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Operating Company, Inc.
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October 26, 2016

Docket Nos.: 52-025
52-026

ND-16-2117
10 CFR 50.90
10 CFR 52.63

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Request for License Amendment and Exemption:
Boric Acid Storage Tank Suction Point ITAAC Changes (LAR-16-028)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, requests an amendment to Combined License Numbers NPF-91 and NPF-92, for VEGP Units 3 and 4, respectively. The requested amendment includes changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the incorporated plant-specific Design Control Document Tier 2 information and involves related changes to the VEGP Units 3 and 4 COL Appendix C (and corresponding plant-specific DCD Tier 1) information. 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 also requested for the plant-specific Tier 1 material departures.

The proposed changes revise the configuration of the boric acid storage tank (BAST) suction point and the maximum verified chemical and volume control system (CVS) makeup flow.

Enclosure 1 provides the description, technical evaluation, regulatory evaluation (including the Significant Hazards Consideration Determination), and environmental considerations for the proposed changes in the License Amendment Request (LAR).

Enclosure 2 provides the background and supporting basis for the requested exemption.

Enclosure 3 provides the proposed changes to the VEGP 3&4 licensing basis documents.

The changes proposed in this LAR are consistent in technical content with LAR 15-11, submitted by South Carolina Electric & Gas Company (SCE&G) on September 29, 2016 [ADAMS Accession No. ML16273A557].

This letter contains no regulatory commitments.

SNC requests staff approval of this license amendment by March 21, 2017, to support the erection of the BAST. Approval by this date will allow sufficient time to implement the licensing basis changes prior to the associated construction activity. SNC expects to implement this proposed amendment (through incorporation into the licensing basis documents; e.g., the UFSAR) within 30 days of approval of the requested changes. SCE&G has indicated the requested approval date for the Virgil C. Summer Units 2 and 3 license amendment request for this topic is March 28, 2017.

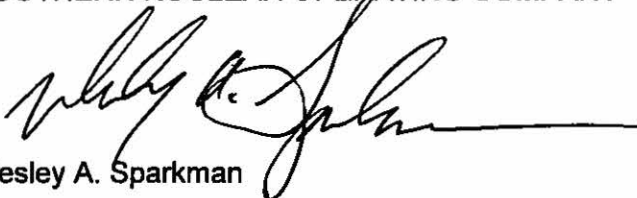
In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia of this LAR by transmitting a copy of this letter and enclosures to the designated State Official.

Should you have any questions, please contact Ms. Paige Ridgway at (205) 992-7516.

Mr. Wesley A. Sparkman states that: he is the Regulatory Affairs Licensing Manager, Nuclear Development, of Southern Nuclear Operating Company; he is authorized to execute this oath on behalf of Southern Nuclear Operating Company; and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY


Wesley A. Sparkman



WAS/PTR/ljs

Sworn to and subscribed before me this 26th day of October, 2016

Notary Public: Lisa Myrick Spears

My commission expires: June 18, 2019

- Enclosures:
- 1) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for License Amendment: Boric Acid Storage Tank Suction Point ITAAC Changes (LAR-16-028)
 - 2) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Exemption Request: Boric Acid Storage Tank Suction Point ITAAC Changes (LAR-16-028)
 - 3) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Proposed Changes to the Licensing Basis Documents (LAR-16-028)

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Southern Nuclear Operating Company

ND-16-2117

Enclosure 1

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Request for License Amendment:

Boric Acid Storage Tank Suction Point ITAAC Changes

(LAR-16-028)

(Enclosure 1 consists of 12 pages, including this cover page)

ND-16-2117

Enclosure 1

Request for License Amendment: Boric Acid Storage Tank Suction Point ITAAC Changes
(LAR-16-028)

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ND-16-2117

Enclosure 1

Request for License Amendment: Boric Acid Storage Tank Suction Point ITAAC Changes (LAR-16-028)

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC, or the "Licensee") hereby requests an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

1. SUMMARY DESCRIPTION

The proposed changes would revise the Combined Licenses (COLs) in regard to the configuration of the boric acid storage tank (BAST) suction point and to align the Tier 1 chemical and volume control system (CVS) makeup flow rate with the previously approved underlying Tier 2 information.

