transients for air-only PCS cooling for four cases with different initial decay heat levels that were run for over 7 days. The staff interpolated these results to estimate the containment pressure at 3 days for air-only PCS cooling with initial decay heat of 7 MWt. The interpolated value of containment pressure at 3 days was well below the containment design pressure of 59 psig and was comparable to SNC's revised analysis results provided in DCP\_DCP\_008777. The staff expects that with initiation of 50 gpm PCS water cooling starting at 3 days, the containment pressure would start dropping, and thus, the containment pressure predicted at 3 days will remain the peak containment pressure for 7 days period following a loss of normal shutdown cooling. Therefore, the staff determined that SNC's containment cooling analysis supporting LAR 17-021 meets requirements of GDC 38, and is therefore acceptable.

#### Technical Specification Changes

SNC proposes to revise TS 3.6.6 to change the reactor decay heat limit from 6 MWt to 7 MWt when air-only PCS cooling capability is sufficient to provide the required reactor decay heat removal with the reactor in Modes 5 and 6, and reflects this change in TS Tables 3.3.9-1 and 3.3.19-1. As described above, the staff evaluated this change and found that SNC's analysis supports it and meets the guidelines in SRP Section 6.2.2. Therefore, the staff finds that the proposed change to TS 3.6.6 is acceptable.

#### Conclusion

The staff finds the proposed changes to TS 3.6.6 acceptable because the containment pressure remains below the containment design pressure as confirmed during the staff's audit. Therefore, the staff finds that the proposed changes to TS 3.6.6 meet the requirements of 10 CFR 50.36 and GDC 38, and are therefore acceptable.

#### 3.1.2 TECHNICAL EVALUATION OF PROPOSED CHANGES FROM SFP COOLING PERSPECTIVE

In LAR 17-021, SNC proposes to change the reactor decay heat limit, specified in COL Appendix A, TS 3.6.6, which allows for sufficient air-only PCS, from 6.0 MWt to 7.0 MWt. The staff's evaluation of this proposed change is discussed in the previous section of this safety evaluation. Once TS 3.6.6 has been revised, the PCCWST can be credited to provide SFP makeup earlier in the refueling process.

In LAR 17-021 the licensee proposed to:

- revise COL Appendix C Table 2.3.7-4 to change the minimum water volume maintained in SFP and FTC to include the gate areas, and change the minimum water volume maintained in the CWP;
- add new ITAAC item to COL Appendix C Table 2.3.7-4, to verify the minimum water volume of the CLP;
- revise COL Appendix A, TS 3.7.9 to add the FTC as a safety-related makeup water source to the SFP;
- revise COL Appendix A, TS 3.7.9 to change the SFP decay heat levels for which the specified safety-related SFP makeup water sources are required to be operable;
- revise COL Appendix A SRs 3.7.9.1 - 4 to change the applicability of heat loads identified in these SRs;
- add new COL Appendix A SR 3.7.9.5 to verify the fuel transfer canal is in communication with the SFP;
- revise UFSAR Tier 2, Section 6.2.2.4.2, "Preoperational Testing," to modify the PCCAWST makeup flow requirements;
- revise UFSAR Table 6.2.2-1, "Passive Containment Cooling System Performance Parameters," to remove information that currently identifies only one PCCAWST concurrent flow requirement and adds a reference to flows identified in 6.2.2.4.2;
- revise UFSAR Tier 2, Section 9.1.3 "Spent Fuel Pool Cooling System," to change the SFP decay heat levels for which the specified safety-related SFP makeup water sources are required to be operable, and add the CLP as one of the credited makeup water sources;
- revise UFSAR Tier 2, Table 9.1-2 "Spent Fuel Pool Cooling And Purification System Design Parameters," to modify the minimum volumes of water available in the different safety-related makeup water sources; and
- revise UFSAR Tier 2, Table 9.1-4, "Station Blackout/Seismic Event Times," to modify the values to time to saturation, SFP water levels, and assumptions of the thermal analysis to reflect the results of the revised SFP heatup and boiloff analysis.

