



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

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS
RELATED TO EXEMPTION AND AMENDMENT NO. 130 AND 129
TO THE COMBINED LICENSE NOS. NPF-91 AND NPF-92, RESPECTIVELY
SOUTH 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 December 20, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17354A964), Southern Nuclear Operating Company, (SNC) requested that the U.S. Nuclear Regulatory Commission (NRC) amend Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Combined License (COL) Numbers NPF-91 and NPF-92, respectively. The requested amendment (LAR 17-044) would revise the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the incorporated plant-specific Design Control Document (PS-DCD). This involves Tier 2 information and related changes to plant-specific Tier 1 information, (Tier 2 Subsection 3.10.2.2 and Tier 1 Table 2.2.5-5, Items 4.a) and 4.b)) with corresponding changes to the associated COL Appendix C information. Specifically, the proposed amendment involves consistency changes that allow a pneumatic test to be used in lieu of a hydrostatic test for the Main Control Room (MCR) Emergency Habitability System (VES).

Pursuant to 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 for the AP1000 Design," Section III.B, "Scope and Contents." This requested exemption would allow a departure from the corresponding portions of the certified information in Tier 1 of the generic DCD¹

¹ While SNC describes the requested exemption as being from Section III.B of 10 CFR Part 52,

In order to grant SNC's request to modify the UFSAR (the 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

Pressure-retaining Class 3 components that are safety-related as described in UFSAR Subsection 3.9.3, are constructed according to the requirements for pressure testing stated in the rules of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section III, Division 1, Article ND-6000. These tests are typically performed hydrostatically, but may be performed pneumatically where systems are not readily dried and traces of testing medium cannot be tolerated.

The VES provides emergency habitability to the MCR by maintaining a positive pressure with respect to the surrounding areas, and providing passive filtration and a supply of breathable air for the MCR occupants while maintaining cooling of the MCR boundary.

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

10 CFR Part 52, Appendix D, Section VIII.A.4 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 Part 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 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 the licensee who references a design certification rule to request NRC approval for an exemption from one or more elements of the certification information. The Commission may only grant such a request if it determines that the exemption will comply with the requirements of 10 CFR 52.7, which in turn points to the requirements listed in 10 CFR 50.12 for specific exemptions, and if the special circumstances present outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. Therefore, any exemption from the Tier 1 information certified by Appendix D to 10 CFR Part 52 must meet the requirements of 10 CFR 50.12, 52.7, and 52.63(b)(1).

10 CFR Section 50.55a, Codes and Standards, requires that components of the Reactor Coolant Pressure Boundary (RCPB) must meet the requirements for Class 1 components in Section III of the ASME Code. This regulation also requires that components classified Quality

Appendix D, the entirety of the exemption pertains to proposed departures from Tier 1 information in the generic DCD. In the remainder of this evaluation, the NRC will refer to the exemption as an exemption from Tier 1 information to match the language of Section VIII.A.4 of 10 CFR Part 52, Appendix D, which specifically governs the granting of exemptions from Tier 1 information.

Group B or C must meet the requirements for Class 2 and 3 components, respectively, in Section III of the ASME Code.

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.

3.0 TECHNICAL EVALUATION

3.1 TECHNICAL EVALUATION OF PROPOSED CHANGES

3.1.1 LICENSEE PROPOSED CHANGES

The proposed changes would revise Tier 1, Table 2.2.5-5, "ITAAC for the VES," Items 4.a) and 4.b) and UFSAR, Subsection 3.10.2.2, "Seismic and Operability Qualification of Active Mechanical Equipment."

COL Appendix C (and plant-specific Tier 1), Table 2.2.5-5, ITAAC No. 2.2.05.02a describes ITAAC for the VES. The licensee proposes changes for ITAAC for Design Commitments 4.a) and 4.b), to be revised from "A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested." to "A pressure test will be performed on the components and piping required by the ASME Code Section III to be pressure tested."

