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NND-17-0117
10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

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

Subject: VCSNS Units 2 & 3: Request for License Amendment: Engineered Safety
Features Actuation Changes for Containment Vacuum Relief (LAR 17-04)

References: Vogtle Electric Generating Plant Units 3 and 4, Request for License Amendment :
Engineered Safety Features Actuation Changes for Containment Vacuum Relief
(LAR-17-005), dated January 31, 2017 (ND-17-0182)

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), requests an amendment to the Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 combined license (COL) numbers NPF-93 and NPF-94, respectively. The requested amendment proposes to depart from Tier 2 information in the Updated Final Safety Analysis Report (UFSAR) and involves changes to the VCSNS Units 2 and 3 COL Appendix A, Technical Specifications (TS).

The proposed changes to TS and departures from Tier 2 information in the UFSAR modify engineered safety features logic to automatically reset the manual containment vacuum relief actuation, so that operator action is not required when containment pressure returns to normal. Additionally, logic is added so that containment vacuum relief cannot be manually actuated without low containment pressure.

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

Enclosure 2 identifies the requested changes and provides markups depicting the requested changes to the VCSNS Units 2 and 3 licensing basis documents.

Enclosure 3 provides conforming TS Bases pages for information only.

This letter contains no regulatory commitments.

This letter does not contain any security related information.

SCE&G requests NRC staff approval of the license amendment by October 20, 2017 to support the installation of Protection and Safety Monitoring System (PMS) cabinets. Delayed approval of this license amendment could result in a delay in installation of PMS cabinets and subsequent dependent construction activities. SCE&G expects to implement this proposed amendment within 30 days of approval of the requested changes; however, in accordance with License Condition 2.D.(9), the Technical Specifications in Appendix A to these licenses would not become effective until a Commission finding that the acceptance criteria in this license (ITAAC) are met in accordance with 10 CFR 52.103(g). There is no requested amendment to this license condition.

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 Nick Kellenberger by telephone at (803) 941-9834, or by email at nicholas.kellenberger@scana.com.

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

Executed on this 27th day of February, 2017.

Sincerely,



April Rice
Manager
New Nuclear Licensing

AJC/ARR/ajc

- Enclosures:
- 1) Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3– Request for License Amendment Regarding Engineered Safety Features Actuation Changes for Containment Vacuum Relief (LAR 17-04)
 - 2) Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3– Proposed Changes to Licensing Basis Documents (LAR 17-04)
 - 3) Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3– Conforming Technical Specifications Bases Changes (For Information Only) (LAR 17-04)

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South Carolina Electric & Gas Co.

NND-17-0117

Enclosure 1

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

**Request for License Amendment Regarding
Engineered Safety Features Actuation Changes for Containment Vacuum Relief
(LAR 17-04)**

(Enclosure 1 consists of 13 pages, including this cover page.)

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Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, South Carolina Electric & Gas Co. (SCE&G) hereby requests an amendment to Combined License (COL) Numbers NPF-93 and NPF-94, for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3, respectively.

1. Summary Description

The proposed changes would revise the Combined Licenses (COLs) Updated Final Safety Analysis Report (UFSAR) Tier 2 information, which involve Appendix A, plant-specific Technical Specifications (TS). The proposed changes reflect modifications to the engineered safety features (ESF) actuation logic to include automatic reset of the manual containment vacuum relief actuation, so that operator action is not required to allow the containment isolation ESF when containment pressure returns to normal. Additionally, the reset has the effect of interlocking the containment vacuum relief valves such that the operators will not be able to manually actuate containment vacuum relief until the containment pressure falls below the Containment Pressure - Low setpoint in two-out-of-four divisions (referred to herein as "interlock" or "manual actuation interlock").

2. Detailed Description

The containment vacuum relief system is a safety grade system, used to mitigate a containment external pressure scenario, and is part of the containment air filtration system. The vacuum relief component of the air filtration system uses 6-inch supply lines and containment isolation valves. These valves close automatically on a containment isolation signal in the absence of a containment vacuum relief actuation signal.

The containment vacuum relief function opens the 6-inch containment vacuum relief isolation valves (VFS-PL-V800A and VFS-PL-V800B) dependent upon the pressure inside containment. Containment vacuum relief is caused by one of the following signals: Manual actuation or Containment Pressure - Low 2.