The staff reviewed the above proposed changes identified in LAR 17-021 in accordance with SRP Section 9.1.3, "Spent Fuel Pool Cooling and Cleanup System."

In order to support the proposed modifications identified in the LAR, SNC revised the SFP heatup and boiloff analysis (APP-SFS-M3C-012). The revised calculation includes several changes to the initial conditions and assumptions, but it still relies on the same methodology previously approved by the staff at the time of certification of the AP1000 design. Therefore, the staff evaluation of the revised SFP heatup and boiloff analysis is focused on the changes to the assumptions and the subsequent results. In order to evaluate the proposed changes, the staff conducted an audit (ADAMS Accession No. ML18136A876) of the revised SFP heatup and boiloff analysis. During the Audit, which began on February 12, 2018, SNC made available the current SFP heatup and boiloff analysis, which was reviewed as part of the AP1000 design certification and the revised SFP heatup and boiloff analysis. The staff evaluated APP-SFS-

M3C-012, "AP1000 Spent Fuel Pool Heatup, Boiloff, and Emergency Makeup on Loss of Cooling," Revision 6, to understand the revision to the SFP heatup and boiloff analysis.

While evaluating APP-SFS-M3C-012, the staff noticed the revision of several inputs and assumptions. All the volumes of the credited safety-related makeup water sources have been modified to account for construction tolerances on the wall dimensions. The staff confirmed that the licensee assumed the most conservative pool volume values. The initial pool water temperature has been raised for all cases evaluated. The staff found that this is a conservative assumption and change because assuming a higher temperature in the revised calculation would result in more limiting results (less time to heatup, higher required makeup and boiloff) than the lower values in the current analysis. SNC's revised calculation assumes that as the SFP water heats up and starts to boil, the steam bubbles swell and additional water is lost through a break on the lowest non-seismic qualified piping. SNC also assumes that, for the cases where the CLP is not credited for makeup, the gate between the SFP and the CLP develops a leakage that contributes to water loss. The staff agrees that assuming additional water losses in these cases is a conservative assumption. Therefore, the staff found these revised assumptions and inputs acceptable.

APP-SFS-M3C-012 evaluates several cases that represent different decay heat loads and available makeup sources (CWP, CLP, both, and none). The staff focused its evaluation during the audit on the cases that represent the bounding conditions for SFP cooling and makeup requirements. These cases calculate the maximum initial heat load in the SFP that would keep the stored fuel covered depending on the available makeup water source. Another case postulates a seismic event and a loss of offsite power after a full core offload immediately after a 44 percent refueling (typical refueling size for an 18 month cycle.) This case calculates minimum time to boil and minimum time for operator action.

While evaluating the results of the revised SFP heatup and boiloff analysis (APP-SFS-M3C-012) and confirming that with an increase in SFP decay heat there is a decrease in the time to reach saturation, the staff noticed that the most limiting event saturation time decreases from 2.33 hours to 2.0 hours. The staff found this small change acceptable since there is no need to take operator action in this timeframe. The staff focused its review in the minimum time limit to take operator action. UFSAR Tier 2, Table 9.1-4, "Station Blackout/Seismic Event Times," (USFAR) Note 9 currently indicates that the operator has a minimum of 18 hours to take action and align makeup to the SFP after a seismic event. This time limit is based on the most limiting decay heat loading scenario. LAR 17-021 did not proposed to update this time limit. The staff evaluated the SFP heatup and boiloff analysis and identified that the calculated minimum time to take operator action remainshigher than the UFSAR limit of 18 hours. Therefore, the staff previous determination that 18 hours to take operator action is adequate is still valid and no additional changes are needed.

