

SummerRAIsPEm Resource

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To: SummerRAIsPEm Resource
Cc: Gleaves, Bill
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To support our discussion at 3/23/2017 Public Meeting, attached is a draft of Revision 2 of LAR 15-17.

Jordan Hoellman
Project Manager
NRO / DNRL / LB4
U.S. Nuclear Regulatory Commission
office: TWFN 6-F33
phone: (301) 415-5481
email: Jordan.Hoellman2@nrc.gov

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From: Hoellman, Jordan

Created By: Jordan.Hoellman2@nrc.gov

Recipients:
"Gleaves, Bill" <Bill.Gleaves@nrc.gov>
Tracking Status: None
"SummerRAIsPEm Resource" <SummerRAIsPEm.Resource@nrc.gov>
Tracking Status: None

Post Office: HQPWMSMRS01.nrc.gov

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Ronald A. Jones
Vice President
Nuclear Construction & Startup

March xx, 2017
NND-17-0119
10 CFR 50.90
10 CFR 52.63

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: Revision to Request for License Amendment and Exemption: Addition of New Turbine Building Sump Pumps to ITAAC (LAR 15-17R2)

Reference: 1. NND-15-0559, Request for License Amendment and Exemption: Addition of New Turbine Building Sump Pumps to ITAAC (LAR 15-17), dated September 30, 2015 (Accession Number ML15273A115)
2. NND-16-0206, Revision to Request for License Amendment and Exemption: Addition of New Turbine Building Sump Pumps to ITAAC (LAR 15-17R1), dated June 15, 2016 (Accession Number ML16167A045)

In accordance with the provisions of 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), requested an amendment to combined operating license (COL) numbers NPF-93 and NPF-94 for VCSNS Units 2 & 3, respectively, in Reference 1. The request was revised in Reference 2 in order to address NRC staff questions regarding the addition of two turbine building sump pumps to COL Appendix C (and plant-specific Tier 1) ITAAC information.

After further discussions with NRC staff, it has been concluded that further information is required in order for the NRC to complete the review of this LAR. The purpose of this letter is to revise LAR 15-17 in its entirety to include previously made changes to Tier 2 material.

Enclosure 5 is provided in this letter which replaces Enclosure 4 in Reference 2.

Enclosure 6 is provided in this letter which replaces Enclosure 2 of Reference 1.

Enclosure 7 is included in this letter which provides markups to the licensing basis on the proposed changes and replaces Enclosure 3 of Reference 1.

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.

This letter contains no regulatory commitments.

Should you have any questions, please contact April Rice by telephone at (803) 941-9858, or by email at arice@scana.com.

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

Executed on this ____ day of _____, 2017.

Sincerely,

Ronald A. Jones
Vice President
Nuclear Construction & Startup

BB/RAJ/bb

Enclosures:

- Enclosure 5: Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 – Revision to Request for License Amendment Regarding Addition of New Turbine Building Sump Pumps to ITAAC - (LAR 15-17R2)
- Enclosure 6: Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 – Revision to Exemption Request Regarding Addition of New Turbine Building Sump Pumps to ITAAC - (LAR 15-17R2)
- Enclosure 7: Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 – Revision to Licensing Basis Documents - Proposed Changes Regarding Addition of New Turbine Building Sump Pumps to ITAAC - (LAR 15-17R2)

c: Billy Gleaves
Ruth Reyes
Chandu Patel
Paul Kallan
Tom Fredette
Tomy Nazario
Cathy Haney
Jim Reece
Stephen A. Byrne
Jeffrey B. Archie
Ronald A. Jones
Alvis J. Bynum
Kathryn M. Sutton
April Rice
Nick Kellenberger
Matt Kunkle
Mory Diane
Bryan Barwick
Dean Kersey
Cynthia Lanier
Lisa Spears
Frederick Willis
Neil Haggerty
Pat Young
Zach Harper
Brian McIntyre
Brian Bedford
Carl Churchman
Joseph Cole
Chuck Baucom
Lisa Alberghini
Curt Castell
Susan E. Jenkins
William M. Cherry
Rhonda O'Banion
vcsummer2&3project@westinghouse.com
VCSummerMail@westinghouse.com
DCRM-EDMS@SCANA.COM