During some atmospheric weather conditions, it is possible for the pressure in the containment vessel to drop significantly below the outside atmospheric pressure if the containment purge isolation valves are not open. The containment vacuum relief isolation valves are opened to limit the negative pressure differential that can develop to prevent structural damage to the containment shell. The valves open automatically on a Containment Pressure - Low 2 signal or by manual actuation.

The containment vacuum relief isolation valves also function as containment isolation valves and must be closed to limit radiological releases to the atmosphere. The containment vacuum relief isolation valves close on the same signals (containment isolation or Containment Radiation – High 1) that close the containment purge inlet and discharge isolation valves. The containment vacuum relief valves provide a possible radiological release path from the containment at any time that the inside containment purge discharge isolation valve

(VFS-PL-V009) is not closed. Even though the containment vacuum relief isolation valves are much smaller than the discharge isolation valves, they have a longer stroke time and add significantly to a postulated radiation release if they are open at the same time as the main containment purge path.

The containment vacuum relief isolation valve logic gives priority to opening the containment vacuum relief valves over closing them due to the negative pressure setpoint to open valves. Under such circumstances, radiation will not be released from the containment because air flows into the containment from the atmosphere. If a Containment Radiation – High 1 condition exists inside the containment, the containment vacuum relief valves close automatically as soon as the existing Containment Pressure – Low 2 signal is no longer present, preventing a possible radiological release to the atmosphere.

Neither the automatic actuation signal to open nor the automatic actuation signal to close the containment vacuum relief isolation valves is latched. This is attributed to the safe state of the valves depends on containment conditions. The actuation signal to close does not need a latch because the normal position for these valves is closed. They are only expected to be open for containment vacuum relief and testing, and the containment vacuum relief open actuation signal takes priority over the close actuation signal.

A possible design basis scenario is a loss of grid power causing a Reactor Trip during cold ambient conditions. This would cause overcooling of containment which may lead to the operator manually actuating containment vacuum relief (in anticipation of automatic containment vacuum relief actuation). After several hours, the containment would pressurize due to steaming from the operation of the Passive Residual Heat Removal Heat Exchanger, at which time containment isolation may be necessary. If this event occurred with a single failure of the inside containment purge discharge isolation valve (VFS-PL-V009) failing open, this would establish a radiological release path from the containment if the containment vacuum relief valves remained open.

The manual actuation signal to open the containment vacuum relief valves contains a set/reset memory (S/R) latch. The current design only allows this latch to be reset manually by the operator. This is not desirable because operator action, following a manual actuation, would be required to reset this manual actuation signal to allow the containment isolation safety actuation to close as soon as the manual actuation signal is removed. Containment pressure above the Low 2 setpoint indicates to the operator that containment has reached a safe containment pressure. The operator would need to manually reset the manual actuation above this setpoint to ensure the containment vacuum relief function adequately restored pressure. A single failure involving VFS-PL-V009 failing open could create a path for radiological release to the atmosphere unless the operator resets the latch in a timely manner.

Request for License Amendment Regarding Engineered Safety Features Changes for Containment Vacuum Relief (LAR 17-04)

To remove the need for the operator to reset the manual containment vacuum relief valves' open actuation signal in a timely manner after the Containment Pressure – Low 2 is no longer exceeded in two-out-of-four divisions, the addition of logic to automatically reset the manual latch is proposed. The automatic reset will occur when three-out-of-four of the narrow range containment pressure channels (PCS-JE-PT005, -PT006, -PT007, and -PT008) used to automatically actuate containment vacuum relief are above the Containment Pressure - Low setpoint. The latch will be automatically reset once containment pressure returns to normal, thus allowing completion of the protective function of the containment isolation engineered safety features (ESF) as necessary. This automatic reset signal is identified as the Containment Pressure – Low signal. If VFS-PL-V009 is closed and no containment isolation signal exists when the automatic reset occurs, then the containment vacuum relief valves will remain open until operator action is taken to place them closed again, or until the containment isolation signal occurs requiring the containment vacuum relief valves to be automatically closed. The proposed logic change is shown on Updated Final Safety Analysis Report (UFSAR) Figure 7.2-1, Sheet 19. The description of this change is also proposed in changes to UFSAR subsection 9.4.7.1.1 to cite that the manual initiation of the containment vacuum relief valves is interlocked with the Containment Pressure - Low signal. The Containment Pressure - Low signal provides an interlock function only and does not directly actuate any ESF. The automatic reset ensures the integrity of the containment isolation function while the containment is not in a vacuum condition. UFSAR subsection 7.3.1.2.26 and UFSAR Table 7.3-1 are revised to reflect the addition of the reset logic.

