

**Southern Nuclear Operating Company**

**ND-19-1292**

**Enclosure 2**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**Exemption Request:**

**PCS Wetted Perimeter Test Modification**

**(LAR-19-018)**

(Enclosure 2 consists of 7 pages, including this cover page.)

## 1.0 PURPOSE

Southern Nuclear Operating Company (the Licensee) requests a permanent exemption from the provisions of 10 CFR 52, Appendix D, Section III.B, *Design Certification Rule for the AP1000 Design, Scope and Contents*, to allow a plant-specific departure from elements of the certification information in Tier 1 of the plant-specific AP1000 Design Control Document (DCD). The regulation, 10 CFR 52, Appendix D, Section III.B, requires an applicant or licensee referencing Appendix D to 10 CFR Part 52 to incorporate by reference and comply with the requirements of Appendix D, including certified information in DCD Tier 1. The proposed changes would modify plant-specific Tier 1 information. The change includes changing the test measurement location of the Passive Containment Cooling System (PCS) wetted perimeter test as specified in the Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for the PCS.

This request for exemption provides the technical and regulatory basis to demonstrate that 10 CFR 52.63, §52.7, and §50.12 requirements are met and will apply the requirements of 10 CFR 52, Appendix D, Section VIII.A.4 to allow departures from generic Tier 1 information due to the proposed change, as described below.

### Tier 1 Table 2.2.2-3

- Modify ITAAC Item 7b.i) (Number 138) to add “any elevation between elevation 266 ft. and” before “the spring line.”

## 2.0 BACKGROUND

The Licensee is the holder of Combined License numbers NPF-91 and NPF-92, which authorize construction and operation of two Westinghouse Electric Company AP1000 nuclear plants, named Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

As described in Tier 1 Section 2.2.2, the PCS removes heat from the containment during design basis events. Updated Final Safety Analysis Report (UFSAR/plant-specific DCD) Subsection 6.2.2.4.2 describes the pre-operational testing of the PCS and includes a containment water coverage test. However, currently the air baffle panels (also PCS components) are located at an elevation above the spring line, which causes construction and testing difficulties. If the water coverage measurement location is adjusted to above the spring line, the air baffle installation and subsequent PCS wetted coverage test can be decoupled and neither will be impacted by the other activity.

SNC proposes to revise COL Appendix C (and plant-specific Tier 1 information) to change the measurement location of the PCS Wetted Perimeter Test as described in Table 2.2.2-3 ITAAC Item 7.(b)(i). An exemption from elements of the AP1000 certified (Tier 1) design information to allow a departure from the Design Description is requested.

## 3.0 TECHNICAL JUSTIFICATION OF ACCEPTABILITY

An exemption is requested to depart from AP1000 plant-specific DCD Tier 1 material with regard to the measurement location of the PCS Wetted Perimeter Test as described in Table 2.2.2-3 ITAAC Item 07.(b)(i).

The design basis accident (DBA) containment analyses are performed using the WGOTHIC computer code in accordance with the WGOTHIC methodology described in UFSAR Subsection 6.2.1.1.3 and WCAP-15846 (Reference 1). The analyses use a specific set of assumptions regarding the wetted coverage of containment during a DBA, including the assumption of a maximum wetted coverage of 90% below the second weir. The percent coverage is equivalent to a 220 gpm PCS water flow rate as discussed in WCAP-15846. The minimum allowable flow rate with all PCS standpipes covered is 469.1 gpm (UFSAR Table 6.2.2-1).

The PCS water coverage test described in Table 2.2.2-3 ITAAC Item 7.(b)(i) and UFSAR Subsection 14.2.9.1.4 item d) is to be performed at ambient, outside conditions; therefore, little to no evaporation will occur during the test; thus there is no mechanism for a significant reduction in coverage for a given PCS flowrate. This is consistent with the observations recorded in WCAP-15846, Chapter 7. Therefore, it is functionally equivalent to measure the wetted perimeter at any of the following elevations: 244 ft. (approximate elevation of the spring line), 255 ft. (approximate elevation of the top of the air baffle seal plate), or elevation 266 ft. The exact elevation is not relevant during this test as long as it is below the second weir (approximate elevation 269 ft.), the proposed range of elevations is consistent with the conservative assumption of a maximum 90% wetted coverage in the AP1000 WGOTHIC containment evaluation model. In the performance of this specific test, the perimeter (dry) at the selected measurement elevation is determined. Flow is then established, and the wetted perimeter measured. The wetted coverage (in percent) is the wetted perimeter divided by the perimeter. Additional detail is provided in letter ND-19-1138, Notice of Uncompleted ITAAC 225-days Prior to Initial Fuel Load Item 2.2.02.07b.i [Index Number 138] (Reference 2).

Detailed technical justification supporting this request for exemption is provided in Section 2 of the associated License Amendment Request in Enclosure 1 of this letter.

#### **4.0 JUSTIFICATION OF EXEMPTION**

10 CFR Part 52, Appendix D, Section VIII.A.4 and 10 CFR 52.63(b)(1) govern the issuance of exemptions from elements of the certified design information for AP1000 nuclear power plants. Since SNC has identified changes to the Tier 1 information related to the testing of the PCS ITAAC, as discussed in Enclosure 1 of the accompanying License Amendment Request, an exemption from the certified design information in Tier 1 is needed.

10 CFR Part 52, Appendix D, and 10 CFR 50.12, §52.7, and §52.63 state that the NRC may grant exemptions from the requirements of the regulations provided six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12(a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)]; 5) the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, App. D, VIII.A.4].

The requested exemption satisfies the criteria for granting specific exemptions, as described below.

**1. This exemption is authorized by law**

The NRC has authority under 10 CFR 52.63, §52.7, and §50.12 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR 50.12 and §52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 upon a proper showing. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations.

