



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

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS  
RELATED TO AMENDMENT NO. 34  
TO THE COMBINED LICENSE NO. NPF-91  
AND LICENSE NO. NPF-92  
SOUTHERN NUCLEAR OPERATING COMPANY, INC.  
VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4  
DOCKET NOS. 52-025 AND 52-026

1.0 INTRODUCTION

By letter dated November 21, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14325A835), Southern Nuclear Operating Company (SNC/licensee) requested that the U.S. Nuclear Regulatory Commission (NRC) amend the combined licenses (COLs) for Vogtle Electric Generating Station Units 3 and 4, COL Numbers NPF-91 and NPF-92, respectively.

The proposed changes would revise the COLs by changing the description and scope of the Initial Test Program (ITP). The changes are consistent with Regulatory Guide (RG) 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants," Revision 3.

The licensee has also requested an exemption from the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, Appendix D, Section III.B, "Design Certification Rule for the AP1000 Design, Scope and Contents," to allow a departure from the elements of the certification information in Tier 1 of the generic Design Control Document (DCD).<sup>1</sup>

2.0 REGULATORY EVALUATION

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 a request for an exemption from Tier 1 if the design change will result in a significant decrease in the level of plant safety otherwise provided by the design.

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

10 CFR 52.63(b)(1) allows the licensee who references the 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 the potential decrease in safety due to reduced standardization. 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 Part 52, Appendix D, Section VIII.B.5.a allows the COL 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. The change requested involves a revision to plant-specific Tier 1 information, thus requiring NRC approval for the Tier 1, COL, and the associated Tier 2 departures.

10 CFR 52.98(f) states that any modification to, addition to, or deletion from the terms and conditions of a COL including any modification to, addition to, or deletion from the inspections, tests, analyses, and acceptance criteria (ITAAC) contained in the license is a proposed amendment to the license.

10 CFR 52.79(a)(28) requires plans for preoperational testing and initial operations.

### 3.0 TECHNICAL EVALUATION

#### 3.1 EVALUATION OF EXEMPTION

##### INTRODUCTION

A licensee referencing Appendix D incorporates by reference all Tier 1 information contained in the generic AP1000 DCD. The licensee requests changes to be made to Tier 1 information in Section 3.4 of the DCD. An exemption is needed because Section VIII.A.4 of Appendix D to 10 CFR Part 52 requires a licensee to obtain an exemption to depart from the Tier 1 information of the generic AP1000 DCD.

The result of this exemption would be that the licensee can implement modifications to Tier 1 information described and justified in License Amendment Request (LAR) 14-010 if and only if the NRC approves LAR 14-010. This 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, the Commission will deny a request for an exemption from Tier 1 if it finds that the design 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, upon application by an applicant or licensee referencing a certified design, grant exemptions from one or more elements of the certification information, so long as the criteria given in 10 CFR 52.7 are met, and that the special circumstances as defined by 10 CFR 52.7 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. 10 CFR 52.7 further states that 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 or 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.

### 3.1.1 AUTHORIZED BY LAW

This exemption would allow the licensee to implement approved changes to Tier 1, Section 3.4. This is a permanent exemption limited in scope to particular Tier 1 information, and subsequent changes to Tier 1 Section 3.4 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 NRC staff has determined that granting the licensee'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.

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

The underlying purpose of Appendix D to 10 CFR Part 52 is to ensure that the licensee will construct and operate the plant based on the approved information found in the DCD incorporated by reference into the licensee's licensing basis. The changes proposed in this amendment request are to the licensee's ITP. There are no changes to the technical content of any component, preoperational, or startup test procedure. The ITP continues to meet its objective to demonstrate that the plant has been constructed as designed, that the systems perform consistent with the plant design, and that operation at full licensed power will be performed in a controlled and safe manner. The description changes do not introduce any new industrial, chemical, or radiological hazards that would represent a public health or safety risk, nor do they modify or remove any design or operational controls or safeguards intended to mitigate any existing on-site hazards. Furthermore, the proposed changes would not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in significant fuel cladding failures. Accordingly, these changes do not present an undue risk from any new equipment or systems. Therefore, as required by 10 CFR 50.12(a)(1), the staff finds that there is no undue risk to the public health and safety.