This Containment Pressure – Low signal also has the effect of interlocking containment vacuum relief actuation such that the operators will not be able to manually actuate containment vacuum relief until the containment pressure indicates an approach to a vacuum condition by falling below the Containment Pressure - Low setpoint in two-out-of-four divisions. The new automatic interlock function will be reflected in changes to Technical Specification (TS) Table 3.3.8-1 and Surveillance Requirement (SR) 3.3.8.4, with conforming changes to TS 3.3.8 and TS 3.3.9 Bases.

Licensing Basis Change Descriptions

The table below details the licensing basis changes sought to implement the proposed changes to revise the manual initiation logic for the containment vacuum relief valves by adding an interlock with the Containment Pressure - Low signal.

<u>Plant-Specific Change</u>	<u>Description of Proposed Change</u>
Technical Specification (TS) TS Table 3.3.8-1, Function 1	Revise to add the Containment Pressure – Low Function to reflect the ESF signal that prevents inadvertent manual opening of the containment vacuum relief valves, and provides automatic reset of the manual containment vacuum relief function to ensure the containment vacuum relief valves are allowed to close after they have been opened manually. The Applicability for this new Function is consistent with the Applicability for Function 1, Containment Pressure – Low 2; i.e., MODES 1, 2, 3, 4, and MODES 5 and 6 without an open containment air flow path ≥ 6 inches in diameter (which is captured as Footnote (a)).
TS Surveillance Requirement (SR) 3.3.8.4	Revise SR 3.3.8.4 to include a Note that exempts the Containment Pressure – Low (Function 1.a) from periodic Engineered Safety Features response time testing.
UFSAR Figure 7.2-1, Sheet 19	Revise to reflect the logic change to interlock the Low Containment Pressure signal with the manual initiation.
UFSAR Subsection 7.3.1.2.26	Revise to add description of the manual initiation interlock with two-out-of-four Low Containment Pressure logic and provide automatic reset of the manual initiation function.
UFSAR Table 7.3-1, Sheet 9	Revise Item 28.b - Containment Vacuum Relief, Manual initiation, to reflect a coincident interlock with the Low containment pressure condition.
UFSAR Subsection 9.4.7.1.1	Revise discussion to indicate that manual initiation can be actuated once the Low containment pressure signal is generated.

3. Technical Evaluation

AP1000 provides instrumentation and controls to sense accident situations and initiate engineered safety features (ESF). The protection and safety monitoring system (PMS) initiates ESF actuations when plant process parameters reach predetermined setpoints. Once the required logic combination is generated, the PMS equipment sends the signals to actuate appropriate ESF components.

The proposed changes interlock the containment vacuum relief valves manual initiation function with the Containment Pressure - Low signal and provide a reset of the manual containment vacuum relief signal in order for the containment isolation signal to automatically actuate containment isolation and prevent a radiological release without relying on the operator to reset this latch. Without this change, it is not guaranteed that the containment isolation protective function will go to completion. This logic change complies with IEEE 603 section 5.2 – Completion of Protective Action. With this interlock, manual safety system–level open actuation of the containment vacuum valves is prevented if containment pressure is above the Containment Pressure - Low setpoint on three or more of the four associated pressure sensors. In addition, the latching logic would be automatically reset upon containment pressure exceeding the Containment Pressure - Low setpoint on three-out-of-four of the associated pressure sensors to return the capability of the valves to close on a containment isolation signal without operator action. A manual reset also already exists within the logic.

The Containment Pressure – Low manual actuation interlock and automatic reset function is reflected in the proposed changes to TS Table 3.3.8-1, Engineered Safeguards Actuation System Instrumentation, as new Function 1.a. This Table is appropriate for listing certain actuation functions credited in the mitigation of analyzed accidents; thereby satisfying 10 CFR 50.36(c)(2)(ii). The corresponding Actions for inoperability of this Function, Condition P, are the same as for the containment vacuum relief actuation function on Containment Pressure – Low 2. Inoperability in either of these Functions is appropriately addressed by the same Actions.