The licensee also proposes changes for Acceptance Criteria for Design Commitments 4.a) and 4.b), to be revised from "A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Tables 2.2.5-1 and 2.2.5-2 as ASME Code Section III conform with the requirements of the ASME Code Section III" to "A report exists and concludes that the results of the pressure test of the components and piping identified in Tables 2.2.5-1 and 2.2.5-2 as ASME Code Section III conform with the requirements of the ASME Code Section III."

UFSAR Subsection 3.10.2.2, "Seismic and Operability Qualification of Active Mechanical Equipment" describes how active mechanical equipment is qualified for both structural integrity and operability for its intended service conditions by a combination of test and analysis, including ASME Code Section III system level hydrostatic tests for valves. The licensee proposes to modify the fourth paragraph in UFSAR subsection 3.10.2.2, replacing "hydrostatic" with "pressure" for valves, in regards to system level testing following installation. The licensee states that the proposed changes give the constructor the ability to pressure test VES either hydrostatically or pneumatically per ASME Code Section III.

The licensee states that per ASME Code Section III, ND-6112, "A pneumatic test in accordance with ND-6300 may be substituted for the hydrostatic test when permitted by ND-6112.1(a)." ND-6112.1(a) allows a pneumatic test to be used in lieu of a hydrostatic test only when any of the following conditions exist:

- (1) When component, appurtenances, or systems are so designed or supported that they cannot safely be filled with liquid.

- (2) When component, appurtenances, or systems which are not readily dried, are to be used in services where traces of the testing medium cannot be tolerated.

The licensee states that due to the design and layout of the VES, it may be difficult to dry the system following a hydrostatic test. Water could remain in system low points or components, and result in sending a slug of water through the system or the formation of rust. Formation of rust inside the VES piping could lead to rust particles being carried into the MCR during VES operation which could adversely affect its emergency habitability function. Since the design and layout of the VES may not allow for the system to be readily dried following a hydrostatic test, ASME Code Section III, ND-6000 permits a pneumatic test to be substituted for a hydrostatic test.

The licensee also stated that the proposed changes are consistent with the ASME Code Section III pressure tests for other air systems that include ASME Code Section III components and piping. As described in COL Appendix C Table 2.2.1-3 and Table 2.7.1-4, the ITAAC for the containment system and Nonradioactive Ventilation System allow for a pressure test as allowed by ASME Code Section III. ASME Code Section III provides the ability to perform hydrostatic or pneumatic pressure tests.

3.1.2 STAFF EVALUATION OF PROPOSED CHANGES

DCD UFSAR Subsection 3.2.2 states that the assignment of safety-related classification and use of codes and standards conform to the requirements of 10 CFR 50.55a for the development of a Quality Group classification and the use of codes and standards. DCD Tier 2 Table 3.2-3, "AP1000 Classification of Mechanical and Fluid Systems, Components, and Equipment," lists the VES components as Class C. DCD Tier 2 Subsection 3.2.2.5, "Equipment Class C," identifies ASME Code Section III, Class 3 as being applicable to Class C pressure retaining components.

The staff reviewed the proposed changes to COL Appendix C Table 2.2.5-5, ITAAC No. 2.2.05.02a and UFSAR Subsection 3.10.2.2 and determined that the changes are in accordance with ASME Code Section III, Article ND-6000. Since changes are in accordance with ASME Code, Section III, the regulations in 10 CFR 50.55a will continue to be met.

The staff finds that the proposed changes are related to construction tests for the VES and do not affect the VES design functions. The proposed changes also do not adversely impact any functions associated with containing, controlling, channeling, monitoring, or processing radioactive or non-radioactive materials, nor do they diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. The types and quantities of expected plant effluents are not changed. No effluent release path is impacted by this change. The proposed changes do not adversely impact radiologically controlled zones. Plant radiation zones, radiation controls established to satisfy 10 CFR Part 20 requirements, and expected amounts and types of radioactive materials are not affected by the proposed changes. Additionally, the change activity has no adverse impact on the emergency plan or the physical security plan implementation, because there are no changes to physical access to credited equipment inside the Nuclear Island (including containment or the auxiliary building) and no adverse impact to plant personnel's ability to respond to any plant operations or security event.