### 3.1.3 CONSISTENT WITH COMMON DEFENSE AND SECURITY

The proposed exemption would allow changes to Section 3.4 of the plant-specific Tier 1 DCD. This is a permanent exemption limited in scope to particular Tier 1 information. Subsequent changes to Section 3.4 or any other Tier 1 information would be subject to the exemption process in Section VIII.A.4 of Appendix D to 10 CFR Part 52. The proposed changes are to the

licensee's ITP. 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.

#### 3.1.4 SPECIAL CIRCUMSTANCES

Special circumstances, in accordance with 10 CFR 50.12(a)(2)(ii), are present whenever application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. The underlying purposes of the Tier 1 information are 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 are to the administrative description and scope of Section 3.4 of the DCD. With the changes implemented, the ITP continues to meet its objective to demonstrate that the plant has been constructed as designed, that the systems perform consistent with the plant design, and that operation at full licensed power will be performed in a controlled and safe manner. Therefore, because the application of the specified Tier 1 information in this circumstance does not serve the underlying purpose of the rule, the staff finds that the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption from the Tier 1 information exist.

#### 3.1.5 SPECIAL CIRCUMSTANCES OUTWEIGH REDUCED STANDARDIZATION

This exemption would allow the implementation of changes to Section 3.4 of the DCD as proposed in the LAR. With the changes implemented, the ITP continues to meet its objective to demonstrate that the plant has been constructed as designed, that the systems perform consistent with the plant design, and that in operation at full licensed power will be performed in a controlled and safe manner. Based on this, as required by 10 CFR Part 52.63(b)(1), the staff finds that the special circumstances outweigh the effects the departure has on the standardization of the AP1000 design.

#### 3.1.6 NO SIGNIFICANT REDUCTION IN SAFETY

This exemption would allow the implementation of changes to Section 3.4 of the DCD as proposed in the LAR. With the changes implemented, the ITP continues to meet its objective to demonstrate that the plant has been constructed as designed, that the systems perform consistent with the plant design, and that in operation at full licensed power will be performed in a controlled and safe manner. Therefore, as required by 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.

### 3.2 EVALUATION OF PROPOSED CHANGES

The licensee requests an exemption to Tier 1 information in Section 3.4. Specifically, the licensee redefined certain "construction and installation tests" as "component tests" and moved them to the first phase of the ITP. Component tests are a specific subset of "construction and installation testing" and include initial energizing and preliminary operation of components, various electrical and mechanical tests, cleaning and flushing, electrical and operability checks,

and instrument calibrations. As a result of the proposed exemption, not all of the construction and installation tests will be included in the ITP.

The licensee also requested an exemption to change the wording to Tier 1 information in Section 3.4 of the DCD to be more consistent with the UFSAR Section 14.2.8, "Test Program Schedule." Finally, the licensee requested an exemption to change Tier 1 information in Section 3.4 of the DCD to clarify when preoperational and startup test specifications and procedures will be available to NRC personnel.

#### *Changes to Tier 1 Information in Section 3.4 of the DCD Initial Test Program*

The licensee requested an exemption to allow for departures from the generic Tier 1 ITP design description in DCD Section 3.4. Specifically, the licensee proposed to (1) redefine the first phase of the ITP scope to only include component testing; (2) clarify when ITP test specifications and test procedures would be made available to NRC personnel prior to performance of individual tests, and (3) clarify that copies of test specifications and test procedures for startup testing are available to NRC personnel.

