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December 4, 2014 NND-14-0525 10 CFR 50.90

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

Subject: VCSNS Units 2 & 3 LAR 13-22: Request for License Amendment and Exemption: Annex Building Structure and Layout Changes

References: 1.ND-14-1414 Southern Nuclear Operating Company Vogtle Electric Generating Plant Units 3 and 4 Revised Request for License Amendment and Exemption: Annex Building Structure and Layout Changes (LAR-13-038R) Dated September 23, 2014 (Accession Number ML14266A656)

In accordance with 10 CFR 50.90, South Carolina Electric & Gas Company (SCE&G), the Licensee for Virgil C. Summer Nuclear Station Units 2 & 3, requests an amendment to Combined License (COL) Numbers NPF-93 and NPF-94, for VCSNS Units 2 & 3, respectively. The requested amendment, LAR 13-22, proposes changes to the structure and layout of various areas of the annex building. LAR 13-22 requires changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the incorporated plant-specific Design Control Document Tier 2 information, and involves changes to related plant-specific Tier 2\* and Tier 1 information, with corresponding changes to the associated COL Appendix C information. Pursuant to the provisions of 10 CFR 52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is also requested for the plant-specific DCD Tier 1 material departures.

The description, technical evaluation, regulatory evaluation (including the No Significant Hazards Consideration determination), and environmental considerations for the proposed changes in this license amendment request are contained in Enclosure 1. Enclosure 2 provides the exemption request for proposed changes to plant specific Tier 1 material. Enclosure 3 provides the publicly available licensing basis markups depicting the requested changes for the VCSNS Units 2 & 3 Updated Final Safety Analysis Report. Enclosure 4 provides the licensing basis markups depicting the requested changes to figures containing security related information which SCE&G requests to be withheld from the public pursuant to 10 CFR 2.390(d). SCE&G's license amendment request, which proposes changes to the layout and structure of the annex building, is identical in technical content to that of the revised license amendment

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request submitted to the NRC by Southern Nuclear Operating Company in Reference 1 with the exception of the site specific security evaluation found in section 3 of Enclosure 1 of this letter.

SCE&G requests staff approval of this license amendment by April 20, 2015 to support construction activities associated with the annex building. SCE&G expects to implement the proposed amendment (through incorporation into the licensing basis documents) within 30 days of approval of the requested changes.

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

Should you have any questions about this letter, please contact April R. Rice, Manager, Nuclear Licensing, by telephone at (803) 941-9858, or by email at arice@scana.com.

This letter contains no regulatory commitments.

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

Executed on this 4 day of December , 2014. Sincerely Ronald A. Jones Vide President New Nuclear Operations

DK/RAJ/dk

- Enclosure 1: Virgil C. Summer Nuclear Station Units 2 & 3 License Amendment Request: Annex Building Structure and Layout Changes (LAR 13-22)
- Enclosure 2: Virgil C. Summer Nuclear Station Units 2 & 3 Exemption Request Regarding Annex Building Structure and Layout Changes (LAR 13-22)
- Enclosure 3: Virgil C. Summer Nuclear Station Units 2 & 3 Proposed Changes to Licensing Basis Documents: Annex Building Structure and Layout Changes (LAR 13-22)

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Enclosure 4: Virgil C. Summer Nuclear Station Units 2 & 3 – Proposed Changes to Licensing Basis Documents: Annex Building Structure and Layout Changes Security Related Information; Withhold Under 10 CFR 2.390(d) (LAR 13-22)

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# South Carolina Electric & Gas Company

Virgil C. Summer Nuclear Station Units 2 & 3

NND-14-0525

**Enclosure 1** 

**License Amendment Request:** 

Annex Building Structure and

Layout Changes

(LAR 13-22)

(This enclosure contains 24 pages, including this cover sheet)

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Pursuant to 10 CFR 50.90, South Carolina Electric & Gas Company (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) by (a) installing an additional nonsafety-related battery, (b) revising the annex building internal configuration by converting a shift turnover room to a battery room, adding an additional battery equipment room, and moving a fire area wall, (c) increasing the height of a room, and (d) increasing certain floor thicknesses. The proposed changes include reconfiguring existing rooms and related room, wall, and access path changes.