South Carolina Electric & Gas Company

NND-17-0119

Enclosure 5

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

**Revision to Request for License Amendment
Regarding Addition of New Turbine Building Sump Pumps to ITAAC
(LAR 15-17R2)**

(Enclosure 5 consists of 12 pages, including this cover page)

Table of Contents

1. Summary Description
2. Detailed Description
3. Technical Evaluation
4. Regulatory Evaluation
 - 4.1. Applicable Regulatory Requirements/Criteria
 - 4.2. Precedent
 - 4.3. Significant Hazards Consideration Determination
 - 4.4. Conclusions
5. Environmental Considerations
6. References

DRAFT

Pursuant to 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), hereby requests an amendment to Combined License (COL) Nos. NPF-93 and NPF-94 for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3, respectively.

1. Summary Description

The proposed changes clarify that there is more than one turbine building main sump and adds a second sump pump for each of the two turbine building main sumps into Updated Final Safety Analysis Report (UFSAR) Tier 2 and COL Appendix C (and associated Plant-specific Tier 1).

The proposed changes will require a change to Tier 2 information which impacts plant-specific Tier 1, and corresponding COL Appendix C information. (See Section 2 for details.) This enclosure requests approval of the license amendment necessary to implement these changes.

2. Detailed Description

As described in UFSAR Section 10.4.6, the Condensate Polishing System (CPS) can be used to remove corrosion products and ionic impurities from the Condensate System (CDS) during plant startup, hot standby, power operation with abnormal secondary cycle chemistry, safe shutdown, and cold shutdown operations. The condensate polishing system cleans up the condensate using deep bed mixed resin polishers during startup to meet condensate and feedwater system water chemistry specifications and assist in minimizing the plant's startup duration. During power operation, the condensate polishers are used only when abnormal secondary cycle conditions exist. Resin replacement requires the polisher vessel to be out of service. Upon removal of exhausted resin from the polisher vessel, the vessel is rinsed and new resin is placed in the vessel. Prior to plant startup, a new resin bed is rinsed and resin performance is verified with flow through the vessel discharged to the Waste Water System (WWS). The CPS serves no safety-related function and therefore has no nuclear safety-related design basis.

The Turbine Building Sumps are part of the Waste Water System (WWS) which collects and processes waste from room equipment and floor drains in nonradioactive building areas. The WWS has no safety design basis other than the WWS drain lines penetrating the Main Control Room (MCR) being seismic Category I for MCR envelope isolation during a design basis accident. As described in UFSAR Section 9.2.9.2.1 and 9.2.9.2.2, the turbine building sumps collect waste from the turbine building floor and equipment drains, laboratory drains, sampling waste drains, and plant washdowns from the turbine building. Selected drains from both the annex and auxiliary buildings are also collected in these sumps. The turbine building sumps provide a temporary storage capacity and a controlled source of fluid flow to the oil separator. Waste water from the turbine building sumps is routed to the oil separator, and then flows to the waste water retention basin for settling of suspended solids and treatment before discharge. In the event radioactivity is present in the turbine building sumps, the waste water is diverted from the sumps to the liquid radwaste system (WLS) for processing and disposal. A radiation monitor located on the common discharge piping of the sump pumps provides an alarm upon detection of radiation, and trips the sump pumps to isolate contaminated waste water. Waste water from the turbine building sumps is routed to the oil separator, and then flows to the waste water retention basin for settling of suspended solids and treatment before discharge. The design of the system precludes inadvertent discharge of radioactively contaminated drainage.

There are three waste water system (WWS) sumps in the turbine building. The two turbine building main sumps (WWS-MT-09A/B) collect non-radioactive drainage from the auxiliary building sump – north, the annex building sump, and CPS rinse effluent via the turbine building collection basin. The turbine building collection basin provides approximately equal distribution of flow into the two turbine building main sumps. Turbine building floor and equipment drain waste water is collected in turbine building sump C (WWS-MT-09C). Water from turbine building sump C is pumped to the turbine building collection basin and ultimately collected in the turbine building main sumps. The WWS does not provide a safety-related design function.

Each of the two turbine building main sumps and turbine building sump C are equipped with air-operated, double diaphragm sump pumps. Sump pump WWS-MP-01A is associated with turbine building main sump WWS-MT-09A, and sump pump WWS-MP-01B is associated with turbine building main sump WWS-MT-09B. Sump pumps WWS-MP-08A and WWS-MP-08B are associated with turbine building sump WWS-MT-09C. Interconnecting piping between the suction of the turbine building main sump pumps allows the pumps associated with either of the main sumps to transfer waste water from either or both of the main sumps.