The requested amendment requires changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the plant-specific Tier 2 information (as detailed in Section 2) and involves changes to COL Appendix C (and corresponding changes to plant-specific DCD Tier 1) information. This enclosure requests approval of the license amendment necessary to implement the UFSAR and COL Appendix C changes. Enclosure 2 requests the exemption necessary to implement the involved changes to the plant-specific DCD Tier 1 information.

2. DETAILED DESCRIPTION AND TECHNICAL EVALUATION

Background:

As described in UFSAR Subsection 9.3.6, one of the CVS functions is to provide makeup at the proper boron concentration to the passive core cooling system accumulators, core makeup tanks, in-containment refueling water storage tank, and the spent fuel pool. Two centrifugal makeup pumps are provided in order to accomplish this function. These pumps are driven by ac motors, and flow is controlled by positioning a control valve in the common discharge line from the pumps. A cavitating venturi in the common discharge line limits the makeup flow and provides protection from excessive pump runout. A three-way valve in the suction header is positioned to provide a full range of concentrations.

The borated water used in this makeup function is retained in the BAST, CVS-MT-01. The BAST volume, as shown in UFSAR Table 9.3.6-2, is nominally 74,839 gallons, but in accordance with UFSAR Subsection 9.3.6.3.3 and 9.3.6.6.1.3, inspections verify that the tank volume can provide a minimum of 70,000 gallons of borated makeup water, sufficient to allow for one shutdown to cold shutdown followed by a shutdown for refueling at the end of the fuel cycle. The tank is vented to atmosphere and is located adjacent to the demineralized water storage tank in the plant yard as shown in UFSAR Figure 1.2-2.

Reconfiguration of BAST Inlet/Outlet Line

Detailed Description

As shown in UFSAR Figure 9.3.6-1 (Sheet 2), the current UFSAR-described design identifies that the common inlet/outlet piping for the BAST connects to the tank entirely through underground piping. Further, as described in UFSAR Table 3.2-3, the tank, CVS-MT-01, is nonsafety, AP1000 Equipment Class D, and is designed to API 650, "Welded Steel Tanks for Oil Storage," consistent with UFSAR Subsection 3.2.2.6. The associated inlet/outlet piping is 4" in diameter, nonsafety-related, and made of austenitic stainless steel.

While below the level of detail in the UFSAR, the design reflected in the UFSAR uses an under-tank nozzle design where the piping connects to the bottom of the tank. However, API 650 Appendix O identifies that under-tank piping connections should only be used when no significant foundation settlement is expected. Given the contents, volume and present piping configuration of the BAST, design improvements were evaluated to consider potential tank settling impacts.

To reduce the potential for impact due to settlement, a change is proposed that relocates the inlet/outlet line for the BAST from the bottom of the tank to the side of the tank, using a gooseneck piping configuration with an anti-vortex device on the tank nozzle to minimize the unusable tank volume. This reconfigured pipe is buried in a trench below grade, but exits before entering the tank. Heat tracing is also included to prevent potential freezing of the piping as the piping may be located above the frost line.

This change to UFSAR Tier 2 information requires a change to COL Appendix C (and associated plant-specific Tier 1) information. Currently, the ITAAC Acceptance Criteria in COL Appendix C Table 2.3.2-4, Item 2.3.02.08a.ii specifies that the volume of the BAST is at least 70,000 gallons between the tank outlet connection and the tank overflow. By relocating the outlet connection to the side of the tank above the new suction point, this volume as measured at the outlet connection would be less than 70,000 gallons despite having over 70,000 usable gallons. To correct this and to remain consistent with the ITAAC purpose, this proposed change updates the ITAAC to measure from the new suction point to the tank overflow.