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

# 2. Detailed Description

# Background:

A nonsafety-related battery power supply is to be added to provide power to loads that require an uninterruptable power supply (UPS) and located in a battery room on Annex Building El. 117'-6". The addition of the new nonsafety-related battery and the battery room change on Annex Building El. 117'-6" require changes to UFSAR (Tier 2) text, tables, and figures. In addition, the new battery room is not large enough to accommodate the battery and the battery's associated equipment (e.g., chargers, inverters, etc.), thus a new (nonsafety-related) battery (i.e., direct current [DC]) equipment room is needed. As a result, the layout in annex building El. 100'-0" is to be modified to house this new battery equipment room.

Separate from the changes to support the addition of a new battery, a number of annex building floors require changes to their specified thickness. These annex building concrete floors are shown in UFSAR figures and identified in plant-specific Tier 1 Table 3.3-1 to be 6" thick for radiation shielding purposes. However, their structural design analyses have been and are based on 8" thick floor slabs, to adequately support the applied loads to those floors and to provide enough depth for anchorage of embed plates and anchor bolts. Therefore, there are inconsistencies between the licensing basis and the structural design analyses.

The ceiling of the annex building Containment Filtration Room A (Room 40551) needs to be raised by 4 feet to accommodate the as-designed size of equipment and provide adequate space for access and maintenance. This change results in the floor elevation of Containment Filtration Room B (Room 40552) increasing from El. 146'-3" to 150'-3".

## Annex Building El. 100'-0" Battery Equipment Room Related Changes:

The proposed changes would revise a portion of the annex building layout on El. 100'-0". A new battery equipment room (40315) is proposed for annex building El. 100'-0" to house the battery equipment.

By expanding Room 40305 to the north, west, and slightly to the south, Room 40305 would be large enough to support dividing it into two rooms, to provide the new battery equipment room (Room 40315) and still provide enough space for its initially intended purpose as a security ready room. No safety-related structure, system, component, analysis, or function is involved, and no safe shutdown function is affected. Although this change involves the relocation of the fire zone boundary rated fire barrier that encompasses the Room 40305, Room 40315 and related room changes, it does not change a performance requirement for any fire boundary barrier.

Room 40315 is to be placed in approximately the same building location as existing Room 40305, and Room 40315 to be in the same fire zone (4031 AF 40300) as Room 40305. The addition of Room 40315 requires the restroom (40304) to be moved, to allow space for Room 40305 to be reconfigured and relocated in the same general area. These changes are confined within Fire Area 4031 AF 05, and there is no fire area boundary (e.g., wall, location change, total area) change or fire area boundary fire barrier (i.e., the 2-hour designed fire rating) performance change.

#### Annex Building El. 100'-0" Fire Area Wall Change:

The north-south portion of annex building Access Corridor 40301 is 12 feet wide. The eastwest portion of Access Corridor 40301, at the entry from the annex building, is approximately 10 feet wide and is adequate for equipment and personnel movements, thus the north-south portion of Access Corridor 40301 is larger than needed. A more effective use of the floor area would be achieved by providing a uniform approximately 10-foot wide corridor, by relocating the north-south oriented wall between corridor 40301 / room 40306 and rooms 40300 / 40302 approximately two feet to the west. This change would reduce the north-south portion of Access Corridor 40301 width to approximately 10 feet, thereby increasing the sizes of Rooms 40300 and 40302 and decreasing the size of Room 40306. The wall to be relocated is a non-structural wall, has a 2-hour fire rating, and forms part of the boundary between Fire Areas 4031 AF 05 and 4031 AF 06. The fire rating of the wall is maintained.

Relocating the north-south corridor wall changes the floor areas of Fire Areas 4031 AF 05 and 4031 AF 06, which includes Rooms 40300, 40302 and 40306. The floor area changes affect the fire loads analysis, thus a change is proposed to update that portion of the fire loads analysis.

## Annex Building El. 117'-6" Battery Room Related Changes:

The proposed changes would revise a portion of the annex building layout on El. 117'-6". Room 40412 (currently a shift turnover room) is to be converted to a battery room to house the new battery. Room 40412 requires changes (e.g., ventilation, doors and walls) in order to be used as a battery room. The (currently non-fire rated) Room 40412 floor is to be changed to a 2-hour fire rated barrier, the (currently non-fire rated) partition wall between the new battery room and Computer Room B (Room 40411) is to be changed to a 2-hour fire rated wall. Room 40412 is to be designated as (new) fire zone 4031 AF 40412 (within Fire Area 4031 AF 02), the north wall is to have no door, and the west door swing direction is to be changed to open outward from the room (i.e., in the direction of egress) into Corridor 40400. Although this proposed change includes fire zone changes, the dimensions and fire barrier rating of related fire area (Fire Area 4031 AF 02) are not affected.