Each turbine building main sump is equipped with a level transmitter. Alarms are generated when the level in a sump exceeds specified setpoints. Signals are also generated based on sump level to open or close the air supply valve to the sump pumps in the associated sump, which are air-powered, thereby initiating or terminating effluent flow from the associated sump. [The air valves for sump pumps associated with the affected sump will close on low sump level, thereby securing the pumps and terminating effluent flow from the sump. Manual controls are also provided for each WWS sump pump in addition to the automatic level-actuated control signals.](#)

A single radiation monitor is provided on the common discharge piping from the turbine building main sumps to detect and terminate the release of waste water from the sumps and prevent it from being released to the waste water retention basin in the event that radioactive contamination is detected in the sump discharge effluent. This is accomplished by the radiation monitor generating a signal to close the air supply valves to the sump pumps when radioactive contamination in excess of the designated setpoint is sensed in the turbine building main sump effluent discharge line, thereby securing the pumps and terminating effluent flow from the sumps.

Should it be determined that the turbine building main sump contents contain radioactive contamination effluent discharges from the sumps may be manually diverted to the liquid radwaste system (WLS) via a temporary hose connection and three-way valve connection to a steam generator blowdown system (BDS) line in the turbine building. The waste water transfer path from turbine building sump C to the turbine building main sumps does not have the ability to release effluent outside the WWS boundary, and is therefore not equipped with a radiation monitor.

[Reason for the Activity](#)

In the original CPS design, CPS rinse effluent was discharged to the circulating water system (CWS). However, in order to preclude resin fines and potentially radioactive resin fines from the CPS rinse effluent from directly entering the CWS, the CPS rinse effluent path was modified to discharge to the WWS. By discharging to the WWS, the CPS rinse effluent is directed through

the turbine building main sumps where it is subject to radiation monitoring before it is ultimately discharged to the waste water retention basin and mixed with the cooling tower blowdown in the blowdown sump.

Due to the increased inflows resulting from the CPS rinse effluent stream, the original turbine building sump design has insufficient pumping capacity; therefore it is necessary to add one air operated pump for each of the two turbine building main sumps. Each of the added pumps is identical in design and size as the original sump pumps and is operated in the same manner.

With the addition of a second pump for each main sump, the turbine building main sumps are able to accommodate the maximum CPS rinse effluent flow into the sumps. During CPS rinse operations, the lag pair of turbine building main sump pumps will be started to aid the lead pair of turbine building main sump pumps in draining the sump contents and avoiding sump overflow. Operational restrictions will also prevent initiation of CPS rinsing operations if the turbine building main sumps are filled to greater than 20 percent of capacity, and significant flows into the turbine building sumps from other sources will also be avoided during CPS rinse operations.

As previously described, discharge from the turbine building main sumps is automatically terminated in the event radioactive contamination in excess of the radiation monitor setpoint is detected in turbine building main sump effluent discharge line. The radiation monitor design does not include provisions to secure CPS rinse inflow to the turbine building main sumps when effluent discharges from the sumps have been terminated due to the detection of radioactive contamination in excess of the monitor setpoint in the effluent discharge line. However, high level alarms are provided for the turbine building main sumps to notify the operator of abnormal conditions that could result in overfilling of the sumps during CPS rinse operations. There are no provisions to automatically terminate CPS rinse water inflows to the turbine building main sumps in order to prevent overflow.

The scope of this license amendment request includes the addition of the second sump pump in each of the two turbine building main sumps, and clarification that there is more than one turbine building sump. Changes are proposed to UFSAR Tier 2 Section 9.2.9.2.2 to reflect the addition of the new sump pumps to the turbine building main sumps. The proposed changes associated with this activity also involves addition of the second sump pump for each of the two turbine building main sumps to COL Appendix C (and associated Plant-specific Tier 1) Table 2.3.29-1. Additionally, changes are proposed to COL Appendix C (and associated Plant-specific Tier 1) Section 2.3.29 and Table 2.3.29-1 to change the description of the turbine building sump from being reflected as a singular entity and reflect that the turbine building sump is actually comprised of more than one sump. This change is a non-technical change and is made for clarification only.