Licensing Basis Change Description

Table 1: Proposed Licensing Basis Changes

<u>Text, Table, or Figure</u>	<u>Description of the Proposed Change</u>
COL Appendix C Table 2.3.2-4, ITAAC No. 2.3.02.8a.ii, Acceptance Criteria ii) and associated plant-specific Tier 1 Table 2.3.2-4, Design Commitment 8.a), Acceptance Criteria ii)	Revise the ITAAC Acceptance Criteria to state that the volume in the BAST is at least 70,000 gallons between the tank suction point and the tank overflow.
UFSAR Figure 9.3.6-1 (Sheet 2 of 2)	Revise the line in the yard connecting to the BAST to enter the side of the tank, identify that portion of pipe is buried, and add heat tracing.

Technical Evaluation

This change to the piping configuration of the BAST reduces the potential for tank failure and leaks by more closely adhering to the requirements of API 650. There is also no change to the nominal volume of the tank or the minimum required volume to accomplish its design function. UFSAR Subsection 9.3.6.3.3 identifies that the tank is sized to allow for one shutdown to cold shutdown followed by a shutdown for refueling at the end of the fuel cycle. The new suction point is located approximately 1.35 inches from the tank floor, reducing the usable tank volume by approximately 600 gallons, but sufficient margin exists for the tank to accomplish this volume requirement. In addition, the change to the location of the line does not alter the minimum volume verified by the ITAAC or the inspection requirements of UFSAR Subsection 9.3.6.6.1.3. Consequently, there is no impact on the ability of the tank to provide sufficient quantities of borated water.

As an added benefit, the gooseneck piping configuration in the proposed design also prevents suction from low points where sediment may accumulate. This is useful in sampling situations, as the common inlet/outlet line is also used for sampling. Moreover, the proposed side inlet with a vertical elbow reduces the ability for a vortex to form, and the anti-vortex device added to the suction point protects the makeup pumps during periods of low liquid levels. No change is made to the CVS makeup pumps that are located in a lower elevation of Room 12255, ensuring the tank contents will be able to be pumped in each scenario, and there is only a minimal change to the available net positive suction head (NPSH). The gooseneck configuration does not change the NPSH or the ITAAC required tank volume available to the CVS makeup pumps provided the suction point remains submerged in the

tank contents, as the CVS makeup pump suction is located well below the suction point of the gooseneck configuration.

The reconfigured piping also addresses potential settlement issues that could cause failure of the tank and the underground piping, and the additional heat tracing and insulation, along with the existing BAST immersion heaters, addresses potential concerns over pipe freezing.

Finally, the proposed change does not alter the codes and standards used for the tanks and associated piping, API 650 and ASME B16.5. Consequently, this proposed change does not alter the CVS borated makeup function or the concentrations of borated water.

Reduction of Maximum Total CVS Makeup Flow

Detailed Description

As described in UFSAR Subsection 9.3.6.5, since the CVS supplies unborated water to the reactor coolant system (RCS), the potential for inadvertent boron dilution events exists. A safety-related method of stopping an inadvertent boron dilution, which operates as described in UFSAR Subsection 9.3.6.4.5.1, is incorporated into the CVS.

As discussed in UFSAR Subsection 15.4.6, an inadvertent boron dilution is caused by the failure of either the demineralized water transfer and storage system (DWS) or the CVS, either by controller, operator or mechanical failure. The CVS and DWS are designed to limit the potential rate of dilution to values that, with indication by alarms and instrumentation, allow sufficient time for automatic or operator response to terminate the dilution.

UFSAR Subsection 15.4.6 further discusses the analysis and basis for addressing such an event in different modes. One aspect of this analysis is the assumption of the dilution flow in different modes. As indicated in this subsection, for Modes 3, 4, and 5, a dilution flow of 175 gpm of unborated water is assumed in the evaluations, and in Modes 1 and 2, a dilution flow of 200 gpm is assumed.