All the TS Surveillance Requirements for TS 3.3.8 are applicable to the proposed Containment Pressure – Low manual actuation interlock and automatic reset function, with the exception of SR 3.3.8.4; i.e., verify ESF response time is within limit. A Note is proposed to modify this SR to state that the ESF response time testing does not apply to Function 1.a. The exception is appropriate because the Containment Pressure – Low signal provides an interlock function, and automatic reset, for the containment vacuum relief valves manual initiation function and does not directly actuate any ESF. As such, there is no response time required to meet the safety analyses.

The proposed UFSAR changes, to add the Containment Pressure – Low manual actuation interlock and automatic reset function for the manual initiation logic for the containment vacuum relief valves, and involved proposed TS requirements, do not adversely affect any function or feature used for the prevention and mitigation of accidents or their safety analyses. No safety-related structure, system, component (SSC) or function is adversely involved. The proposed

changes do not adversely 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. 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 because the containment isolation function is maintained without operator action for the instance where the containment vacuum relief valves have been manually opened.

The change to the design as described in the proposed UFSAR changes, to add the Containment Pressure – Low manual actuation interlock and automatic reset function to the containment vacuum relief valves manual initiation logic, and involved proposed TS requirements, do not adversely interface with, or adversely affect, safety-related equipment or a fission product barrier. Containment integrity and the capability to isolate containment are not affected by this change. 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 change to the design as described in the proposed UFSAR changes to add the Containment Pressure – Low manual actuation interlock and automatic reset function for the manual initiation logic for the containment vacuum relief valves, and involved proposed TS requirements, do not adversely interface with, or adversely affect, safety-related equipment or a radioactive material barrier. The proposed changes do not adversely affect any safety-related equipment, design code limit allowable value, safety-related function or design analysis, nor do they adversely affect any safety analysis input or result, or design/safety margin.

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.

Summary

The proposed changes revise the UFSAR to add the Containment Pressure – Low automatic reset function for the manual initiation for the containment vacuum relief valves, and include the associated ESF function in TS.

The above proposed changes would not adversely affect any safety-related equipment or function, design function, radioactive material barrier or safety analysis.

4. REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 52, Appendix D, Section VIII, paragraph 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 change to the plant-specific Technical Specifications, and thus requires NRC approval for the Technical Specifications change and involved Tier 2 departures.

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, changes to Technical Specifications Surveillance Requirement 3.3.8.4 and Table 3.3.8-1 are requested, and thus a license amendment request (LAR) (as supplied herein) is required.

10 CFR 50, Appendix A, *Criterion 20—Protection system functions*. The protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety. The proposed revision to the containment vacuum relief valves manual initiation logic will ensure that the valves will close on a containment isolation signal without operator action.

10 CFR 50, Appendix A, *Criterion 54—Piping Systems Penetrating Containment*. Piping systems penetrating primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. The proposed revision to the containment vacuum relief valves manual initiation logic will ensure the isolation capabilities of the containment are appropriately maintained.

4.2 Precedent

No precedent is identified.

4.3 Significant Hazards Consideration Determination

The proposed changes revise plant-specific Updated Final Safety Analysis Report (UFSAR) Tier 2 information, which involve changes to the Combined Licenses (COLs), Appendix A, plant-specific Technical Specifications (TS). The proposed changes revise the UFSAR to include the Containment Pressure – Low manual actuation interlock and automatic reset function for the containment vacuum relief valve manual initiation logic to eliminate the necessity for operator action to reset the actuation signal after initiating the manual function. The Containment Pressure – Low manual actuation interlock and automatic reset function is also proposed to be included in TS LCO 3.3.8, Engineered Safety Feature Actuation System (ESFAS) Instrumentation.