Licensing Basis Change Descriptions

Plant-Specific Change	Description of Proposed Change
Tier 1 and COL Appendix C Section 2.3.29	Revise the Design Description to indicate there is more than one turbine building sump; i.e. change “sump” to “sumps”.
Tier 1 and COL Appendix C Table 2.3.29-1	Revise to indicate there is more than one turbine building sump and to add turbine building sump pumps WWS-MP-07A and B as pumps that will be confirmed to stop operating on a simulated high radiation signal from the radiation discharge monitor.
UFSAR Tier 2 Section 9.2.9.2.2	Changes to reflect the addition of the new sump pumps to the turbine building main sumps.

3. Technical Evaluation

The CPS effluent discharge flow from CWS to WWS was modified in order to preclude resin fines and potentially radioactive resin fines from the CPS rinse effluent from directly entering the CWS. As a result, the rinse effluent flow will pass through the Turbine Building main sumps. The CPS serves no safety-related functions. As described in UFSAR Section 10.4.6.3, CPS performs the design function of removing corrosion products and ionic impurities from the Condensate System (CDS). The CPS will continue to meet the design functions described in the current licensing basis with these changes.

Because the CPS rinse water will now be collected in the turbine building main sumps before being routed to the oil separator and the waste water retention basin, the pumping capacity of the turbine building main sumps needs to be increased. In order to prevent overflow of the sumps, additional pumping capability from the sumps is required. Turbine building air operated sump pumps WWS-MP-07A/B are proposed to be added, one to each of the two turbine building main sumps, to accommodate the increased flow from the CPS. These pumps will operate in the same manner as the existing sump pumps (WWS-MP-01A/B). Either existing WWS-MP-01A/B or new WWS-MP-07A/B can be aligned as the lead pump. Each of the running pumps will stop if a high-radiation signal is received indicating radioactivity in the turbine building main sumps. The additional sump pumps will have no impact on the design functions of the turbine building sumps or existing sump pumps described in the UFSAR. The features and design functions of the turbine building and the systems housed within continue to be met with these changes.

UFSAR subsection 9.2.9.2.1 describes the WWS and its function. Upon detection of radioactivity, the radiation monitor on the common discharge of the turbine building main sump pumps will alarm and stop the turbine building main sump pumps to ensure radioactivity is not released.

The additional turbine building main sump pumps do not provide any safety related function; therefore the proposed changes do not affect any function or feature used for the prevention and mitigation of accidents or their safety analyses. The turbine building main sumps are

nonsafety-related structures. The oil separator and the waste water retention basin are not safety-related and perform no safety-related function. The function of the waste water discharge radiation monitor (WWS-JE-RE021) to maintain discharge releases within regulatory limits is not affected. Thus, no safety-related structure, system, component (SSC) or function is involved. The proposed changes do not involve nor interface with any SSC accident initiator or initiating sequence of events related to the accidents evaluated in the plant-specific DCD or UFSAR.

In the event of radioactive contamination of the ion exchange resins in the vessel the resin is transferred to a mobile radwaste processing unit located outside of the turbine building. The CPS does not include ion exchange resin regeneration capability. As such, it is not expected that the CPS rinse water effluent to the turbine building sump will contain significant contamination. Additionally, any release from the turbine building main sumps following a primary system to secondary system leak that may contaminate the condensate polishers is a monitored release. 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.

CPS piping and components are located within the turbine building in non-radiological zones that do not normally restrict worker occupancy. Introduction of the CPS rinse effluent stream to the turbine building sump does not result in a change to the radiation zones for normal operations, shutdown, and post-accident depicted in UFSAR Figures 12.3-1 and 12.3-2. In the event of an abnormal condition that results in radioactively contaminated resins being discharged the turbine building sump, handling of contaminated resins will be handled in accordance with procedures for handling solid waste, and personnel access and radiation zone posting will be performed in accordance with the radiation protection program.