In Generic DCD Revision 15, this evaluation assumed a dilution flow of 200 gpm in each Mode. This was updated as described in Technical Report (TR) APP-GW-GLR-080 to the current state as part of the Revision 19 Generic DCD Amendment. This TR and the associated RAIs made changes to the maximum flow rate throughout Tier 2, including UFSAR Table 7.5-1, Subsection 9.3.6.6.1.2, Subsection 15.4.6, and Table 15.4-2. Specifically, this change identified that testing will ensure that the makeup flow with both CVS makeup pumps is less than 175 gpm.

Consistent with this requirement, a cavitating venturi, CVS-PY-N01, is included in the design as shown in Figure 9.3.6-1 (Sheet 2) and described in Subsection 9.3.6.3.1. This venturi limits the makeup flow to 175 gpm and also provides protection from excessive pump runout.

A maximum makeup flow rate of 200 gpm is identified as an ITAAC Acceptance Criteria in COL Appendix C Table 2.3.2-4, Item 8.a.iii and associated plant-specific Tier 1 Table 2.3.2-4, Item 8.a). These ITAAC are provided to require that testing is performed to measure

the delivery rate from the DWS to the RCS by operating both CVS makeup pumps while the RCS pressure is below 6 psig. However, to remain consistent with the design of the system and the assumed maximum flow in the underlying Tier 2 information, this acceptance criteria should instead be 175 gpm, the most conservative found in UFSAR Subsection 15.4.6. This change makes the ITAAC acceptance criteria consistent with its purpose and the safety analyses.

Licensing Basis Change Description

Table 2: Proposed Licensing Basis Changes

<u>Text, Table, or Figure</u>	<u>Description of the Proposed Change</u>
COL Appendix C Table 2.3.2-4, ITAAC No. 2.3.02.8a.iii, Acceptance Criteria iii) and associated plant-specific Tier 1 Table 2.3.2-4, Design Commitment 8.a), Acceptance Criteria iii)	Revise ITAAC Acceptance Criteria to state that the total CVS makeup flow to the RCS is less than or equal to 175 gpm.

Technical Evaluation

This change revises an ITAAC found in COL Appendix C (and plant-specific Tier 1) to align the ITAAC testing requirement with the underlying Tier 2 descriptions and analyses. As stated earlier, Tier 2 was previously updated during the generic DCD certification review and was approved as part of Revision 19. As stated earlier, UFSAR Subsection 9.3.6.6.1.2 currently makes clear that the testing limit for the makeup flow to the RCS is 175 gpm. This portion of the activity makes no change to the applicable codes and standards or system design functions. Because of this, this change increases conservatism to the ITAAC acceptance criteria and resolves potential inconsistencies.

Technical Evaluation (Common to both portions)

The proposed changes do not affect any function or feature used for the prevention or mitigation of accidents or their safety analyses. No safety-related structure, system, component (SSC) or function is involved. The proposed changes neither involve, nor interface with, any SSC accident initiator or initiating sequence of events related to the accidents evaluated in the UFSAR. The proposed changes do not affect the radiological source terms (i.e., amounts and types of radioactive materials released, their release rates and release durations) used in the accident analyses.

The equipment involved in these proposed changes does not affect safety-related equipment or a fission product barrier. No system or design function or equipment qualification is adversely affected by the proposed changes. The changes do not result in a new failure mode, malfunction, or sequence of events that could adversely affect a

radioactive material barrier or safety-related equipment. The proposed changes do 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.

The proposed changes do not affect the containment, control, channeling, monitoring, processing or releasing of radioactive and non-radioactive materials. The types and quantities of expected effluents are not changed, and no effluent release path is adversely affected by the proposed changes. Therefore, radioactive or non-radioactive material effluents are not affected by the proposed changes.

Plant radiation zones (as described in UFSAR Section 12.3), controls under 10 CFR 20, and expected amounts and types of radioactive materials are not affected by the proposed changes. Therefore, individual and cumulative radiation exposures do not change.