UFSAR Table 9.1-4 identifies a decrease in the minimum water level above the stored fuel during abnormal conditions (most severe cases). The water level dropped from 1.4 feet to 0.5 feet above the fuel. LAR 17-021 clarifies that this water level is not measured from the top of the stored fuel, but from the lowest reading of the SFP water level instrument. At this elevation there is still approximately 1 foot of water covering the stored fuel.

The staff reviewed the licensee's LAR 17-021 and evaluated the revised SFP heatup and boiloff analysis and finds that because the stored fuel is never uncovered under any of the evaluated scenarios, the reduction in minimum water level is acceptable.

When addressing the SFP cooling capability during the time period after 72 hours and before 7 days, the licensee's UFSAR credits makeup water from the PCCWST or the PCCAWST, depending on individual heatload at the SFP and the core. The PCCAWST is designed to supply a makeup flow of 135 gpm to the PCCWST and the SFP simultaneously. This flow is adjusted according to the relative decay heat in these two systems. Due to changes to the relative heatload, the licensee proposed to revise the SFP makeup requirements. The revised SFP heatup and boiloff analysis (APP-SFS-M3C-012) calculated the maximum required makeup flow from the PCCAWST in order to ensure the stored fuel remains covered and cooled for at least 7 days after the initiating event. The staff focused its review on Case 4c, which assumes the maximum heat load in the SFP at the end of a typical refueling that can be removed by water in the SFP, FTC, gate areas, CWP, and CLP. Case 4c represents the highest decay heat the SFP can contain while the PCCWST is not available as a makeup water source for the SFP.

The staff evaluated the results of the Cases 4c and confirmed that the calculation results demonstrate that the design makeup flow (described in the UFSAR) of 50 gpm remains adequate to ensure cooling for the stored fuel for at least 7 days.

Based on the staff evaluation of LAR 17-021, as confirmed by audit of the revised SFP heatup and boiloff analysis discussed above, the staff concludes that the revised decay heat loads, SFP water volume, and the revised makeup water volumes demonstrate that the SFS is capable of removing the decay heat of the fuel stored at the pool for at least 7 days. Therefore, the staff finds that the SFP and its makeup water sources continue to meet the design requirements of GDC 61.

## Tier 2 Changes

As discussed in the technical evaluation above, the staff reviewed SNC's revised SFP heatup and boiloff analysis (APP-SFS-M3C-012) and determined that the revised calculation demonstrates adequate concurrent flow to the SFP and the PCCWST during accident conditions. SNC also calculated additional decay heat combinations that would require adjustments to the concurrent makeup water flows, without requiring additional increase in the combined makeup flow.

In LAR 17-021, SNC proposed to modify UFSAR Tier 2, Section 6.2.2.4.2 in order to confirm a new makeup flow from the PCCAWST. This test requires at least 50 gpm to the PCCWST and at least 80 gpm to the SFP.

The staff evaluated the proposed changes to UFSAR Tier 2, Section 6.2.2.4.2, and determined that the proposed new makeup flow distribution does not require an increase in the total flow from the PCCAWST and, since the tested flows are above the minimum required makeup, the proposed changes are acceptable.

In UFSAR Tier 2, Section 9.1.3, "SFP Cooling System," the licensee describes the methods and makeup water sources credited to remove decay heat from the SFP. UFSAR Tier 2, Subsection 9.1.3.4.3, "Abnormal Conditions," discusses the decay heat removal under abnormal conditions when the active SFP cooling system is not credited operable, and the decay heat removal function is performed by the steaming and makeup water addition to the SFP. The UFSAR discussed the need for different makeup water sources depending on the decay heat in the SFP.

LAR 17-021 proposes changes to UFSAR Tier 2, Section 9.1.3, in order to reflect the revised SFP heatup and boiloff analysis (APP-SFS-M3C-012). These changes include revisions to UFSAR Section 9.1.3 and Tables 9.1-2 and 9.1-4,

The staff evaluated these changes and confirmed that they are supported by the revised SFP heatup and boiloff analysis (addressed in the technical evaluation section above) which demonstrates that the credited makeup water sources have adequate flow and total volume to provide SFP decay heat removal. Therefore, the staff finds the proposed changes to UFSAR Tier 2, Section 9.1.3, acceptable.