The NRC staff evaluated the proposed exemption request and associated Tier 1 changes in DCD Section 3.4 including a combination of administrative, more restrictive and less restrictive changes to the ITP. The licensee proposed three less restrictive changes in Tier 1, denoted as L01, L02, and L03 in LAR 14-010. In less restrictive change L01, the licensee proposed to redefine construction and installation tests as component tests in the ITP. Component testing is defined as a specific subset of construction and installation testing typically beginning with the initial energizing of equipment and includes subsequent functional testing at the component and subsystem level. As a result of the L01 change, only a subset of construction and installation testing will be included in the ITP. Construction testing not included in the scope of ITP will be performed by the construction organization to verify the adequacy of construction and installation. In addition, for the ITP, the licensee is committed to RG 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants," Revision 3, which does not include construction and construction-related inspections and tests within the scope of ITP. Based on the above, the NRC staff determined that the proposed exemption to redefine construction and installation testing is consistent with RG 1.68, Revision 3 and meets requirements in 10 CFR 50.79(a)(28), and is therefore acceptable.

In less restrictive change L02, the licensee proposed to make copies of test specifications and test procedures for preoperational tests available to NRC personnel prior to the scheduled performance of each individual test, not prior to initiating the preoperational test phase. The licensee's technical evaluation stated that "procedures and specifications will be made available as soon as possible following internal approval. Subsequent changes and revisions will also be made available consistent with UFSAR Section 14.2.8." The change in L02 means that after the licensee approves preoperational test procedures, the licensee will make all of these documents available to NRC personnel no later than 60 days prior to their intended use, consistent with RG 1.68, Regulatory Position C.4, "Procedures," and UFSAR Section 14.2.8, "Test Program Schedule." The NRC staff reviewed the proposed L02 change and concluded that this change clarifies the availability of the individual preoperational test procedures consistent with RG 1.68, Revision 3, and UFSAR Section 14.2.8, and is therefore acceptable.

In less restrictive change L03, the licensee proposed to clarify Tier 1 Section 3.4 to state that "copies of the test specifications and test procedures for startup tests are available to NRC inspection personnel prior to the scheduled fuel loading date." The licensee's technical

evaluation states that “[t]his change represents a reduction in commitment because instead of actively providing the NRC with startup test specifications and procedures on the docket, the procedures will be passively made available using a similar process that will be used for preoperational test procedures and test specifications. The startup specifications and procedure will be proprietary and therefore withheld if docketed.” The change in L03 means that after the licensee approves startup test procedures, the licensee will make these documents available to NRC personnel no later than 60 days prior to fuel loading. The NRC staff reviewed the proposed L03 change and concluded that this change clarifies the availability of the individual startup test procedures consistent with RG 1.68, Revision 3 and is therefore acceptable.

The NRC staff also reviewed and concluded that Tier 1 DCD Section 3.4 administrative changes (A01 through A04) and more restrictive change (M01): (1) do not impact the scope of test controls under the licensee’s Quality Assurance Program (QAP); (2) add flexibility to the licensee’s implementation of the ITP; (3) adequately addresses administrative changes from licensee commitments to the guidance in RG 1.68, Revision 3; and (4) does not impact public health and safety; therefore, these changes are acceptable.

- *Changes to Combined License Conditions*

Based on the exemption request, the licensee proposes to make conforming changes to the COL. The licensee proposes two less restrictive changes to the COL, denoted as L04 and L06. In less restrictive change L04, the licensee proposed to replace “construction” with “component” in COL Condition 2.D.(10)(m)1., which would be revised to read “Component Test Program implemented before the first component test.” The NRC staff reviewed the proposed conforming change and concluded that including component tests in the ITP is beyond the minimum regulatory requirements and is not a technical change to the preoperational or startup test programs, and therefore, is acceptable.

In less restrictive change L06, the licensee proposes to change license condition 2.D.(12)(e)9. to make the license condition consistent with UFSAR Section 14.2.3 and RG 1.68, Revision 3. Specifically, the proposed changes will align the scheduled completion of preoperational and startup procedures with industry guidance, other portions of the licensing basis, and proposed Tier 1 changes L02 and L03. COL 2.D.(12)(e)9. will read as follows with the changes in italics:

9. The *ITP procedures* identified in FSAR Section 14.2.3
  - a. *administrative manual (before the first component test)*
  - b. *preoperational testing (before scheduled performance)*
  - c. *startup testing (before initial fuel load)*

With the changes above, the preoperational and startup procedures would be made available before they are implemented and in accordance with regulatory guidance. The NRC staff evaluated the proposed changes and determined that less restrictive changes L04 and L06 were consistent with the Tier 1 proposed changes and therefore are acceptable.