Summary

The proposed changes alter the configuration of the inlet/outlet line of the BAST and the ITAAC-verified maximum CVS makeup flow. The above proposed changes would not adversely affect any safety-related equipment or function, design function, radioactive material barrier or safety analysis.

3. TECHNICAL EVALUATION (Contained within Section 2)

4. REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a COL. This activity involves a departure from COL Appendix C, Inspections, Tests, Analyses and Acceptance Criteria information and a corresponding change to plant-specific Tier 1 information; therefore, this activity requires a proposed amendment to the COL. Accordingly, NRC approval is required prior to making the plant-specific changes in this license amendment request.

10 CFR 52, Appendix D, Section VIII.B.5.a allows an applicant or licensee who references this appendix to depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure from Tier 1 information, Tier 2* information, or the Technical Specifications, or requires a license amendment under paragraphs B.5.b or B.5.c of the section. This change involves a revision to COL Appendix C information (and corresponding plant-specific Tier 1 information), and thus requires NRC approval for the Tier 1 and involved Tier 2 departures.

10 CFR 50, Appendix A, General Design Criterion (GDC) 17, Electric Power Systems, requires that an onsite electric power system and an offsite electric power system shall

be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents. A loss of offsite power is considered for the boron dilution case initiated from the power mode of operation with the reactor in manual control as described in UFSAR Subsection 15.4.6.2.6. Because no change is made to the underlying analysis described, compliance with GDC 17 is maintained.

10 CFR 50 Appendix A, GDC 25, Protection System Requirements for Reactivity Control Malfunctions, requires that the protection system shall be designed to assure that specified acceptable fuel design limits are not exceeded for any single malfunction of the reactivity control systems, such as accidental withdrawal (not ejection or dropout) of the control rods. Because the automatic and manual features used to terminate a boron dilution event are not changed by this activity, compliance with GDC 25 is maintained.

4.2 Precedent

No precedent identified.

4.3 Significant Hazards Consideration Determination

The proposed changes would revise the Combined Licenses (COLs) in regard to the boric acid storage tank (BAST) inlet/outlet piping configuration and the maximum verified chemical and volume control system (CVS) makeup flow.

The requested amendment proposes changes to Updated Final Safety Analysis Report (UFSAR) Tier 2 information, which involve changes to the plant-specific Tier 1 and corresponding changes to COL Appendix C information.

An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

4.3.1 Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes alter the BAST suction point by relocating the common inlet/outlet line from the bottom of the tank to the side of the tank and aligns the Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for the maximum CVS flow to the reactor coolant system (RCS) with the previously approved Tier 2 descriptions and analyses. No change is made to the minimum required volume of the BAST, the included concentrations, or the overall operation of the

system. The proposed changes do not alter any safety-related functions, and the analyses previously performed on the potential for an inadvertent dilution event are not affected. Consequently, there is no change to an accident initiator in the UFSAR and accordingly, there is no change to the probabilities of an accident previously evaluated. The radioactive source terms and release paths are unchanged, thus the radiological releases in the UFSAR accident analyses are not affected.

Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

4.3.2 Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change to alter the BAST suction point affects only nonsafety-related equipment, reducing the possibility for leaks from the BAST. The basic requirements, including the applicable codes and standards, for the configuration of the BAST are unchanged. In addition, the change to the ITAAC verified CVS makeup flow does not alter the design of the CVS, which is currently limited in the design to 175 gallons per minute of flow. The change to the ITAAC aligns the test with the Tier 2 requirement. Consequently, because the BAST codes and standards are unchanged and the CVS is otherwise unchanged, there is no effect on accidents previously evaluated in the UFSAR.

Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

4.3.3 Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed change to the BAST piping configuration and to the CVS makeup flow ITAAC does not alter any safety-related equipment, applicable design codes, code compliance, design function, or safety analysis. Consequently, no safety analysis or design basis acceptance limit is challenged or exceeded by the proposed changes, and thus, the margin of safety is not reduced.

Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

4.4 Conclusions

Based on the considerations discussed above, (1) there is reasonable assurance that 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. The above evaluations demonstrate that the requested changes can be accommodated without an increase in the probability or consequences of an accident previously evaluated, without creating the possibility of a new or different kind of accident from any accident previously evaluated, and without a significant reduction in a margin of safety. Having arrived at negative declarations with regard to the criteria of 10 CFR 50.92, this assessment determined that the requested change does not involve a Significant Hazards Consideration.

5. ENVIRONMENTAL CONSIDERATIONS

The proposed changes would revise the Combined Licenses (COLs) in regard to the configuration of the boric acid storage tank (BAST) suction point and the maximum chemical and volume control system (CVS) makeup flow. The details of the proposed changes are provided in Section 2 of this license amendment request.

The proposed changes require changes to Updated Final Safety Analysis Report (UFSAR) information, which involve a change to plant-specific Tier 1 and corresponding changes to COL Appendix C.

This review has determined the proposed changes require an amendment to the COL. However, a review of the anticipated construction and operational effects of the requested amendment has determined the requested amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

- (i) *There is no significant hazards consideration.*

As documented in Section 4.3, Significant Hazards Consideration Determination, of this license amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment." The Significant Hazards Consideration Determination determined that (1) the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the proposed amendment does not involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

- (ii) *There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.*

The changes proposed by the requested amendment alter the configuration of the BAST suction point and the CVS maximum makeup flow. The proposed change to the BAST reduces the potential for tank failure and release of significant amounts of boric acid solution to the environment. The change to the maximum verified makeup flow is unrelated to any aspect of plant construction or operation that would introduce any change to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents), or affect any plant radiological or non-radiological effluent release quantities. Furthermore, the proposed changes do not affect any effluent release path or diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. Therefore, it is concluded that the proposed amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

- (iii) *There is no significant increase in individual or cumulative occupational radiation exposure.*

The proposed changes modify the configuration of the BAST suction point and the CVS maximum makeup flow. Plant radiation zones (addressed in UFSAR Section 12.3) are not affected, and controls under 10 CFR 20 preclude a significant increase in occupational radiation exposure. Therefore, the proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above review of the proposed amendment, it has been determined that anticipated construction and operational impacts of the proposed amendment do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6. REFERENCES

None.

Southern Nuclear Operating Company

ND-16-2117

Enclosure 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Exemption Request:

Boric Acid Storage Tank Suction Point ITAAC Changes

(LAR-16-028)

(Enclosure 2 consists of 8 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 departure from elements of the certification information in Tier 1 of the generic 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 Tier 1 information for which a plant-specific departure and exemption is being requested includes system-based design Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) information, including changes that alter the configuration of the inlet/outlet line and suction point of the boric acid storage tank (BAST) and the ITAAC-verified maximum chemical and volume control system (CVS) makeup flow.

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 DCD Tier 1 information due to the following proposed changes to the system-based design ITAAC table:

- In Tier 1 Table 2.3.2-4, revise the BAST and CVS makeup flow information as follows:
 - Revise ITAAC Design Commitment 8.a), Acceptance Criteria ii), to state that the volume in the BAST is at least 70,000 gallons between the tank suction point and the tank overflow.
 - Revise ITAAC Design Commitment 8.a), Acceptance Criteria iii), to state that the total CVS makeup flow to the RCS is less than or equal to 175 gpm.

2.0 BACKGROUND

The Licensee is the holder of Combined License Nos. 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. The proposed changes would revise the COLs in regard to the configuration of the BAST suction point and to align the Tier 1 CVS makeup flow with the previously approved underlying Tier 2 information.