#### ITAAC Changes

SNC proposes modifying COL Appendix C ITAAC to change the minimum water volume maintained in the SFP and FTC to include the gate areas, and change the minimum water volume maintained in the CWP.

The staff reviewed the new proposed minimum water volumes for the SFP, FTC and CWP and confirmed that these values are consistent with the assumptions in APP-SFS-M3C-012 and discussed in Tier 2 of the UFSAR (as discussed above).

SNC also proposes adding a new requirement to verify the minimum water volume of the CLP available to provide SFP makeup. Since the CLP is a credited safety-related makeup water source to the SFP; the staff confirmed that the source is capable of providing the required SFP makeup volume. The staff confirmed that the proposed CLP water volume is consistent with the assumptions in APP-SFS-M3C-012 and as discussed in Tier 2 of the UFSAR. Therefore, the staff finds the proposed changes to COL Appendix C Table 2.3.7-4 are acceptable.

#### Technical Specification Changes

LAR 17-021 proposed changes to TS 3.7.9 to reflect the proposed change in reactor decay heat for which air-only PCS cooling can provide sufficient cooling for the first 72 hours, and to revise the SFP decay heat limits based on available makeup water sources. LAR 17-021 also proposed to update SRs 3.7.9.1 - 4 in order to reflect the revised SFP decay heat limits, and to add a new SR 3.7.9.5 to verify that the FTC is in communication with the SFP and therefore, capable of providing makeup water.

The staff evaluated the proposed changes to TS 3.7.9 and confirmed that they are in accordance with the revised SFP heatup and boiloff analysis and the SFP cooling system description discussed in the revised UFSAR Section 9.1.3. The results of the SFP heat up and boiloff analysis discussed in LAR 17-021 demonstrates that the credited safety-related makeup water sources have sufficient capacity to maintain the stored fuel covered and cooled for at least 72 hrs following a design basis event, and for at least 7 days, crediting the PCCAWST. Therefore, the staff finds the proposed changes to TS 3.7.9 acceptable.

#### 3.1.3 SUMMARY

Based on the results shown in LAR 17-021 (as confirmed by the audit of the calculations) and the technical discussion shown above, the staff finds the changes proposed in LAR 17-021 acceptable. The licensee has demonstrated that the credited makeup water sources are capable of providing adequate residual heat removal for the SFP under both normal operating and accident conditions. Therefore, the requirements of GDC 38 and 61 continue to be met.

### 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. 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 17-021. This exemption is a permanent exemption limited in scope to the particular Tier 1 information specified.

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

Pursuant to 10 CFR 52.7, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 52. As 10 CFR 52.7 further states, the Commission's consideration will be governed by 10 CFR 50.12, "Specific exemptions," which states that an exemption may be granted when: (1) the exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security; and (2) special circumstances are present. Specifically, 10 CFR 50.12(a)(2) lists six circumstances for which an exemption may be granted. It is necessary for one of these bases to be present 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 changes requested in the amendment including 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 changes to the VEGP Units 3 and 4 plant-specific Tier 1 information (and associated COL Appendix C information) and to the VEGP Units 3 and 4 Appendix A, TS. 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 NRC 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 below in the technical evaluation, thereby departing from the AP1000 certified (Tier 1) design information. The changes do not alter or impede the design, function, or operation of any plant structures, systems, or components (SSCs) associated with the facility's physical or cyber security and, therefore, does not affect any plant equipment that is necessary to maintain a safe and secure plant status. In addition, the changes have no impact on plant security or safeguards. Therefore, as required by 10 CFR 50.12(a)(1), the staff finds that the common defense and security is not impacted by this exemption.

