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May 12, 2016
NND-16-0142
10 CFR 50.90
10 CFR 52.98

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

Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3
Docket Numbers 52-027 and 52-028
Combined License Numbers NPF-93 and NPF-94

Subject: Request for License Amendment: Core Makeup Tank Volume Inconsistency (LAR 14-12)

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, South Carolina Electric & Gas Company (SCE&G), acting on behalf of itself and the South Carolina Public Service Authority (Santee Cooper), requests an amendment to the combined licenses (COLs) for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 (License Numbers NPF-93 and NPF-94, respectively). The requested amendment requires changes to COL Appendix A, Technical Specifications, and changes to the Updated Final Safety Analysis Report (UFSAR) information in the form of departures from the incorporated plant-specific Design Control Document Tier 2 information.

The requested amendment proposes changes to COL Appendix A, Technical Specifications, and the UFSAR information to align the minimum volume of the passive core cooling system core makeup tanks.

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 markups depicting the requested changes to the Technical Specifications and UFSAR information. Enclosure 3 provides a conforming Technical Specifications Bases change for reference only. NRC review and approval is not requested for the change in Enclosure 3.

This letter contains no regulatory commitments.

SCE&G requests staff approval of this license amendment by January 3, 2017. SCE&G expects to implement the proposed amendment (through incorporation into the licensing basis documents; e.g., the UFSAR) within 30 days of the approval of the requested changes.

In accordance with 10 CFR 50.91, SCE&G is notifying the State of South Carolina of this LAR by transmitting a copy of this letter and enclosures to the designated State Official.

Should you have any questions, please contact Justin Bouknight by telephone at (803) 941-9828, or by email at justin.bouknight@scana.com.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 12th day of May, 2016.

Sincerely,

April Rice
Manager
New Nuclear Licensing

BB/ARR/bb

Enclosures:
1. Request for License Amendment Regarding Core Makeup Tank Volume Inconsistency (LAR 14-12)
2. Proposed Changes to the Licensing Basis Documents (LAR 14-12)
3. Conforming Technical Specifications Bases (For Information Only) (LAR 14-12)

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South Carolina Electric & Gas Company

NND-16-0142

Enclosure 1

Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3

Request for License Amendment Regarding Core Makeup Tank Volume Inconsistency (LAR 14-12)

(Enclosure 1 consists of 11 pages, including this cover page)

Table of Contents

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, South Carolina Electric & Gas Company (SCE&G), acting on behalf of itself and the South Carolina Public Service Authority (Santee Cooper), the licensees for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3, request an amendment to Combined License (COL) Numbers NPF-93 and NPF-94, for VCSNS Units 2 and 3.

1. SUMMARY DESCRIPTION

COL Appendix C, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC), Table 2.2.3-4, acceptance criteria number 8.c) vi (2.2.03.08c.vi.01) requires inspection of the core makeup tanks (CMTs) to verify that the calculated volume of each CMT is ≥ 2487 ft^3. In contrast, the UFSAR (and the incorporated plant-specific Design Control Document (DCD) Tier 2 information) specifies in Subsection 5.4.13.2 and in Tables 6.3-2 and 14.3-2 that the minimum volume of the CMTs is 2500 ft^3. Additionally, COL Appendix A, Technical Specifications (TS) Surveillance Requirement (SR) 3.5.2.2 requires at least 2500 ft^3 of borated water in each CMT. A change is therefore proposed to revise the COL Appendix A (Technical Specifications) SR 3.5.2.2 and UFSAR to reflect a minimum CMT volume of 2487 ft^3. This lower value is supported by the Small Break Loss of Coolant Accident (SBLOCA) safety analysis, the analysis in which minimum CMT volume is a critical parameter, and aligns with the current ITAAC value.

The proposed change would revise the licensing basis documents with regard to the minimum volume of the Passive Core Cooling System (PXS) CMTs.

The requested amendment requires a change to COL Appendix A, Technical Specifications, and the supporting information in the UFSAR. This enclosure requests approval of the license amendment necessary to implement this change to the TS and UFSAR information.