The BAST change proposes to relocate the inlet/outlet line for the BAST from the bottom of the tank to the side of the tank, using a gooseneck piping configuration with an anti-vortex device on the tank nozzle to minimize the unusable tank volume. Currently, the ITAAC Acceptance Criteria in Tier 1 Table 2.3.2-4 specifies that the volume of the BAST is at least 70,000 gallons between the tank outlet connection and the tank overflow. By relocating the outlet connection to the side of the tank and thus, well above

the new suction point, the tank volume if measured at the outlet connection would be less than 70,000 gallons despite having over 70,000 usable gallons. To correct this and to remain consistent with the ITAAC purpose, this proposed change updates the ITAAC to measure tank volume instead from the new suction point to the tank overflow.

The change proposes to reduce the maximum CVS makeup flow to the RCS that is stipulated in the ITAAC. At present, a maximum CVS makeup flow of less than or equal to 200 gpm is identified as an ITAAC Acceptance Criteria in plant-specific Tier 1 Table 2.3.2-4. This ITAAC is provided to ensure that testing is performed to measure the delivery rate from the Demineralized Water System (DWS) to the RCS by operating both CVS makeup pumps while the RCS pressure is below 6 psig. However, to remain consistent with the design of the system and the assumed maximum flow in the underlying Tier 2 information, this acceptance criteria should instead be less than or equal to 175 gpm, the most conservative value found in UFSAR Subsection 15.4.6. This change ensures that the ITAAC acceptance criteria is consistent with its purpose and the safety analyses.

An exemption from elements of the AP1000 certified (Tier 1) design information is requested to allow plant-specific departures to be taken from BAST and CVS design descriptions in Tier 1 ITAAC Table 2.3.2-4.

3.0 TECHNICAL JUSTIFICATION OF ACCEPTABILITY

An exemption is requested to depart from Tier 1 material by departing from the description of the BAST outlet connection and CVS makeup flow in Tier 1 Table 2.3.2-4. The proposed changes are necessary to clarify that the new suction point created by modifying the BAST inlet/outlet piping does not impact the ability to provide a tank volume of at least 70,000 gallons, and to ensure that the ITAAC acceptance criteria is consistent with the CVS purpose of providing makeup flow of less than or equal to 175 gpm to agree with the most conservative value as stipulated in the safety analyses.

The proposed changes do not adversely impact the design functions of the BAST and CVS to provide makeup at the proper boron concentration to the passive core cooling system accumulators, core makeup tanks, in-containment refueling water storage tank, and the spent fuel pool; and to supply unborated water to the RCS.

Therefore, the BAST and CVS will continue to meet their required functionality following implementation of the proposed changes

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. Because SNC has identified changes to the Tier 1 information 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 DCD 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 changes to the BAST and CVS do not represent any adverse impact to their design functions or the systems, structures and components therein and will continue to protect the health and safety of the public in the same manner. The BAST and CVS 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 fuel cladding failures. Accordingly, these changes do not present an undue risk from any existing or proposed 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 the design, function, or operation of any structures or plant equipment that is necessary to maintain a safe and secure status of the plant. The requested 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 exemption would allow changes to the BAST suction point by relocating the common inlet/outlet line from the bottom of the tank to the side of the tank and aligning the ITAAC for the maximum CVS flow to the RCS with previously approved

Tier 2 descriptions and analyses, and enhancing the accuracy of details presented in a Tier 1 ITAAC table.

The proposed changes maintain the design functions of the BAST and CVS. This change does not impact the ability of any SSCs to perform their functions or negatively impact safety. Accordingly, this change to the certified information will enable the Licensee to safely construct, maintain, and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR Part 52, Appendix D.

Therefore, special circumstances are present, because application of the current generic 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 non-standard nature of the changes to the plant-specific Tier 1 information in this limited area and the understanding that these changes are not related to system functions, 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 generic 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 changes to the BAST inlet/outlet piping and the CVS makeup flow as presented in a Tier 1 ITAAC table. The proposed changes do not affect the ability of the BAST and CVS to perform their design functions including providing makeup at the proper boron concentration to the passive core cooling system accumulators, core makeup tanks, in-containment refueling water storage tank, and the spent fuel pool; and supplying unborated water to the RCS.

