



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

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS  
RELATED TO AMENDMENT NOS. 143 AND 142  
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 April 20, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18110A113), 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) 18-010 requested changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the plant-specific Design Control Document (DCD) Tier 2 information and involves changes to plant-specific Tier 1 information (and associated COL Appendix C information). Specifically, the amendment proposes changes to plant-specific Tier 1 (and COL Appendix C) Table 2.5.2-3, "PMS Automatically Actuated Engineered Safety Features," to revise the nomenclature for "Auxiliary Spray and Letdown Purification Line Isolation" and to include "Component Cooling System Containment Isolation Valve Closure" in Table 2.5.2-3.

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.<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

As discussed in plant-specific Tier 1 and UFSAR Chapter 7, the protection and safety monitoring system (PMS) initiates reactor trip and actuation of engineered safety features (ESF) in response to plant conditions monitored by process instrumentation and provides safety-related displays. In part, the PMS initiates automatic actuation of ESF, as identified in Tier 1 Table 2.5.2-3, when plant process signals reach specified limits. LAR 18-010 proposes changes to plant-specific Tier 1 (and COL Appendix C) Table 2.5.2-3 to revise the nomenclature for "Auxiliary Spray and Letdown Purification Line Isolation" and to include "Component Cooling System Containment Isolation Valve Closure."

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 (TS), or requires a license amendment under paragraphs B.5.b or B.5.c of the section.

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

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a COL. 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.

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<sup>1</sup> While SNC describes the requested exemption as being from Section III.B of 10 CFR Part 52, Appendix D, the entirety of the exemption pertains to proposed departures from Tier 1 information in the 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 Part 50, "Domestic Licensing of Production and Utilization Facilities," Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion (GDC) 13, "*Instrumentation and control*," requires that instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems.

10 CFR Part 50, Appendix A, GDC 20, "*Protection system functions*," requires that the protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences, and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

### 3.0 TECHNICAL EVALUATION

#### 3.1 TECHNICAL EVALUATION OF THE REQUESTED CHANGES

The information presented by SNC in LAR 18-010 was evaluated by the staff for its completeness, quality, and clarity. As part of this license amendment, SNC characterized two revisions to Tier 1 (and COL Appendix C) Table 2.5.2-3, and associated changes to Tier 2 information, proposed in LAR 18-010:

- (1) Revise Tier 1 (and COL Appendix C) Table 2.5.2-3, and associated Tier 2 information, to consistently provide the appropriate nomenclature for the PMS ESF "Auxiliary Spray and Purification Line and Zinc/Hydrogen Addition Isolation" signals, and
- (2) Add the Component Cooling Water System (CCS) Containment Isolation Valve Closure signal to the PMS automatically actuated ESF in Tier 1 (and COL Appendix C) Table 2.5.2-3.

The staff reviewed the proposed changes and determined that the changes do not affect any of the information used or cited in the NRC's safety findings as documented in either the AP1000 DCD Final Safety Evaluation Report (FSER), as supplemented, or the VEGP Units 3 and 4 COL FSER. The staff reviewed the proposed revisions to Tier 1 (and COL Appendix C) Table 2.5.2-3 to ensure the appropriate PMS automatically actuated ESF signals are tested per Tier 1 (and COL Appendix C) Table 2.5.2-3 and ITAAC No. 2.5.02.06b. The staff noted that the LAR incorrectly refers to ITAAC No. 2.5.02.06b, which was consolidated into ITAAC 2.5.02.06a.ii [Index No. 530] per Amendment Nos. 113/112 (ADAMS Accession No. ML18019A854). The staff reviewed COL Appendix C and confirmed that ITAAC Index No. 530 will confirm that the appropriate PMS signals are generated once test signals reach specified limits. The staff determined that there are no adverse effects to the design, functional capabilities, method for performing a function, design analysis, or safety analysis, and thus, the requested changes do not adversely affect any design functions. The proposed changes do not involve a change to the method of evaluation for establishing design bases or safety analyses. The following paragraphs describe the staff's evaluation of the proposed changes.

(1) Chemical and Volume Control System (CVS) Clarification Changes to Tier 1 (and COL Appendix C) Table 2.5.2-3 and Related UFSAR Locations

In LAR 18-010, SNC described that two CVS isolation signals, "Auxiliary Spray Isolation" and "Purification Line Isolation," isolate CVS pipe lines that could serve as potential pathways for reactor coolant leakage. These isolations prevent potential additional decrease of reactor coolant inventory after Low-1 pressurizer level is reached. The isolation signals are applied to valves located along the CVS purification loop, auxiliary spray line, zinc addition line, and hydrogen addition line.