The proposed additional turbine building sump pumps are identical in design and operation to the existing turbine building main sump pumps and will permit the discharge of waste water from the turbine building main sumps to the oil separator. In the event of radioactivity in the turbine building main sumps waste water, the proposed turbine building main sump pumps will be stopped and the discharge of the waste water will be terminated, consistent with the operation of the existing turbine building main sump pumps. The turbine building main sumps, the turbine building main sump pumps and the waste water discharge radiation monitors are nonsafety-related. The turbine building main sumps or turbine building main sump pumps do not interface with/affect safety-related equipment or a fission product barrier. No system or design function or equipment qualification is affected by the proposed changes. The changes do not result in a new failure mode, malfunction or sequence of events that could affect a radioactive material barrier or safety-related equipment. The proposed changes do not affect equipment associated with the reactor or spent fuel systems and 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.

Summary

Indicating that there is more than one turbine building sump and the proposed addition of an additional sump pump for each of the turbine building main sumps (to make a total of four) does not affect any safety related equipment or function, design function, radioactive material barrier or safety analysis. The changes do not impact security barriers or radiation protection and

shielding safety analyses, nor do the changes affect any procedure, method of evaluation, or test and experiment. Implementing these changes has no adverse affect on structural analysis and does not impact the Aircraft Impact Assessment. There is no impact to ex-vessel severe accident consequences, containment venting, and containment integrity. The design functions of the turbine building and its structures, systems, and components as described in the plant-specific DCD or UFSAR continue to be met. Although there are Tier 1 changes, the resulting reduction in standardization caused by the Tier 1 changes does not result in a decrease in safety.

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 plant-specific Tier 1 information, and a corresponding change to COL Appendix C, Inspections, Tests, Analyses and Acceptance Criteria 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 plant-specific Tier 1 information (and corresponding COL Appendix C information), and thus requires NRC approval for the Tier 1 departures.

10 CFR 50, Appendix A, Criterion 60—*Control of releases of radioactive materials to the environment*, requires that each nuclear power unit design include means to control suitably the release of radioactive materials in gaseous and liquid effluents and to handle radioactive solid wastes produced during normal reactor operation, including anticipated operational occurrences. Sufficient holdup capacity shall be provided for retention of gaseous and liquid effluents containing radioactive materials, particularly where unfavorable site environmental conditions can be expected to impose unusual operational limitations upon the release of such effluents to the environment. These proposed changes to indicate there is more than one turbine building sump and to add two turbine building sump pumps meets this criterion by ensuring potentially radioactive material is collected and the sump pumps are stopped if any the discharge radiation monitor detects any radioactivity, thus ensuring any radioactive material that may be in the sumps will be retained

4.2 Precedent

No precedent is identified.

4.3 Significant Hazards Consideration Determination

The proposed changes would revise the Combined Licenses (COLs) to identify that there is more than one turbine building sump and to add two additional turbine building sump pumps to Tier 1 Section 2.3.29 and Tier 1 Table 2.3.29-1, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) 2.3.29.04. The proposed changes also impact UFSAR Tier 2 Section 9.2.9.2.2 to address addition of the new sump pumps to the turbine building main sumps.

The requested amendment proposes a change 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 activity adds a second pump to each of the turbine building main sumps, and identifies that there is more than one turbine building sump. The reason for the additional pumps is to account for an increase in volume due to the changes to the CPS rinse effluent flowpath from CCW to WWS via the Turbine Building sumps. The extra sump pumps will prevent potential overflowing and flooding of the sumps during CPS rinse operations. The CPS serves no safety-related function. By directing the effluent to the turbine building sumps it is subject to radiation monitoring. Under normal operating conditions, there are no significant amounts of radioactive contamination within the CPS. However, radioactive contamination of the CPS can occur as a result of a primary to secondary leakage in the steam generator should a steam generator tube leak develop while the CPS is in operation and radioactive condensate is processed by the CPS. Radiation monitors associated with the steam generator blowdown, steam generator, and turbine island vents, drains and relief systems provide the means to determine if the secondary side is radioactively contaminated. The main turbine building sumps and sump pumps are not safety-related components and do not interface with any systems, structures, or components (SSC) accident initiator or initiating sequence of events; thus, the probability of accidents evaluated within the plant-specific UFSAR are not affected. The proposed changes do not involve a change to the predicted radiological releases due to accident conditions, thus the consequences of accidents evaluated in the UFSAR 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 changes to the non-safety waste water system (WWS) do not affect any safety-related equipment, nor does it add any new interface to safety-related SSCs. No system or design function or equipment qualification is affected by this change. The changes do not introduce a new failure mode, malfunction, or sequence of events that could affect safety or safety-related equipment.