Accordingly, this requested exemption is "authorized by law," as required by 10 CFR 50.12(a)(1).

**2. This exemption will not present an undue risk to the health and safety of the public**

The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow changes to elements of the plant-specific DCD Tier 1 to depart from the AP1000 certified (Tier 1) design information. The plant-specific Tier 1 will continue to reflect the approved licensing basis for VEGP Units 3 and 4 and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the DCD. Therefore, the affected plant-specific DCD Tier 1 ITAAC will continue to serve its required purpose.

The proposed changes to the PCS ITAAC will not impact the ability of the structures, systems, or components (SSCs) to perform their design functions. The PCS will be tested in accordance with the design certification as verified by plant-specific Tier 1 Table 2.2.2-3 ITAAC. Because the change will not alter the operation of any plant equipment or system's ability to perform their design function, this change does not present an undue risk to existing equipment or systems. The change does not introduce any new industrial, chemical, or radiological hazards that would represent a public health or safety risk, nor does it modify or remove any design or operational controls or safeguards that are intended to mitigate any existing on-site hazards. Furthermore, the proposed change does not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in significant fuel cladding failures. Accordingly, this change does not present an undue risk from any new equipment or systems.

Therefore, the requested exemption from 10 CFR 52, Appendix D, Section III.B, would not present an undue risk to the health and safety of the public.

**3. The exemption is consistent with the common defense and security**

The requested exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow the Licensee to depart from elements of the plant-specific DCD Tier 1 design information. The requested exemption does not alter or impede the design, function, or operation of any plant SSCs that is necessary to maintain a safe and secure plant status. The proposed exemption has no impact on plant security or safeguards procedures.

Therefore, the requested exemption is consistent with the common defense and security.

**4. Special circumstances are present**

10 CFR 50.12(a)(2) lists six “special circumstances” for which an exemption may be granted. Pursuant to the regulation, it is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii). That subsection defines special circumstances as when “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 rule under consideration in this request for exemption is 10 CFR 52, Appendix D, Section III.B, which requires that a licensee referencing the AP1000 Design Certification Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information. The VEGP Units 3 and 4 COLs reference the AP1000 Design Certification Rule and incorporate by reference the requirements of 10 CFR Part 52, Appendix D, including Tier 1 information. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D.

The proposed change to the wetted perimeter test measurement location ITAAC ensures that the SSCs related to this amendment are constructed in accordance with the design certification as verified by plant-specific Tier 1 Table 2.2.2-3 ITAAC. These changes do not impact the ability of any SSCs to perform their functions or negatively impact safety. Accordingly, this exemption from the certification information will enable the licensee to safely construct, test and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR 52, Appendix D.

Therefore, special circumstances are present, because application of the current plant-specific certified design information in Tier 1 as required by 10 CFR Part 52, Appendix D, Section III.B in the particular circumstances discussed in this request is not necessary to achieve the underlying purpose of the rule.

**5. The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption.**

Based on the nature of the changes to the plant-specific Tier 1 information in this area and the understanding that these changes support the design and system functions of the PCS, these changes will not have a negative impact. Nevertheless, if other AP1000 licensees do not elect to request this exemption, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization because the key design functions associated with this request will continue to be maintained. This exemption request and the associated marked-up table demonstrate that there is a minimal change from the plant-specific AP1000 DCD, minimizing the reduction in standardization and consequently the safety impact from the reduction.

Therefore, the special circumstances associated with the requested exemption outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption.

**6. The design change will not result in a significant decrease in the level of safety.**

The proposed exemption would allow the measurement of the wetted perimeter test at any elevation between elevation 266 ft. and the spring line. Because the proposed change to ITAAC associated with this exemption request will not modify the design or operation of any systems or equipment, there are no new failure modes introduced by this change and the level of safety provided by the current SSCs will be unchanged.

The proposed change requires revisions to plant-specific Tier 1 information. There is no significant technical design change or plant function change associated with this exemption. Because the proposed change associated with this exemption request will not adversely affect the ability of any systems or equipment to perform their design functions and the level of safety provided by the current systems and equipment is unchanged, it is concluded that the change associated with this proposed exemption will not result in a significant decrease in the level of safety.

## **5.0 RISK ASSESSMENT**

A risk assessment was not determined to be applicable to address the acceptability of this proposal.

## **6.0 PRECEDENT**

None identified.

## **7.0 ENVIRONMENTAL CONSIDERATION**

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed exemption does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Specific justification is provided in Section 5 of the corresponding license amendment request.

Accordingly, the proposed exemption meets the eligibility criterion 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 need to be prepared in connection with the proposed exemption.

## **8.0 CONCLUSION**

The proposed change to DCD Tier 1 is necessary to allow the measurement of the wetted perimeter test at any elevation between elevation 266 ft. and the spring line. The exemption request meets the requirements of 10 CFR 52.63, 10 CFR 52.7, 10 CFR 50.12, 10 CFR 51.22 and 10 CFR 52 Appendix D. Specifically, the exemption request meets the criteria of 10 CFR 50.12(a)(1) in that the request is authorized by law, presents no undue risk to public health and safety, and is consistent with the common defense and security. Furthermore, approval of this request does not result in a significant decrease in the level of safety, satisfies the underlying purpose of the AP1000 Design Certification Rule, and does not present a significant decrease in safety as a result of a reduction in standardization.

## **9.0 REFERENCES**

1. WCAP-15846, WGOTHIC Application to AP600 and AP1000, Revision 5.
2. Letter ND-19-1138, Southern Nuclear Operating Company Vogtle Electric Generating Plant Unit 3 and Unit 4 Notice of Uncompleted ITAAC 225-days Prior to Initial Fuel Load Item 2.2.02.07b.i [Index Number 138].