The staff previously approved changes to the CVS in License Amendment No. 12 (ADAMS Accession No. ML13172A181), extending the purification line isolation signal to include the zinc and hydrogen lines, in addition to the purification loop. License Amendment No. 12 authorized SNC's proposed changes to the VEGP Units 3 and 4 UFSAR Figure 7.2-1 (Sheet 12) to identify the signal as, "Purification Line and Zinc and Hydrogen Addition Lines Isolation Valve Isolation," which is inconsistent with the naming convention used in design documentation for this signal.

In Tier 1 (and COL Appendix C) Table 2.5.2-3 and related UFSAR locations, SNC requested to revise the naming convention for the "Auxiliary Spray and Purification Line and Zinc/Hydrogen Addition Isolation" signals for consistency with the nomenclature used in supporting design descriptions. The staff verified that the proposed changes to the ESF actuation system (ESFAS) nomenclature are for clarity purposes only and do not modify the design of a valve or change an application of PMS logic to the CVS valves. The staff confirmed that the proposed changes accurately reflect the information depicted in CVS design documentation. The staff reviewed the updated information, and confirmed that it provides consistency between Tier 1 (and COL Appendix C) information, Tier 2 information, and design documentation. Based on these findings, the staff concludes that the conforming nomenclature changes to the TS Bases are consistent with the TS.

(2) CCS Changes to Tier 1 (and COL Appendix C) Table 2.5.2-3

In LAR 18-010, SNC described that the CCS cools the shell side of the reactor coolant pump (RCP) heat exchangers to remove the heat from the RCP motor assembly during normal plant operation. The heated CCS water is then pumped to the CCS heat exchangers, located outside the containment building, cooled, and returned to the RCP heat exchangers for continued RCP cooling. Because the CCS heat exchanger is located outside of containment, a leak in one of the RCP heat exchangers can provide a leakage path for reactor coolant outside of containment. During this scenario, the CCS Containment Isolation Valve Closure signal, which actuates due to RCP high bearing water temperature for a RCP, is generated to isolate the CCS containment isolation valves and prevent the flow of reactor coolant outside of containment.

In Tier 1 (and COL Appendix C) Table 2.5.2-3, SNC requested to add the CCS Containment Isolation Valve Closure signal, consistent with the approved plant design. The staff reviewed the associated UFSAR information and verified that the CCS Containment Isolation Valve Closure signal is described and depicted as actuating upon RCP high bearing water temperature. Therefore, consistent with the approved plant design, the staff confirmed that SNC's proposed revision to Tier 1 (and COL Appendix C) Table 2.5.2-3 to add the CCS Containment Isolation Valve Closure signal is both accurate and complete. Additionally, because the change specifically adds the CCS Containment Isolation Valve Closure signal to the required ESFAS that are tested to confirm the appropriate PMS signals are generated once test signals reach specified limits, this is more conservative and is acceptable.

Based on these findings, the staff concludes that there is reasonable assurance that the requirements of GDC 13 and 20 of Appendix A to 10 CFR Part 50 will continue to be met. Therefore, the staff finds the proposed changes to be acceptable.

### 3.2 EVALUATION OF EXEMPTION

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

The Tier 1 information for which a plant-specific departure and exemption was requested is described above. The result of this exemption would be that SNC could implement modifications to Tier 1 information in the UFSAR as well as departures from plant-specific DCD Tier 2 information, as described in the LAR. Pursuant to the provisions of 10 CFR 52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is requested for the involved Tier 1 information described and justified in LAR 18-010. This exemption is a permanent exemption limited in scope to the particular Tier 1 information specified.

As stated in Section VIII.A.4 of Appendix D to 10 CFR Part 52, an exemption from Tier 1 information is governed by the requirements of 10 CFR 52.63(b)(1) and 52.98(f). Additionally, Section VIII.A.4 of Appendix D to 10 CFR Part 52 provides that the Commission will deny a request for an exemption from Tier 1 if it finds that the requested change will result in a significant decrease in the level of safety otherwise provided by the design. Pursuant to 10 CFR 52.63(b)(1), the Commission may grant exemptions from one or more elements of the certification information, so long as the criteria given in 10 CFR 52.7, which, in turn, reference 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. SNC stated that the requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii). That subparagraph defines special circumstances as when "[a]pplication of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." The staff's analysis of these findings is presented below.

### 3.2.1 AUTHORIZED BY LAW

The requested exemption would allow SNC to implement the amendment described above. This exemption is a permanent exemption limited in scope to particular Tier 1 information. Subsequent changes to this plant-specific Tier 1 information, and corresponding changes to Appendix C, or any other Tier 1 information would be subject to the exemption process specified in Section VIII.A.4 of Appendix D to 10 CFR Part 52 and the requirements of 10 CFR 52.63(b)(1). As stated above, 10 CFR Part 52, Appendix D, Section VIII.A.4 allows the NRC to grant exemptions from one or more elements of the Tier 1 information. The staff has determined that granting of SNC's proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, as required by 10 CFR 50.12(a)(1), the exemption is authorized by law.