- *Tier 2 Changes to UFSAR Section 13.4, Table 13.4.201, UFSAR Section 14.2, UFSAR Section 14.4*

Based on the exemption request, the licensee proposes to make conforming changes to UFSAR Section 13.4, Table 13.4-201, Section 14.2, and Section 14.4. The licensee identified a

total of eight administrative control changes to the ITP (designated as A01 through A08) related to changes in licensee and contractor organizational responsibilities for completing the ITP, three more restrictive changes to the ITP (designated as M01 through M03) and eleven less restrictive changes to the ITP (designated as L07 through L17).

The NRC staff reviewed the proposed UFSAR changes and determined that the proposed changes to UFSAR Table 13.4.201 and UFSAR Sections 14.2 and 14.4 involved administrative, more restrictive and less restrictive changes to (1) the licensee's ITP Organizations and ITP Administrative Manual governing the conduct of the ITP; (2) descriptive changes to delete "construction and installation tests" and replace them with "component tests" that will be completed before system preoperational tests are performed; (3) changes to the ITP scope to include three test phases: the Component Test Phase; the System Preoperational Test Phase; and the Startup Test Phase; (4) changes to individual preoperational test references to correct design chapter test acceptance criteria needed to successfully demonstrate completion of each preoperational test; and (5) justify Tier 2 administrative changes from COL commitments in RG 1.68, Revision 3.

Similar to the Tier 1 changes made in L01 through L03, the NRC staff reviewed and evaluated the licensee's identification of less restrictive changes in L07 through L17. A summary of the less restrictive changes included: (1) administrative changes to licensee commitments in RG 1.68, Revision 3; (2) test schedule changes for completing test specification and test procedures and making them available for intended use prior to each preoperational test; (3) revising the scope of the ITP to include three phases: components tests, preoperational tests and startup tests; (4) changes to licensee organizations responsible for implementing the ITP; and (5) redefining "construction and installation tests" names to "components tests" under the ITP.

The NRC staff determined that the less restrictive changes in L07 through L017: (1) do not change the scope of test controls under the QAP; (2) add flexibility to the licensee's implementation of the ITP; (3) adequately address administrative changes from the guidance in RG 1.68, Revision 3; and (4) do not impact public health and safety; therefore, the less restrictive changes in L07 through L17 are acceptable.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations in 10 CFR 50.91(b)(2), the Georgia State official was notified of the proposed issuance of the amendment. 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, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (80 FR 520, published on January 6, 2015). 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.

## 6.0 CONCLUSION

The NRC staff has determined that pursuant to Section VIII.A.4 of Appendix D to 10 CFR Part 52, the exemption (1) is authorized by law, (2) presents no undue risk to the public health and safety, (3) is consistent with the common defense and security, (4) is a special circumstance that outweighs the reduction in standardization, and (5) does not significantly reduce the level of safety at 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: (1) there is reasonable assurance that 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 14-010: Initial Test Program, letter from Southern Nuclear Operating Company (SNC), dated November 21, 2014 (ADAMS Accession No. ML14325A835).
2. Vogtle Electric Generating Plant Updated Final Safety Analysis Report, Revision 3, dated June 27, 2014 (ADAMS Accession No. ML14183A926).
3. AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A500).
4. Vogtle Electric Generating Plant, Final Safety Evaluation Report dated August 5, 2011 (ADAMS Accession No. ML111950510 - letter, ADAMS Accession No. ML110450302 - FSER package).
5. 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).
6. Regulatory Guide 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants," Revision 3, March 2007 (ADAMS Accession No. ML070260039).