Due to potential hydrogen gas accumulations, battery rooms are serviced by separate dedicated ventilation subsystems. The heating, ventilation and air conditioning (HVAC) system servicing Room 40412 is to be changed from the Nuclear Island Nonradioactive Ventilation System (VBS) to the Annex/Auxiliary Building Nonradioactive Ventilation System (VXS). Because each battery room should be equipped with a HVAC exhaust fan, a battery room exhaust fan is added to the VXS, to service new Battery Room 40412. The additional fan maintains the functional capability of the VXS, thus the VXS is not adversely affected.

With the conversion of Room 40412 to a battery room, the portion of the building volume that is serviced by the VBS decreases from 105,500 ft<sup>3</sup> to 100,700 ft<sup>3</sup> (i.e., 4,800 ft<sup>3</sup>). This approximate five percent decrease in volume that the VBS has to service, does not adversely affect the performance of the VBS.

## Annex Building Floor Thickness Increases:

In the detailed structural design analyses, the El. 117'-6" and part of the El. 135'-3" floor slabs are 8" thick, however, Tier 1 Table 3.3-1 and some UFSAR (Tier 2) figures show a 6" thickness value, which is the minimum thickness needed for shielding. This discrepancy was identified during a previous effort to compare the construction requirements to the licensing basis (referred to as "C2LB"). To be consistent with the detailed structural design analyses, in Tier 1 and the UFSAR, the El. 117'-6" floor slab thickness between Column Lines 9 and 13 and Column Lines E and I.1, El. 135'-3" floor slab thickness between Column Lines 2 and 4 and Column Lines E and H, and Containment Filtration Room B (Room 40552) floor slab thickness are be increased from 6" to 8".

## Annex Building Containment Filtration Room A Height Increase:

The ceiling height of Containment Filtration Room A (Room 40551) is to be raised by 4 feet, thereby raising the Containment Filtration Room B (Room 40552) floor elevation from El. 146'-3" to 150'-3".

## Plant-Specific Tier 1 Editorial Changes:

The following editorial changes are proposed to plant-specific Tier 1 Table 3.3-1 to more accurately reflect the annex building structure and layout.

- In Table 3.3-1 the entries for "Containment Filtration Rm A (North Wall)" and "Containment Filtration Rm A (East Wall)" each indicate an elevation from El. 135'-3" to 158'-0". However, Room A is directly below Room B, so the north and east walls actually serve both rooms by extending from the Room A floor elevation (El. 135'-3") to the Room B ceiling elevation (El. 158'-0"). Therefore, a change is proposed to the "Wall or Section Description" for both walls to refer to them as "Containment Filtration Rms A and B" walls.
- In the first Table 3.3-1 annex building "Floor" row for El. 135'-3", the Column Line entry is inconsistent with other similar row entries and is potentially confusing. The "shield wall between E and F to Column Line H" is actually a single wall that runs from Column Line E to Column Line H. Therefore, for clarity and to be consistent with the other floor entries, a change is proposed to simplify this floor description by identifying it as "From 2 to 4 and E to H".

#### Licensing Basis Change Descriptions

This section describes the licensing basis changes associated with each of the change activities described above.

The addition of the battery necessitates a change to the UFSAR Table 8.3.1-3, Item 4, Load Center 71 transformer rating from 1000 kVA to 1500 kVA due to the increased load from the battery charger. (The new nonsafety-related battery does not directly affect any other UFSAR information.)