2. DETAILED DESCRIPTION

The AP1000 Passive Core Cooling System is a seismic Category I safety-related system, located in the containment building. The primary components of the passive core cooling system are two core makeup tanks, two accumulators, the in-containment refueling water storage tank, the passive residual heat removal heat exchanger, and two spargers. The PXS is designed to provide adequate core cooling in the event of design basis events.

As discussed in UFSAR Subsection 5.4.13, the CMTs in the PXS store borated water under system pressure for high pressure reactor coolant makeup. During normal operation, the CMTs are completely full. When actuated, the CMT adds water mass to the reactor coolant system (RCS) by natural circulation. The water in the core makeup tank drains by gravity head into the RCS. The normal full-power temperature range and pressure in the core makeup tank are 70° to 120°F and 2250 psia, respectively. The tank is designed to withstand an environment of 2500 psia and 650°F. The core makeup tanks are normally aligned with an open inlet line from the reactor coolant loop cold legs.

The CMT is a vertically mounted, cylindrical pressure vessel with hemispherical top and bottom heads. One nozzle on the lower head connects the CMT to the reactor vessel direct vessel injection (DVI) piping. One nozzle in the center of the upper head connects the CMT to a line connected to one of the RCS cold legs.

Because of the vertical orientation of the CMTs and the fact that the inlet and outlet nozzles are located at the hemispherical high and low points, respectively, the entire volume of the CMTs is useable and deliverable. The entire volume of the CMT is subject to injection with no unusable volume. Therefore, the minimum free internal volume, as described in UFSAR Subsection 5.4.13.2, of the CMTs is the useable volume.

The CMTs are designed and fabricated according to ASME Code, Section III, as a Class 1 component, and are classified as AP1000 Class A components.

Plant-Specific DCD Tier 1 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Table 2.2.3-4, number 8.c) vi, requires inspection of the CMTs to verify the calculated volume of each CMT is ≥2487 ft^3. In contrast, the UFSAR specifies in Subsection 5.4.13.2 and in Tables 6.3-2 and 14.3-2 that the minimum volume of the CMTs is 2500 ft^3. Further, COL Appendix A, Technical Specifications (TS) Surveillance Requirement 3.5.2.2 requires that operators verify that there is at least 2500 ft^3 of borated water in each CMT every 7 days.

This proposed activity would revise the TS Surveillance Requirement and UFSAR information, as described below in Table 1, to make clear that the minimum CMT volume of borated water is 2487 ft^3. The proposed changes are consistent with design tolerances for the CMT and are supported by the safety analyses, as discussed in the Technical Evaluation section of this amendment request. Reducing the CMT volume specified in TS and UFSAR information to reflect a minimum of 2487 ft^3 is supported by the SBLOCA safety analysis, the analysis in which minimum CMT volume is a critical parameter, and aligns with the current ITAAC value.

Licensing Basis Change Description

Table 1

Plant-Specific Changes	Description of the proposed change
UFSAR/Tier 2 Subsection 5.4.13.2	Change CMT Volume to a minimum of 2487 ft^3.
UFSAR/Tier 2 Table 6.3-2	Change CMT Volume to a minimum of 2487 ft^3.
UFSAR/Tier 2 Table 14.3-2	Change CMT Volume to a minimum of 2487 ft^3.
Technical Specifications (COL Appendix A) SR 3.5.2.2	Change the verified CMT Volume of borated water to a minimum of 2487 ft^3 for each CMT

In addition the Bases for TS 3.5.2 will be clarified to indicate that the borated water volume of one CMT is adequate for RCS safety injection for SBLOCA. (See Enclosure 3 of this letter)

3. TECHNICAL EVALUATION

This proposed activity will revise the minimum CMT volume of borated water to 2487 ft^3. The proposed change to the Technical Specifications and UFSAR information is based on the SBLOCA assumption that the borated water volume of one CMT is adequate for Reactor Coolant System (RCS) safety injection.

The AP1000 Passive Core Cooling System (PXS) is a safety related system designed to provide sufficient core cooling during all design basis events. The PXS consists of a passive residual heat removal heat exchanger, two accumulators, two CMTs, an in-containment

refueling water storage tank, two depressurization spargers, pH adjustment baskets, valves, piping and instrumentation.