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 WWS is a non safety-related system that does not interface with any safety-related equipment. The proposed changes to identify that there is more than one turbine building sump and to add two turbine building sump pumps do not affect any design code, function, design analysis, safety analysis input or result, or design/safety margin. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the proposed change.

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

This review supports a request to amend the Combined Licenses (COLs) to allow a departure from various elements of the certification information in the plant-specific Tier 1 information and the corresponding elements in Appendix C of the COL.

The proposed changes clarify that there is more than one turbine building sump and add two additional turbine building sump pumps to Tier 1 Section 2.3.29 and Tier 1 Table 2.3.29-1. [The proposed changes also impact UFSAR Tier 2 Section 9.2.9.2.2 to address addition of the new sump pumps to the turbine building main sumps.](#)

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 changes in the requested amendment clarify that there is more than one turbine building sump and adds two additional turbine building sump pumps to the Tier 1 Section 2.3.29 and Tier 1 Table 2.3.29-1. [The proposed changes also impact UFSAR Tier 2 Section 9.2.9.2.2 to address addition of the new sump pumps to the turbine building main sumps.](#) The proposed changes are 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 indicate that there is more than one turbine building sump and adds two additional turbine building sump pumps to the Tier 1 Section 2.3.29 and Tier 1 Table 2.3.29-1. [The proposed changes also impact UFSAR Tier 2 Section 9.2.9.2.2 to address addition of the new sump pumps to the turbine building main sumps.](#) 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 exemption is not required.

6. References

None

South Carolina Electric & Gas Company

NND-17-0119

Enclosure 6

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

**Revision to Exemption Request
Regarding Addition of New Turbine Building Sump Pumps to ITAAC
(LAR 15-17R2)**

(Enclosure 6 consist 7 pages, including this cover page)

1.0 Purpose

South Carolina Electric & Gas Company (SCE&G) 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 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 the generic DCD Tier 1 information. The Tier 1 information for which a plant-specific departure and exemption is being requested is related to the addition of two non safety-related turbine building sump pumps and clarifying that there is more than one turbine building sump as specified in Tier 1 material.

This request for exemption will apply the requirements of 10 CFR 52, Appendix D, Section VIII.A.4 to allow departures from Tier 1 information due to the following proposed changes to the system-based design descriptions:

- Tier 1 Section 2.3.29
 - Revise the Design Description to indicate there is more than one turbine building sump.
- Tier 1 Table 2.3.29-1
 - Revise to indicate there is more than one turbine building sump and to add turbine building sump pumps WWS-MP-07A and B as pumps that will be confirmed to stop operating on a simulated high radiation signal from the radiation discharge monitor.

This request will provide for the application of the requirements for granting exemptions from design certification information, as specified in 10 CFR Part 52, Appendix D, Section VIII.A.4, 10 CFR 52.63, §52.7, and §50.12.

2.0 Background

SCE&G is the holder of Combined License Nos. NPF-93 and NPF-94, which authorize construction and operation of two Westinghouse Electric Company AP1000 nuclear plants, named Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3, respectively.

During the detailed design finalization of the waste water system (WWS), departures from the details identified in Tier 1 information were determined necessary to accommodate changes to functions of the systems described in the plant-specific DCD Tier 2 information. This activity requests exemption from the Generic DCD Tier 1 information, which supports the associated COL Appendix C ITAAC.

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 for Proposed Exemption

An exemption is requested to depart from AP1000 generic DCD Tier 1 material in regards to the AP1000 by adding two turbine building sump pumps to accommodate the increased flow that will be experienced during condensate polishing system (CPS) rinsing operations, and to indicate that there is more than one turbine building sump.

Indicating that there is more than one turbine building sump and the proposed addition of an additional sump pump for each of the turbine building main sumps (to make a total of four) does not affect any safety related equipment or function, design function, radioactive material barrier or safety analysis. The changes do not impact security barriers or radiation protection and shielding safety analyses, nor do the changes affect any procedure, method of evaluation, or test and experiment. Implementing these changes has no adverse affect on structural analysis and does not impact the Aircraft Impact Assessment. There is no impact to ex-vessel severe accident consequences, containment venting, and containment integrity. The design functions of the turbine building and its structures, systems, and components as described in the plant-specific DCD or UFSAR continue to be met. Although there are Tier 1 changes, the resulting reduction in standardization caused by the Tier 1 changes does not result in a decrease in safety.