Changing the annex building EI. 117'-6" "Shift Turnover Room" to a "Battery Room" requires the following proposed UFSAR changes:

- Layout changes described in the above Detailed Description of the Annex Building El. 117'-6" Battery Room Related Changes, require corresponding layout changes in UFSAR (SUNSI) Figures 1.2-19, 12.3-1 (Sh 12), 12.3-2 (Sh 12) and 12.3-3 (Sh 12);
- Deleting the reference to "Shift Turnover Room" in UFSAR subsection 9.4.1.2.1.1, first paragraph;
- Changing the number of battery room exhaust fans from "two" to "three" in UFSAR subsection 9.4.2.2.1.3, first paragraph, last sentence;
- Changing UFSAR subsection 9.4.2.2.1.3, 4th paragraph, 1st sentence to read "Each non-Class 1E battery room and the additional battery room in the annex building are provided with an individual exhaust system to prevent the buildup of hydrogen gas in the room;"
- Changing UFSAR Table 9.4.2-2 to include the new battery room exhaust fan that is to service annex building Room 40412, and to specify that the existing battery room exhaust fans are for Rooms 40307 and 40309;
- Deleting "Shift Turnover Room" from UFSAR Figure 9.4.1-1 (Sh 5);

- Adding (new) exhaust fan (MA-20) to service the new battery room (annex building Room 40412) to UFSAR Figure 9.4.2-1 (Sh 3), and making an editorial change to revise "M-S02A/B" to read "MS-02A/B";
- Changing UFSAR subsection 9A.3.4.8 as follows
  - The first sentence is changed to read "This annex building fire area contains one train of the non-Class 1E batteries, one additional battery bank and battery charging equipment,"
  - The fire zone number for the Computer Room B (Room 40411) is corrected from 4041 AF 40411 to 4031 AF 40411 (editorial change),
  - New Fire Zone number "4031 AF 40412" is created for Room 40412, and the Room 40412 name is changed from "Shift Turnover Room" to "Battery Room,"
  - "4031 AF 40412" is added to the listing of fire zones in the "Smoke Control Features" paragraph, and "4041 AF 40411" is corrected to "4031 AF 40411" (editorial change), and
  - In the "Fire Protection Adequacy Evaluation," the 1st sentence of the 2nd paragraph has "batteries and" inserted before "electrical cable,"
- Updating UFSAR Table 9A-3 to add new fire zone "4031 AF 40412" for the new "BATTERY ROOM" (40412) in Fire Area 4031 AF 02, including floor area, (types of) combustible materials, fire service categories, amounts of combustible materials, heat values, combustible load and duration;
- Updating UFSAR Table 9A-3 the Fire Area 4031 AF 02 totals for floor area, heat value, combustible load and duration, to account for adding Fire Zone 4031 AF 40412 to the fire area;
- Changing UFSAR (SUNSI) Figure 9A-3 (Sh 2) as follows:
  - The Room 40412 west door swing direction is changed to open outward from the room, and the north door is removed.
  - The Room 40412 name is changed from "Shift Turnover Room" to "Battery Room."
  - The partition between the new Battery Room (Room 40412) and Computer Room B (Room 40411) is replaced with a two-hour rated fire wall. The Room 40412 floor, which is not a fire area boundary, is changed to have a two-hour fire rating. The Battery Room becomes new fire zone 4031 AF 40412, and remains within Fire Area 4031 AF 02. The Fire Area 4031 AF 02 boundary and its fire area barrier rating are not affected.
- Changing the UFSAR Table 15.6.5-2 HVAC volume from 105,500 ft<sup>3</sup> to 100,700 ft<sup>3</sup>, due to removing room 40412 from the Control Support Area (CSA).

The addition of Room 40315 and reconfiguration of annex building El. 100'-0" Rooms 40301, 40304, and 40305 result in proposed changes to the building layout as depicted in UFSAR Figures 1.2-201, 3.7.2-19 (Sh 1 and 7), 9A-201, 12.3-201, 12.3-202, and 12.3-203. In addition, a change is proposed to add a new fire zone to UFSAR Subsection 9A.3.4.9 and to update the fire loads in Table 9A-3 to account for the addition of Room 40315. Note: consistent with the terminology used to identify other rooms in the security area, the new battery equipment room (Room 40315) is simply identified as a "security room" in the UFSAR.

The proposed UFSAR figure changes also involve corresponding changes to Tier 1 Figure 3.3-11A, Annex Building Plan View at Elevation 100'-0". The physical arrangement of the annex building is referred to in Tier 1 Section 3.3, Table 3.3-1, and Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Table 3.3-6. However, this design change does not require a change to either of those Tier 1 tables.