The CMTs provide reactor coolant system makeup and boration during events not involving loss of coolant when the normal makeup system is unavailable or insufficient. There are two CMTs located inside the containment at an elevation above the reactor coolant loops. During normal operation, the CMTs are completely full of cold, borated water, at normal RCS pressure.

The CMTs are connected to the reactor coolant system through a discharge injection line to the reactor vessel Direct Vessel Injection (DVI) path and an inlet line connected to the cold legs. The discharge line is blocked by two normally closed, parallel air-operated isolation valves that open on a loss of air pressure, loss of electrical power, or on an actuation signal. The outlet line from the bottom of each CMT provides an injection path to one of the DVI lines.

There are two operating processes for the CMTs, steam-compensated injection and water recirculation. During steam-compensated injection, steam is supplied to the CMTs to displace the water that is injected into the reactor coolant system. This steam is provided to the CMTs through the cold leg line. The cold leg line only has steam flow if the cold legs are voided. During water recirculation, water from the cold leg enters the CMTs and the cold water in the tank is discharged to the RCS. This results in reactor coolant system boration and a net increase in reactor coolant system mass.

The operating process for the CMTs depends on conditions in the RCS. When the cold leg is full of water, the cold leg connection line remains full of water and the injection occurs via water recirculation. If reactor coolant system inventory decreases sufficiently to cause cold leg voiding, steam flows through the cold leg balance lines to the CMTs.

The design and capability of CMTs and the balance of the passive core cooling system are unaltered by the CMT volume revision. During the development of the ITAAC, the value of 2487 ft^3 was established by allowing for a 0.5% construction tolerance to the design tank volume (2500 ft^3). The ITAAC represents the minimum volume available in the tank needed to accomplish the system design functions.

Physical dimensions of systems and equipment are typically modeled assuming specific values in the safety analysis calculations. For each particular analysis, biases are applied to include appropriate conservatism in each analysis result. This allows the base models to be used for a wide variety of applications, as some require a bias in one direction and others would require a bias in the opposite direction for conservatism. The small break loss of coolant accident (SBLOCA) analyses are performed with a CMT volume of 2487 ft^3. The SBLOCA transients are the limiting analyses with respect to CMT volume because relative to large loss of coolant accidents (LOCAs), the transients are slower moving and rely on the full sequence of the passive core cooling system. Therefore, a smaller amount of CMT volume reduces the amount of inventory in the reactor coolant system and increases the calculated peak clad temperature (PCT). The results of the SBLOCA analyses confirm the acceptability of the ITAAC minimum value, thus supports acceptability to revise the TS Surveillance Requirement to 2487 ft^3.

Non-LOCA analyses, Steam Generator Tube Rupture, containment peak pressure analyses (double ended cold leg LOCA and main steam line break), and large break LOCA (LBLOCA) analyses utilize a CMT volume of 2500 ft^3 or greater. For Non-LOCA analyses, using a larger

CMT volume is more conservative than the CMT volume of 2487 ft^3. This is because the smaller CMT volume, when heated during CMT actuation, expands to slightly less than the larger CMT volume and results in less pressurizer filling. Therefore, modeling to a smaller CMT volume in the Non-LOCA analyses results in less pressurizer filling, so the more conservative, larger CMT volume is used in these analyses.

For containment peak pressure analyses, a 0.5% smaller CMT volume results in a negligible difference in the amount of mass and energy released into containment. Thus, a slightly smaller CMT volume would not impact the peak containment design pressure and temperature values. Lastly, for the LBLOCA analysis, the results show that in the most limiting case, the CMTs inject only during the last 25 seconds of the approximately 225 second transient. The limiting PCT from the LBLOCA transient occurs within the first 100 seconds and thus modeling a smaller CMT volume would not impact the calculated PCT due to a LBLOCA. Therefore, a CMT volume of 0.5% less than the design value assumed in these events does not impact the conclusions of the containment peak pressure and LBLOCA analyses.

For non-LOCA events such as steam line break, the RCS experiences a decrease in temperature and pressure due to an increase in energy removal by the secondary system. The cooldown results in a reduction of the core shutdown margin due to the negative moderator temperature coefficient, with a potential for return to power. The actuation of the CMTs following this event provides injection of borated water to mitigate the reactivity transient and ensures the core remains shut down. However, CMT volume is not a critical parameter to shutdown margin.