The proposed changes to the description information presented in plant-specific Tier 1 are at a level of detail that is consistent with the information currently provided therein. The proposed changes neither adversely impacts the ability to meet the design functions of the components nor involve a significant decrease in the level of safety provided by the components. The proposed changes to information in plant-specific Tier 1 continue to provide the detail necessary to implement the corresponding ITAAC. Further, 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 would not serve the underlying purpose of the rule since it could be read to be inconsistent with the design information currently provided in Tier 2 of the plant-specific DCD.

4.0 Justification for Proposed 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 SCE&G has identified changes to the Tier 1 information related to the components, as a result of further design review activities, an exemption to 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)(ii)]; 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 to allow changes to the description of the components 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 plant-specific elements of the Tier 1 information to depart from the AP1000 certified design information. The plant-specific DCD Tier 1 information will reflect the approved licensing basis for VCSNS Units 2 and 3, and will maintain a consistent level of detail with that which is currently provided elsewhere in the Tier 1. Therefore, the affected ITAAC in the plant-specific Tier 1 information will serve its required purpose.

These changes will not impact the ability of the components to perform their design functions. The new pumps will operate in the same manner as the existing sump pumps (WWS-MP-01A and B). Either existing WWS-MP-01A or new WWS-MP-07A can be aligned as the primary pump. Each of the running pumps will stop if a high radiation signal is received indicating radioactivity in the main turbine building sumps. Because the changes will not alter the operation of any plant equipment or system's ability to perform their design function, these changes do not present an undue risk to existing equipment or systems. The description changes do not introduce any new industrial, chemical, or radiological hazards that would represent a public health or safety risk, nor do they modify or remove any design or operational controls or safeguards that are intended to mitigate any existing on-site hazards. Furthermore, the proposed changes would not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in significant fuel cladding failures. Accordingly, these changes do not present an undue risk from any new equipment or systems.

Therefore, 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 exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow the addition of two new turbine building sump pumps, in addition to the existing two pumps, and indicate there is more than one turbine building sump, as presented in plant-specific Tier 1 information, thereby departing from the AP1000 certified design

information. The proposed exemption will enable performance of the ITAAC associated with these changed elements, by reflecting the current design information in the text, and tables that are referenced in these ITAAC. The exemption does not alter or impede the design, function, or operation of any plant structures, systems, or components (SSCs) associated with the facility's physical or cyber security, and therefore does not affect any plant equipment that is necessary to maintain a safe and secure plant status. The proposed exemption has no impact on plant security or safeguards.

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 "[a]pplication of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

The 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 VCSNS Units 2 and 3 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 is to add two turbine building sump pumps to Tier 1 information, and to indicate there is more than one turbine building sump. This change does not impact the ability of any SSCs to perform their functions or negatively impact safety. The reason for adding an additional sump pump to each sump is to account for the additional volume from the CPS resin rinse effluent and ensure that overflowing of the sumps can be prevented. The design functions of the turbine building sumps continue to be met with the additional sump pumps. Additionally, the proposed change to indicate there is more than one turbine building sump is made to provide clarification and consistency in the licensing basis since the Turbine Building design has always had more than one sump. Accordingly, this exemption from the certification information will enable the licensee to safely construct 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 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 nature of the changes to the plant-specific Tier 1 information and the understanding that these changes are necessary to support the actual system functions, it is likely that other AP1000 licensees will request this exemption. However, if this is not the case, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization because, *as stated previously, there is no decrease in safety in regards to the proposed changes, and the design functions of the systems associated with this request will continue to be maintained. Additionally, the proposed change to add two turbine building sump pumps is necessary to account for the additional volume from the CPS resin rinse effluent and ensure that overflowing of the sumps can be prevented. The proposed change to indicate there is more than one turbine building sump is made to provide clarification and consistency in the licensing basis since the Turbine Building design has always had more than one sump. These proposed changes result in* minor departures from tables and text in the generic AP1000 DCD. This exemption request and the associated marked-up tables and text 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 the addition of two new turbine building sump pumps, in addition to the existing two pumps, and indicate there is more than one turbine building sump, as presented in the plant-specific Tier 1 information. The addition of two new sump pumps and the change to indicate there is more than one turbine building sump will not impact the functional capabilities of these components. The two new pumps will operate in the same manner as the existing sump pumps. Either the existing pump (WWS-MP-01A/B) or new pump (WWS-MP-07A/B) can be aligned as the primary pump. Each of the running pumps will stop if a high radiation signal is received indicating radioactivity in the main turbine building sumps.