### 3.2.2 NO UNDUE RISK TO PUBLIC HEALTH AND SAFETY

As discussed above in the technical evaluation, the proposed changes comply with the NRC's substantive safety regulations. Therefore there is no undue risk to the public health and safety.

### 3.2.3 CONSISTENT WITH COMMON DEFENSE AND SECURITY

The proposed exemption would allow changes as described above in the technical evaluation, thereby departing from the AP1000 certified (Tier 1) design information. The change does not alter or impede the design, function, or operation of any plant 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 DCD, which is incorporated by reference into a licensee's licensing basis. The proposed changes described in the above technical evaluation would revise Tier 1 (and COL Appendix C) Table 2.5.2-3 listing of PMS automatically actuated ESF signals. The proposed revisions maintain the required design functions of the PMS.

Special circumstances are present in the particular circumstances discussed in LAR 18-010 because the application of the current generic certified Tier 1 information in Table 2.5.2-3, and COL Appendix C, concerning PMS Automatically Actuated ESF, which includes incorrect nomenclature for the Auxiliary Spray and Letdown Purification Line Isolation and does not include the CCS Containment Isolation Valve Closure, does not serve the underlying purpose of the rule. The proposed changes ensure the appropriate PMS automatically actuated ESF signals are tested. The proposed changes do not adversely 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 adversely affected. This exemption request and associated revisions to the Tier 1 information and corresponding changes to Appendix C demonstrate that the applicable

regulatory requirements will continue to be met. Therefore, for the above reasons, the staff finds that the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption from the Tier 1 information exist.

### 3.2.5 SPECIAL CIRCUMSTANCES OUTWEIGH REDUCED STANDARDIZATION

This exemption would allow the implementation of changes to Tier 1 information in the plant-specific DCD and corresponding changes to COL Appendix C that are being proposed in the LAR. The justification provided in LAR 18-010, the exemption request, and the associated licensing basis mark-ups demonstrate that there is a limited change from the standard information provided in the generic AP1000 DCD. The proposed revisions to the Tier 1 information support the design function of the PMS. 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. In addition, the proposed revisions ensure the appropriate PMS automatically actuated ESF signals are tested per Tier 1 (and COL Appendix C) Table 2.5.2-3 and ITAAC 2.5.02.06a.ii [Index No. 530], which identify that the PMS initiates automatic actuation of ESF, when plant process signals reach specified limits. 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 PMS to perform its design functions, and the level of safety provided by the current systems and equipment therein is unchanged. Therefore, based on the foregoing reasons and as required by 10 CFR 52.7, 10 CFR 52.98(f), and 10 CFR Part 52, Appendix D, Section VIII.A.4, the staff finds that granting the exemption would not result in a significant decrease in the level of safety otherwise provided by the design.

## 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendment on August 29, 2018. The State official had no comments.

## 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20, "Standards for Protection Against Radiation." The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite. Also, there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (*Federal Register*, 83 FR 23738, dated May 22, 2018). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Under 10 CFR 51.22(b), no environmental impact statement or

environmental assessment needs to be prepared in connection with the issuance of the amendment.

Because the exemption is necessary to allow the changes proposed in this LAR, and because the exemption does not authorize any activities other than those proposed in this LAR, 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), the staff finds that no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the exemption.

## 6.0 CONCLUSION

The staff has determined that pursuant to Section VIII.A.4 of Appendix D to 10 CFR Part 52, the exemption (1) is authorized by law, (2) presents no undue risk to the public health and safety, (3) is consistent with the common defense and security, (4) presents special circumstances, and (5) does not reduce the level of safety at the licensee's facility. Therefore, the staff grants the licensee an exemption from the Tier 1 information requested by the licensee.

The staff has concluded, based on the considerations discussed in Section 3.1 that there is reasonable assurance that: (1) the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. Therefore, the staff finds the changes proposed in this license amendment acceptable.

## 7.0 REFERENCES

1. Request for License Amendment and Exemption RE: Updates to Tier 1 Table 2.5.2-3 (LAR 18-010) letter from Southern Nuclear Operating Company, dated April 20, 2018 (ADAMS Accession No. ML18110A113).
2. Vogtle Electric Generating Plant, Units 3 and 4 Updated Final Safety Analysis Report, Revision 7 and Tier 1, Revision 6, dated June 15, 2018 (ADAMS Accession No. ML18179A227).
3. AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A500).
4. Vogtle Electric Generating Plant Units 3 and 4 – Issuance of Amendments and Granting of Exemptions RE: Testing Inspections, Tests, Analyses, and Acceptance Criteria Consolidation (LAR 17-038) (ADAMS Accession No. ML18019A854).
5. Issuance of Exemption and License Amendment Number 12 for Vogtle Units 3 and 4 (LAR 13-002) (ADAMS Accession No. ML13172A181).