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 to the UFSAR and TS will include the Containment Pressure – Low automatic reset function for the containment vacuum relief valves manual initiation logic, such that the containment vacuum relief manual actuation will be automatically reset when the containment pressure rises above the Containment Pressure - Low setpoint. This reset allows a containment isolation signal to close the valves when necessary. The Containment Pressure – Low signal is an interlock for the containment vacuum relief manual actuation such that the valves cannot be opened unless the Containment Pressure - Low setpoint has been reached in any two-out-of-four divisions. The modified logic will ensure that the automatic initiation of containment isolation is made available following manual initiation of containment vacuum relief actuation. The analyzed design and function of the Engineered Safety Features Actuation System and its actuated components is not affected. The proposed changes do not adversely affect any safety-related equipment and does not involve any accident, initiating event, or component failure, thus the probabilities of accidents previously evaluated are not affected. The proposed changes do not adversely interface with or adversely affect any system containing radioactivity or affect any radiological material release source term; thus the radiological releases in an accident 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 changes to the UFSAR and TS to include the Containment Pressure – Low manual actuation interlock and automatic reset function for the containment vacuum relief valves manual initiation logic will maintain the Engineered Safety Features Actuation System and Plant Safety and Monitoring System in accordance with the design objectives as licensed. The design of the Class 1E Containment Pressure – Low manual actuation interlock and automatic reset function is required to meet the licensing basis for the Engineered Safety Features Actuation System and Plant Safety and Monitoring System. The changes to the manual initiation logic do not adversely affect the function of any safety-related structure, system, or component, and thus does not introduce a new failure mode. The changes to the containment vacuum relief valves manual initiation logic do not adversely interface with any safety-related equipment or any equipment associated with radioactive material and, thus, do not create a new fault or sequence of events that could result in a new or different kind of accident.

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 changes to the UFSAR and TS to include the Containment Pressure – Low automatic reset function for the containment vacuum relief valves manual initiation logic will maintain the Engineered Safety Features Actuation System and Plant Safety and Monitoring System in accordance with the design objectives as licensed. The changes to the manual initiation logic do not adversely interface with any safety-related equipment or adversely affect any safety-related function. The changes to the containment vacuum relief manual initiation logic continue to comply with existing design codes and regulatory criteria, and do not involve a significant reduction in the margin of safety.

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 Technical Specifications incorporated as Appendix A to the Combined License (COL) related to a change to the containment vacuum relief valves manual initiation reset logic and manual actuation interlock.

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. However, facility construction and operation following implementation of the proposed amendment 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. Accordingly, the proposed 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 modify the UFSAR and TS to include the Containment Pressure – Low automatic reset function for the containment vacuum relief valves manual initiation logic. 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 modify the UFSAR and TS to include the Containment Pressure – Low automatic reset function for the containment vacuum relief valves manual initiation logic. 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 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 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

South Carolina Electric & Gas Co.

NND-17-0117

Enclosure 2

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

Proposed Changes to Licensing Basis Documents

(LAR 17-04)

Note:

Added text is shown as Underlined Blue
Deleted text is shown as ~~Red Strikethrough~~
Figure change is shown in red bubble

(Enclosure 2 consists of 6 pages, including this cover page.)