Therefore, the proposed revision to the CMT volume reflected in the TS Surveillance Requirement does not adversely affect the shutdown margin for non-LOCA events.

Physical dimensions of systems and equipment with no additional biases added is typical in safety analysis calculations. However, placing conservative biases on key parameters provides conservatism in the overall analyses. The analyses are not sensitive to small changes, such as a 0.5% decrease in CMT volume. The analysis most sensitive to a reduction in the CMT volume, the SBLOCA analysis, already assumes the minimum ITAAC volume of 2487 ft^3 and so supports the acceptability of the change to the TS Surveillance Requirement and UFSAR information.

Additionally, no changes are made to the codes and standards or materials used in the design and construction of the CMTs from what is identified in the UFSAR, including the principal construction code. No changes are made to the inputs used in the supporting analyses. Therefore, the tank construction and design requirements are maintained with the proposed revisions.

This license amendment request proposes changes to the COL Appendix A (Technical Specifications) Surveillance Requirement 3.5.2.2 and UFSAR information to reflect a minimum CMT volume of 2487 ft^3. This lower value is supported by the SBLOCA safety analysis, the analysis in which minimum CMT volume is a critical parameter, and aligns with the current ITAAC value. There is no change to the functional capabilities or methods for performing a function, design analysis, or safety analysis, and thus, the requested CMT volume changes do not affect any design functions. The CMT volume change does not involve a modification to the method of evaluation for establishing design bases or safety analyses. Tests, experiments and

procedures described in the licensing basis were not revised by this CMT volume change. Nor does the CMT volume change represent a variation to a design feature credited in the ex-vessel severe accident assessment.

Environmental Review

The proposed changes associated with this license amendment request do not adversely 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.

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 A (Technical Specifications) requirements; 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 COL Appendix A (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 the plant-specific Technical Specifications and thus requires NRC approval.

10 CFR 52, Appendix D, VIII.C.6 states that after issuance of a license, “Changes to the plant-specific TS [Technical Specifications] will be treated as license amendments under 10 CFR 50.90.” 10 CFR 50.90 addresses the applications for amendments of licenses, construction permits and early site permits. As discussed above, a change to COL Appendix A, Technical Specifications Surveillance Requirement 3.5.2.2 is requested, and thus a license amendment request (as supplied herein) is required.

10 CFR 50.36(c)(3) requires that surveillance requirements are related to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met. The proposed revision to the minimum CMT volume of borated water does not affect the ability to meet the Technical Specifications Surveillance Requirements. Therefore the proposed changes continue to meet the requirements of 10 CFR 50.36(c)(3).

10 CFR 50, Appendix A, GDC 34, "Residual Heat Removal," requires that residual heat removal systems maintain the ability to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the Reactor Coolant Pressure Boundary are not exceeded. The proposed revision to the minimum CMT volume of borated water does not affect the Passive Core Cooling Systems ability to provide sufficient core cooling during all design basis events. Therefore the proposed changes continue to meet the requirements of GDC 34.

10 CFR 50, Appendix A, GDC 35, "Emergency Core Cooling," GDC 36, "Inspection of Emergency Core Cooling System," and GDC 37, "Testing of Emergency Core Cooling System," requires inspection and testing of the Emergency Core Cooling System (ECCS) to demonstrate the ability of the ECCS to provide an abundance of core cooling to transfer heat from the core at a rate so that fuel and clad damage will not interfere with continued effective core cooling, to permit appropriate periodic inspection of important components, and to permit appropriate periodic pressure and functional testing. The proposed revision to the minimum CMT volume of borated water does not affect requirements for inspection and testing the ECCS. Therefore the proposed changes continue to meet the requirements of GDC 35, 36 and 37.

10 CFR 50.46 and Appendix K to 10 CFR 50, requires an analysis of the ECCS performance to ensure that it is accomplished in accordance with an acceptable evaluation model. The proposed revision to the minimum CMT volume of borated water does not affect the required and acceptable feature of the ECCS evaluation model. Therefore the proposed changes continue to meet the requirements of 10 CFR 50.46 and 10 CFR 50, Appendix K.