The staff also 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) or the VEGP Units 3 and 4 COL FSER. Additionally, the staff determined that there are no changes to the design, functional capabilities, method for performing a function, design analysis, safety analysis, or UFSAR Tier 2 information involved. Thus, the requested Tier 1 and Tier 2 changes do not affect any design functions.

The proposed changes do not involve a change to the method of evaluation for establishing design bases or safety analyses. Tests, experiments and procedures described in the licensing basis were not changed by these departures. The proposed changes do not represent any technical changes to the design, construction, or operation of the plant. No structure, system, component, design function, or analysis as described in the AP1000 certified design is affected.

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 design 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 changes to Tier 2 information and a COL Appendix C table. Pursuant to the provisions of 10 CFR 52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is requested for the involved Tier 1 information described and justified in LAR 17-044. 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 public health and safety, and are consistent with the common defense and security; and (2) special circumstances are present. 10 CFR 50.12(a)(2) lists six special circumstances for which an exemption may be granted. It is necessary for one of these special circumstances to be present in order for 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 subsection 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 each of these findings is presented below.

3.2.1 AUTHORIZED BY LAW

This exemption would allow SNC to implement the amendment as described above. This 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. 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 the SNC’s proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission’s regulations. 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 the licensee will safely construct and operate the plant based on the certified information found in the AP1000 DCD, which was incorporated by reference into the licensee’s licensing basis. The proposed changes described in the above technical evaluation do not impact the ability of any SSCs to perform their safety functions or negatively impact safety of the facility.

Special circumstances are present in the particular circumstances discussed in LAR 17-044 because the application of the specified Tier 1 information is not necessary to achieve the underlying purpose of the rule. The proposed changes are equal or provide additional clarity to the existing requirement. The proposed changes do not affect any function or feature used for the prevention and mitigation of accidents or their safety analyses, and no safety-related SSC or function is involved. This exemption request and associated revisions to the Tier 1 information and corresponding changes to Appendix C demonstrate that the applicable regulatory requirements will continue to be met. Therefore, for the above reasons, the staff finds that the

special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption from the Tier 1 information exist.

3.2.5 SPECIAL CIRCUMSTANCES OUTWEIGH REDUCED STANDARDIZATION

This exemption would allow the implementation of changes to Tier 1 information in the plant-specific DCD and corresponding changes to Appendix C of the COL that are being proposed in the LAR. The justification provided in LAR 17-044, 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. Due to the design and layout of the VES, it is difficult to dry the system following a hydrostatic test. Water could remain in system low points or components, and result in sending a slug of water through the system or the formation of rust. Formation of rust inside the VES piping could lead to rust particles being carried into the MCR during VES operation which could adversely affect its emergency habitability function. Since the design and layout of the VES may not allow for the system to be readily dried following a hydrostatic test, ASME Code Section III, ND-6000 permits a pneumatic test to be substituted for a hydrostatic test. 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 VES. 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 the changes discussed above. The exemption request proposes to depart from the certified design by allowing the 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 VES to perform its design functions, and the level of safety provided by the SSCs 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 May 24, 2018, the Georgia State official was consulted regarding 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 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 10922, dated March 13, 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 need 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, (5) the special circumstances outweigh the potential decrease in safety due to reduced standardization, and (6) 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 specified by the licensee.

The staff has concluded, based on the considerations discussed in Section 3.2 and confirming that these changes do not change an analysis methodology, assumptions, or the design itself, 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 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 17-044: ITAAC for Pneumatic Testing of VES Air Lines, letter from SNC, dated December 20, 2017 (ADAMS Accession No. ML17354A964).
2. Vogtle Electric Generating Plant Updated Final Safety Analysis Report, Revision 5, dated June 4, 2011 (ADAMS Accession No. ML11180A100)
3. AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A500).
4. Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design, NUREG-1793, Supplement 2, dated August 5, 2011 (ADAMS Accession No. ML112061231).
5. Vogtle Electric Generating Plant, Final Safety Evaluation Report, dated September 30, 2012 (ADAMS Accession No. ML12271A045)