As a result of the limited-scope and nature of the proposed changes associated with this exemption request, no systems or equipment will be adversely impacted such that there are new failure modes introduced by these changes and the level of safety provided by the current BAST and CVS and equipment contained therein will be maintained.

Because the proposed changes to the BAST inlet/outlet line and CVS makeup flow will not adversely affect the ability of the BAST or CVS to perform their design functions and the level of safety provided by the current BAST, CVS and equipment contained therein

is unchanged, it is concluded that the design change associated with the 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.

7.0 ENVIRONMENTAL CONSIDERATION

The Licensee requests a departure from elements of the certified information in Tier 1 of the generic AP1000 DCD. The Licensee has determined that the proposed departure would require a permanent exemption from the requirements of 10 CFR 52, Appendix D, Section III.B, Design Certification Rule for the AP1000 Design, Scope and Contents, with respect to installation or use of facility components located within the restricted area, as defined in 10 CFR Part 20, or which changes an inspection or a surveillance requirement; however, the Licensee evaluation of the proposed exemption has determined that the proposed exemption meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9).

Based on the above review of the proposed exemption, the Licensee has determined that the proposed activity does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed 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), an environmental impact statement or environmental assessment of the proposed exemption is not required.

Specific details of the environmental considerations supporting this request for exemption are provided in Section 5 of the associated License Amendment Request provided in Enclosure 1 of this letter.

8.0 CONCLUSION

The Licensee requests a permanent exemption for elements of AP1000 design certification information reflected in Tier 1. The proposed changes to Tier 1 are necessary to revise a table in the plant-specific DCD Tier 1 to reflect proposed plant-specific design. The proposed exemption would allow departure from AP1000 generic Tier 1 DCD information by altering the BAST suction point by relocating the common inlet/outlet line from the bottom of the tank to the side of the tank, aligning the ITAAC for the maximum CVS flow to the RCS with the previously approved Tier 2 descriptions and analyses, and enhancing the accuracy of details presented in a Tier 1 ITAAC table.

ND-16-2117

Enclosure 2

Exemption Request: Boric Acid Storage Tank Suction Point ITAAC Changes (LAR-16-028)

The exemption request meets the requirements of 10 CFR 52.63, "Finality of design certifications," 10 CFR 52.7, "Specific exemptions," 10 CFR 50.12, "Specific exemptions," and 10 CFR 52 Appendix D, "Design Certification Rule for the AP1000." 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

None.

Southern Nuclear Operating Company

ND-16-2117

Enclosure 3

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Proposed Changes to the Licensing Basis Documents

(LAR-16-028)

Note:

Added text is shown as bold **Blue Underline**
Deleted text is shown as bold **Red Strikethrough**
Changes to figures are shown as **Red Bubbles**

(Enclosure 3 consists of 3 pages, including this cover page)

COL Appendix C (and associated Plant-Specific Tier 1) Table 2.3.2-4 “Inspections, Tests, Analyses, and Acceptance Criteria” is revised as shown below.

**COL Appendix C (and associated Plant-Specific Tier 1) Table 2.3.2 -4 (cont.)
 Inspections, Tests, Analyses, and Acceptance Criteria**

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
***	***	***
8.a) The CVS provides makeup water to the RCS.	*** ii) Inspection of the boric acid storage tank volume will be performed. iii) Testing will be performed to measure the delivery rate from the DWS to the RCS. Both CVS makeup pumps will be operating and the RCS pressure will be below 6 psig. ***	*** ii) The volume in the boric acid storage tank is at least 70,000 gallons between the tank suction point outlet connection and the tank overflow. iii) The total CVS makeup flow to the RCS is less than or equal to 175 200 gpm. ***

UFSAR Figure 9.3.6-1 (Sheet 2) “Simplified Chemical and Volume Control System Piping and Instrumentation (REF) CVS 002” is revised as depicted in the excerpt shown below.