Technical Specification Page 3.3.8 – 5

<div>SR 3.3.8.4</div> <div> <div>- NOTE -</div> <div>Not applicable to Function 1.a.</div> </div> <div>Verify ESF RESPONSE TIME is within limit.</div>	<div>24 months on a STAGGERED TEST BASIS</div>
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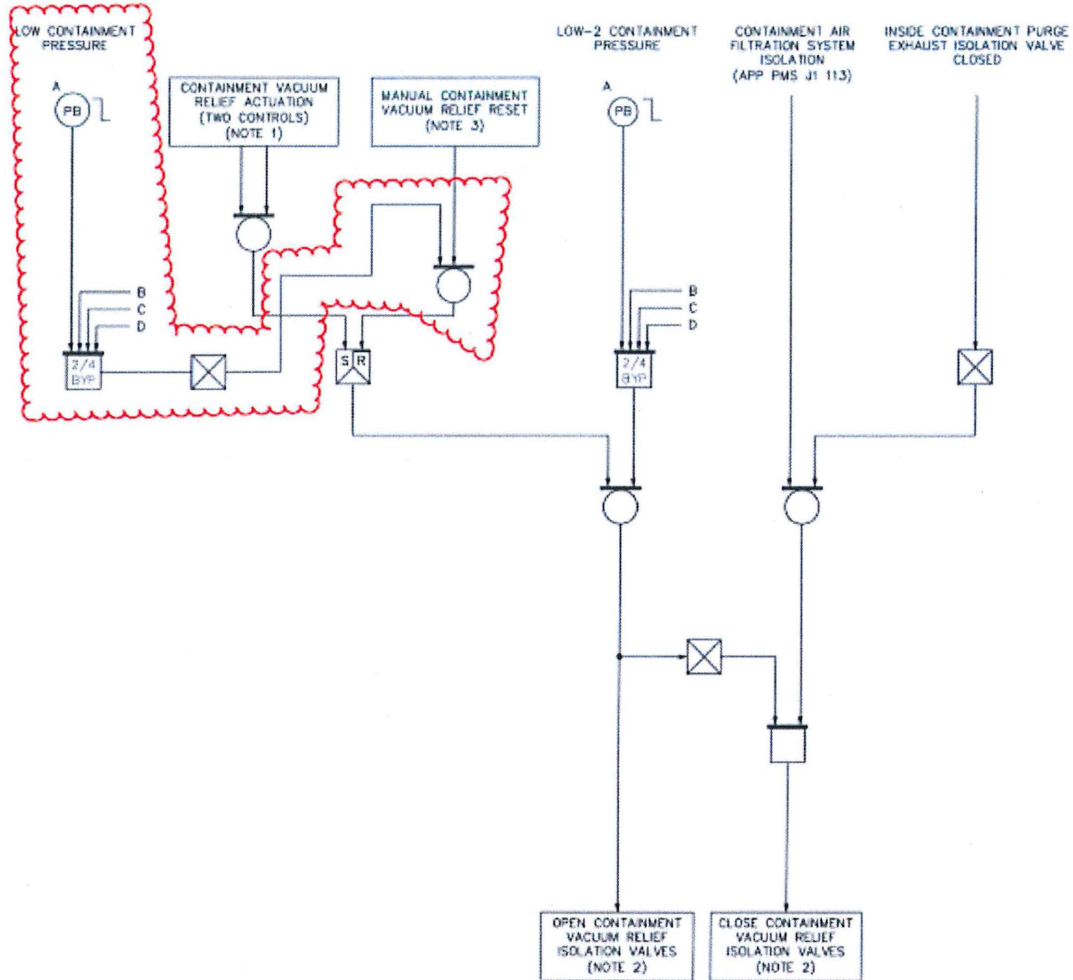
Technical Specification Page 3.3.8 – 6

Table 3.3.8-1 (page 1 of 2)
Engineered Safeguards Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS
<div>1. Containment Pressure</div> <div>a. – Low</div> <div>b. – Low 2</div>	<div>1,2,3,4,5^(a),6^(a)</div> <div>1,2,3,4,5^(a),6^(a)</div>	<div>4</div> <div>4</div>	<div>P</div> <div>P</div>

(a) Without an open containment air flow path ≥ 6-inches in diameter.

UFSAR Figure 7.2-1, Sheet 19 of 21



UFSAR Subsection 7.3.1.2.26, “Containment Vacuum Relief”

A signal for opening the containment vacuum relief valves is generated from the following conditions:

- Low-2 containment pressure
- Manual initiation [coincident with low containment pressure.](#)

Condition 1 results from the incidence of containment pressure reaching the Low-2 setpoint in any two of the four divisions.

Condition 2 consists of two momentary controls. Manual actuation of either of the two controls will result in opening of the containment vacuum relief valves. [Manual containment vacuum relief valve actuation for Condition 2 is interlocked to prevent actuation until the Containment Pressure Low setpoint is reached in any two of the four divisions. After manual containment vacuum relief is initiated, the signal is automatically reset when containment pressure rises above the Low setpoint. Following signal reset, the valves will remain open until closed by a manual or automatic actuation signal.](#)

Either signal will actuate two motor-operated containment isolation valves to break the containment vacuum.

The functional logic relating to containment vacuum relief is illustrated in Figure 7.2-1, Sheet 19.