Because the design changes associated with this exemption request will not adversely affect the ability of any systems or equipment to perform their design functions, there are no new failure modes introduced by these changes and the level of safety provided by the current systems and equipment. It is concluded that the design 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 Exemptions

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 be prepared in connection with the proposed exemption.

8.0 Conclusion

The proposed changes to Tier 1 are necessary to revise information in design descriptions in plant-specific Tier 1 information. 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, presents special circumstances, does not present a significant decrease in safety as a result of a reduction in standardization, and meets the eligibility requirements for categorical exclusion.

9.0 References

None

South Carolina Electric & Gas Company

NND-17-0119

Enclosure 7

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

**Revision to Licensing Basis Documents - Proposed Changes
Regarding Addition of New Turbine Building Sump Pumps to ITAAC
(LAR 15-17R2)**

Note: Added text is Blue Underline

Deleted text is ~~Red Strikethrough~~

(Enclosure 7 consist of 4 pages, including this cover page)

Tier 1 Section 2.3.29, Radioactive Waste Drain System, Design Description

[VCSNS Tier 1, pg. 2.3.29-1]

[VCSNS Unit 2 COL, Appendix C, pg. C-273]

[VCSNS Unit 3 COL, Appendix C, pg. C-273]

Revise Tier 1 information, as shown below:

The radioactive waste drain system (WRS) collects radioactive and potentially radioactive liquid wastes from equipment and floor drains during normal operation, startup, shutdown, and refueling. The liquid wastes are then transferred to appropriate processing and disposal systems.

Nonradioactive wastes are collected by the waste water system (WWS). The WRS is as shown in Figure 2.3.29-1.

1. The functional arrangement of the WRS is as described in the Design Description of this Section 2.3.29.
2. The WRS collects liquid wastes from the equipment and floor drainage of the radioactive portions of the auxiliary building, annex building, and radwaste building and directs these wastes to a WRS sump or WLS waste holdup tanks located in the auxiliary building.
3. The WRS collects chemical wastes from the auxiliary building chemical laboratory drains and the decontamination solution drains in the annex building and directs these wastes to the chemical waste tank of the liquid radwaste system.
4. The WWS stops the discharge from the turbine building ~~sump~~ sumps upon detection of high radiation in the discharge stream to the oil separator.

Tier 1 Section 2.3.29, Radioactive Waste Drain System, Table 2.3.29-1

[VCSNS Tier 1, pg. 2.3.29-2]

[VCSNS Unit 2 COL, Appendix C, pg. C-274]

[VCSNS Unit 3 COL, Appendix C, pg. C-274]

Revise Tier 1 information, as shown below:

Table 2.3.29-1 Inspection, Tests, Analyses and Acceptance Criteria		
Design Commitment	Inspection, Tests, Analyses	Acceptance Criteria
4. The WWS stops the discharge from the turbine building sump <u>sumps</u> upon detection of high radiation in the discharge stream to the oil separator.	Tests will be performed to confirm that a simulated high radiation signal from the turbine building sump discharge radiation monitor, WWS-021 causes the sump pumps (WWS-MP-01A and B, <u>and WWS-MP-07A and B</u>) to stop operating, stopping the spread of radiation outside of the turbine building.	A simulated high radiation signal causes the turbine building sump pumps (WWS-MP-01A and B, <u>and WWS-MP-07A and B</u>) to stop operating, stopping the spread of radiation outside of the turbine building.

UFSAR Subsection 9.2.9.2.2, Component Description, Turbine Building Sump Pumps, is revised as shown below:

~~Each sump has one pneumatic, double diaphragm pump which routes~~ **The sumps have pneumatic, double diaphragm pumps. The main sump pumps route** the waste water to the oil separator. Interconnecting piping between the suction of the **main** sump pumps allows for either pump to transfer waste water from either or both **main** sumps. The plant service air system provides the supply of air for operation of the pumps. Operation of the pumps is automatic based on sump level with controls provided for manual operation.

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