4.2 Precedent

No precedent is identified.

4.3 Significant Hazards Consideration Determination

The proposed changes would revise the Combined Licenses (COLs) in regard to the minimum volume of the Passive Core Cooling Core Makeup Tanks (CMTs) specified in COL Appendix A (Technical Specifications) and the Updated Final Safety Analysis Report (UFSAR).

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 activity would revise the minimum CMT volume in the COL Appendix A (Technical Specifications) and UFSAR information to be consistent with the plant-specific Tier 1 and COL Appendix C requirements. Because the new minimum volume is bounded by the current analyses, the proposed activity does not alter the design of an accident initiating component or system. Thus, the probabilities of an accident previously evaluated are not affected. The proposed activity does not involve other safety-related equipment or radioactive material barriers. Thus, the proposed activity does not affect an accident mitigation function.

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 activity would revise the minimum CMT volume in the COL Appendix A (Technical Specifications) and UFSAR information to be consistent with the plant-specific Tier 1 and COL Appendix C requirements. No results or conclusions of any design or safety analyses are affected. No system or design function or equipment qualification is affected by the changes. The changes do not result in a new failure mode, malfunction or sequence of events that could affect safety or safety-related equipment. This activity 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 results in significant fuel cladding failures.

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

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

Response: No

The proposed activity would revise the minimum CMT volume in the COL Appendix A (Technical Specifications) and UFSAR information to be consistent with the plant-specific Tier 1 and COL Appendix C requirements. No results or conclusions of any design or safety analyses are affected. No system design function or equipment is altered by this activity, and the proposed changes do not alter any design code, safety classification, or design margin. No safety analysis or design basis limit is involved with the requested change, and consequently, no margin of safety is 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

In conclusion, 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. Pursuant to 10 CFR 50.92, the requested change does not involve a Significant Hazards Consideration.

5. ENVIRONMENTAL CONSIDERATIONS

The proposed changes would revise the Combined Licenses (COLs) by clarifying that the minimum volume of the Core Makeup Tanks specified in the COL Appendix A, Technical Specifications, and UFSAR information to be consistent with the plant specific Tier 1 and COL Appendix C requirements. The details of the proposed changes are provided in Sections 2 and 3 of this license amendment request.

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 Part 20, or would change an inspection or surveillance requirement. This proposed surveillance requirement change requires 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 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 proposed change in the requested amendment revises the COL Appendix A (Technical Specifications) Surveillance Requirement 3.5.2.2 and UFSAR information to

reflect a minimum CMT volume of 2487 ft^3 . This lower value is supported by the SBLOCA safety analysis, which uses the same value as a critical parameter input, and also aligns with the current ITAAC value. The proposed change 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 change in the requested amendment revises the COL Appendix A (Technical Specifications) Surveillance Requirement 3.5.2.2 and UFSAR information to reflect a minimum CMT volume of 2487 ft^3 . This lower value is supported by the SBLOCA safety analysis, which uses the same value as a critical parameter input, and also aligns with the current ITAAC value. 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 requested amendment, it has been determined that anticipated construction and operational effects 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 requested 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), an environmental impact statement or environmental assessment of the proposed amendment is not required.

6.0 REFERENCES

None

South Carolina Electric & Gas Company

NND-16-0142

Enclosure 2

Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3

Proposed Changes to the Licensing Basis Documents

(LAR 14-12)

Note: Added text is **Blue Underline**

Deleted text is ~~**Red Strikethrough**~~

(Enclosure 2 consists of 5 pages, including this cover page)

VCSNS COL Appendix A Technical Specifications, Subsection 3.5.2 Core Makeup Tanks (CMTs) – Operating

Revise Surveillance Requirement 3.5.2.2 as shown below:

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
	...	...
SR 3.5.2.1	Verify the temperature of the borated water in each CMT is < 120°F.	24 hours
SR 3.5.2.2	Verify the borated water volume in each CMT is ≥ ~~2500~~ 2487 cu. ft.	7 days
SR 3.5.2.3	Verify each CMT inlet isolation valve is fully open.	12 hours
	...	...