### 3.2.4 SPECIAL CIRCUMSTANCES

Special circumstances, in accordance with 10 CFR 50.12(a)(2), are present, in part, whenever application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. The underlying purpose of the Tier 1 information is to ensure that a licensee will safely construct and operate a plant based on the certified information found in the AP1000 DCD, which was incorporated by reference into the VEGP Units 3 and 4 licensing basis. The proposed changes described in the technical evaluation above 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 17-021 because the application of the specified Tier 1 information is not necessary to achieve the underlying purpose of the rule. The proposed changes do not affect any function or feature used for the prevention and mitigation of accidents or their safety analyses, and no safety-related SSC or function is involved. This exemption request and associated revisions to the Tier 1 information and corresponding changes to Appendix C demonstrate that the applicable regulatory requirements will continue to be met. Therefore, for the above reasons, the staff finds that the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption from the Tier 1 information exist.

### 3.2.5 SPECIAL CIRCUMSTANCES OUTWEIGH REDUCED STANDARDIZATION

This exemption would allow the implementation of changes to Tier 1 information in the plant-specific DCD and corresponding changes to Appendix C that are being proposed in the LAR. The justification provided in LAR 17-021, the exemption request, and the associated licensing basis mark-ups demonstrate that there is a limited change from the standard information provided in the generic AP1000 DCD, and that information is unnecessary to achieve the underlying purpose of the rule. 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 Containment Cooling and SFP Makeup Systems. 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 below. The exemption request proposes to depart from the certified design by allowing changes discussed below in the technical evaluation. The proposed changes will not adversely affect the ability of the SFP and Containment Systems to perform its design functions, and the level of safety provided by the current systems and equipment therein is unchanged. Therefore, based on the foregoing reasons and as required by 10 CFR 52.7, 10 CFR 52.98(f), and 10 CFR Part 52, Appendix D, Section VIII.A.4, the staff finds that granting the exemption would not result in a significant decrease in the level of safety otherwise provided by the design.

### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations in 10 CFR 50.91(b)(2), on March 28, 2018, the Georgia State official was notified of the proposed issuance of the amendment. 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 NRC 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 55654, published on November 22, 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) 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 review and evaluation discussed in Sections 3.0 through 3.3 above, 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) such activities will be conducted in compliance with the Commission's regulations; and (3) the issuance of the proposed amendment will not be inimical to the common defense and security or to the health and safety of the public. Therefore, the staff finds that the changes proposed in this LAR are acceptable.

## 7.0 REFERENCES

1. Vogtle Electric Generating Plant Units 3 and 4 – Request for License Amendment and Exemption (LAR-17-021): Changes to Containment Cooling and Spent Fuel Pool Makeup Strategies, July 14, 2017 (ADAMS Accession No. ML17198A596).
2. Audit Plan for Vogtle Electric Generating Plant Units 3 and 4, Request for License Amendment and Exemption (LAR 17-021): Changes to Containment Cooling and Spent Fuel Pool Makeup Strategies, January 17, 2017 (ADAMS Accession No. ML18010B038).
3. Audit Summary for Vogtle Electric Generating Plant Units 3 and 4, Request for License Amendment and Exemption (LAR 17-021): Changes to Containment Cooling and Spent Fuel Pool Makeup Strategies, May31, 2018 (ADAMS No.18136A876).
4. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," March 2007 (ADAMS Accession No. ML070660036).
5. Vogtle Units 3 and 4 Updated Final Safety Analysis Report, Revision 6 and Tier 1, Revision 5, March 12, 2017 (ADAMS Accession No. ML17172A218).
6. AP1000 Design Control Document, Revision 19, June 13, 2011 (ADAMS Accession No. ML11171A500).
7. Combined License NPF-91 for Vogtle Electric Generating Plant Unit 3, Southern Nuclear Operating Company (ADAMS Accession No. ML14100A106).
8. Combined License NPF-92 for Vogtle Electric Generating Plant Unit 4, Southern Nuclear Operating Company (ADAMS Accession No. ML14100A135).