UFSAR Table 7.3-1, Sheet 9

**Table 7.3-1 (Sheet 9 of 9)
 Engineered Safety Features Actuation Signals**

Actuation Signal	No. of Divisions/ Controls	Actuation Logic	Permissives and Interlocks
27. Containment Vacuum Relief (Figure 7.2-1, Sheet 19)			
a. Low-2 containment pressure	4	2/4-BYP ¹	None
b. Manual initiation <u>coincident with the following condition:</u>	2 controls	1/2 controls	None
<u>Low containment pressure</u>	<u>4</u>	<u>2/4-BYP¹</u>	<u>None</u>

UFSAR Subsection 9.4.7.1.1, “Safety Design Basis”

The containment air filtration system provides the safety-related functions of containment isolation and containment vacuum relief. System equipment and ductwork whose failure could affect the operability of safety-related systems or components are designed to seismic Category II requirements. The remaining portion of the system is non-seismic. The containment isolation function is described in Subsection 6.2.3. The containment vacuum relief function automatically adjusts the internal containment pressure as it approaches the analyzed design parameters described in Subsection 6.2.1.1.4. This adjustment in the pressure across the containment shell preserves the structural integrity of the shell by maintaining the differential pressure within the allowable limits as defined by the structural analysis described in Subsection 3.8.2. The vacuum relief function is actuated on the Low-2 containment pressure signal and manually [once the low containment pressure signal is generated](#).

South Carolina Electric & Gas Co.

NND-17-0117

Enclosure 3

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

Conforming Technical Specification Bases Changes

(For Information Only)

(LAR 17-04)

Note:

Added text is shown as Underlined Blue Text

Deleted text is shown as ~~Red Strikethrough~~

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

Technical Specification Bases, ESFAS Instrumentation B 3.3.8

BASES

APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY (continued)

* * *

Containment Vacuum Relief Valve Actuation

The purpose of the vacuum relief lines is to protect the containment vessel against damage due to a negative pressure (i.e., a lower pressure inside than outside). Containment Vacuum Relief Valve Actuation is actuated by the following signals

- Containment Pressure – Low 2; and
- Containment Vacuum Relief Valve Actuation – Manual Initiation [coincident with Containment Pressure – Low.](#)

* * *

Technical Specification Bases, ESFAS Instrumentation B 3.3.8

BASES

APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY (continued)

* * *

1.a. Containment Pressure - Low

[The Containment Pressure - Low provides an interlock to block opening of the Containment Vacuum Relief Valves above the Low setpoint to prevent inadvertent opening of these valves. The Containment Pressure - Low also provides an automatic reset of the Containment Vacuum Relief manual initiation function to ensure the Containment Vacuum Relief Valves are allowed to close when Containment Vacuum Relief function is no longer needed.](#)

[The OPERABILITY of the Containment Pressure - Low function is necessary for the manual actuation function for the Containment Vacuum Relief Valves. The Containment Pressure - Low actuation must be OPERABLE in MODES 1, 2, 3, and 4 and in MODES 5 and 6 when there is no open containment air flow path \$\geq\$ 6 inches in diameter. With a 6 inch diameter or equivalent containment air flow path, the vacuum relief function that the Containment Pressure – Low signal supports is not needed to prevent inadvertent opening of these valves.](#)

Technical Specification Bases, ESFAS Instrumentation B 3.3.8

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.4

* * *

The 24 month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrence.

The Surveillance Requirement is modified by a Note: Not applicable to Function 1.a for Containment Pressure - Low. The exception is appropriate because the Containment Pressure - Low signal provides an interlock function for the containment vacuum relief valves manual initiation function and does not directly actuate any ESF.

Technical Specification Bases, ESFAS Manual Initiation B 3.3.9

BASES

APPLICABLE SAFETY ANALYSES, LCOs, and APPLICABILITY (continued)

* * *

15. Containment Vacuum Relief Valve Actuation – Manual Initiation

* * *

The operator can open the vacuum relief valves ~~at any time~~ from the main control room by actuating either of the two vacuum relief actuation switches. There are two switches in the main control room, either of which will actuate vacuum relief in all divisions. Manual Containment Vacuum Relief Actuation is interlocked to prevent actuation until the Containment Pressure – Low setpoint is reached. After the operator initiates Manual Containment Vacuum Relief Actuation, the actuation signal is automatically reset when containment pressure rises above the Low setpoint due to the interlock condition no longer being satisfied. Following actuation signal reset, the valves will remain open until closed by a different manual or automatic signal.