UFSAR Subsection 5.4.13.2 Design Description

Revise the first paragraph as shown below:

The core makeup tank is a low-alloy steel vessel with 308L stainless steel internal cladding. The minimum free internal volume for the core makeup tank is ~~2500~~ 2487 cubic feet. The normal full-power temperature and pressure in the core makeup tank are 70° to 120°F and 2250 psia, respectively. The tank is designed to withstand the design environment of 2500 psia and 650°F. The core makeup tank is a vertically mounted, cylindrical pressure vessel with hemispherical top and bottom heads.

UFSAR Table 6.3-2 Component Date-Passive Core Cooling System

Revise the table as shown below:

Table 6.3-2 (Sheet 1 of 2) COMPONENT DATA- PASSIVE CORE COOLING SYSTEM	
...	...
Core Makeup Tanks	
Number	2
Type	Vertical, cylindrical, hemispherical heads
Minimum ~~V~~ volume (cubic feet)	~~**2500**~~ 2487
Design pressure (psig)	2485
Design temperature (^{0}F)	650
Material	Carbon-steel, stainless steel clad
AP1000 equipment class	A
...	...

UFSAR, Table 14.3-2, Design Basis Accident Analysis

Revise table as shown below:

Table 14.3-2 (Sheet 7 of 17)

DESIGN BASIS ACCIDENT ANALYSIS

Reference	Design Features	Value
...	...	...
Figure 6.3-1	The passive core cooling system has two direct vessel injection lines.	
Table 6.3-2	The passive core cooling system has two core makeup tanks, each with a minimum required volume (ft^3)	~~2500~~ 2487
Table 6.3-2	The passive core cooling system has two accumulators, each with a minimum required volume (ft^3)	2,000
...	...	...

South Carolina Electric & Gas Company

NND-16-0142

Enclosure 3

Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3

Conforming Technical Specifications Bases (For Information Only)

(LAR 14-12)

Note: Added text is **Blue Underline**

(Enclosure 3 consists of 2 pages, including this cover page)

BASES

APPLICABLE SAFETY ANALYSES

The CMTs are assumed to be OPERABLE to provide emergency boration and core makeup when the Chemical and Volume Control System (CVS) is inoperable, and to mitigate the consequences of any DBA which requires the safety injection of borated water (Ref. 2).

Following a non-LOCA event such as a steam line break, the RCS experiences a decrease in temperature and pressure due to an increase in energy removal by the secondary system. The cooldown results in a reduction of the core SHUTDOWN MARGIN due to the negative moderator temperature coefficient, with a potential for return to power. The actuation of the CMTs following this event provides injection of borated water to mitigate the reactivity transient and ensure the core remains shut down.

In the case of a steam generator tube rupture (SGTR), CMT injection provides borated water to compensate for RCS LEAKAGE.

In the case of an RCS leak of 10 gallons per minute, the CMTs can delay depressurization for at least 10 hours, providing makeup to the RCS and remain able to provide the borated water to compensate for RCS shrinkage and to assure the RCS boration for a safe shutdown.

In the case of a LOCA, the CMTs provide a relatively large makeup flow rate for approximately 20 minutes, in conjunction with the accumulators to provide the initial core cooling.

CMTs satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum conditions necessary to ensure that CMT parameters meet the initial conditions assumed in the safety analyses. OPERABILITY is not expected to be challenged due to small gas accumulations in the high point, and rapid gas accumulations are not expected during plant operation. However, a relatively small gas volume was incorporated into the design for alerting operators to provide sufficient time to initiate venting operations before the gas volume would be expected to increase to a sufficient volume that might potentially challenge the OPERABILITY of natural circulation flow. Therefore, noncondensible gas accumulation in the inlet line high point that causes the water level to drop below the sensor will require operator action to investigate the cause of the gas accumulation and to vent the associated high point(s). RN-15-070

Each CMT represents 100% of the total injected borated water assumed in LOCA analysis. If the injection line from a single CMT to the vessel breaks, no single active failure on the other CMT will prevent the injection of borated water into the vessel. Thus the assumptions of the LOCA analysis will be satisfied. RN-15-070