In UFSAR Figure 9A-201, [*Annex I & II Building Fire Areas Plan at Elevation 100'-0" & 107'-2"*]\*, a change is proposed to move the common (north-south oriented) wall between annex building Corridor 40301 and Rooms 40300 and 40302 two feet to the west. Because this wall is part of the boundary between Fire Areas 4031 AF 05 and 4031 AF 06, this change constitutes a Tier 2\* information change.

Consistent with the change to Tier 2\* information in Figure 9A-201, a change is proposed to move the common north-south oriented wall between Corridor 40301 and Rooms 40300 and 40302 two feet to the west in UFSAR Figures 1.2-201, 3.7.2-19 (Sh 1), 3.7.2-19 (Sh 7), 12.3-201, 12.3-202 and 12.3-203.

In UFSAR Table 9A-3, changes are proposed to the Fire Area 4031 AF 05 combustible loads, floor areas, equivalent durations and totals.

In UFSAR Table 9A-3, changes are proposed to the Fire Area 4031 AF 06 the total floor area, combustible load and equivalent duration.

The El. 135'-3" floor thickness increase necessitates changes to UFSAR Figures 3.7.2-19 (Sh 7), 3.7.2-19 (Sh 8), and 3.7.2-19 (Sh 9, Section D-D). (Note: Changing the floor thickness to 8" at El. 135'-3" in UFSAR Figure 3.7.2-19 (Sh 8) between Column Lines 2 and 4 and Rows E and H resolves an existing UFSAR inconsistency. The current figure shows a floor slab thickness of 1'-0". This thickness value is not consistent with the same floor's thickness currently indicated in UFSAR Figure 3.7.2-19 (Sh 9, Section D-D) and the structural design analysis, both of which use an 8" thickness.) The resulting plant-specific Tier 1 change is:

To maintain consistency with the annex building design and UFSAR Figures 3.7.2-19 (Sh 7), 3.7.2-19 (Sh 8), and 3.7.2-19 (Sh 9, Section D-D), a change is proposed to revise the Concrete Thickness in the first Table 3.3-1 annex building "Floor" row from 0'-6" to 0'-8".

To enhance the accuracy of Tier 1 Table 3.3-1, a change is proposed to modify an existing line item and add a new line item pertaining to the annex building corridor wall between Column Lines G and H. The table identifies the annex building corridor wall between G and H, as going from Column Line 9 to Column Line 13 between elevations 100'-0" and 135'-3". However, UFSAR Figure 3.7.2-19 (Sh 1) (before and after the changes described

in this LAR) shows that the wall does not completely extend to Column Line 13 between elevations 100'-0" and 117'-6". UFSAR Figure 3.7.2-19 (Sh 2) shows that the wall completely extends to Column Line 13 between elevations 117'-6" and 135'-3". A change is proposed to revise the current line item to indicate that this wall runs from Column Line 9 to "near" Column Line 13, and to change the upper value of the elevation range from 135'-3" to 117'-6". A second change is proposed to add a new Table 3.3-1 line item to indicate that the annex building corridor wall between G and H runs from Column Line 9 to Column Line 13 between elevations 117'-6" and 135'-3". These two changes align the configurations shown in Tier 1 with the configurations depicted in UFSAR Figure 3.7.2-19 and are not the result of a design change.

The proposed change to the El. 117'-6" floor slab thickness affects UFSAR Figures 3.7.2-19 (Sh 7) and 3.7.2-19 (Sh 10, Section H-H). The resulting plant-specific Tier 1 change is:

• To maintain consistency with the annex building design and UFSAR Figures 3.7.2-19 (Sh 7) and 3.7.2-19 (Sh 10, Section H-H), it is proposed that the "Concrete Thickness" in the third annex building "Floor" row in Tier 1 Table 3.3-1 be changed from 0'-6" to 0'-8".

The Containment Filtration Room B (Room 40552) floor slab thickness change, the 8" floor thickness is to be indicated on UFSAR Figure 3.7.2-19 (Sh 7). The resulting plant-specific Tier 1 change is:

• To maintain consistency with the annex building design and revised UFSAR Figure 3.7.2-19 (Sh 7), it is proposed that in the Tier 1 Table 3.3-1, annex building "Containment Filtration Rm B (Floor)" row, the "Concrete Thickness" be changed from 0'-6" to 0'-8".

The proposed Containment Filtration Room A (Room 40551) ceiling height change affects UFSAR subsection 9.4.7.2.1 and UFSAR Figures 1.2-20, 3.7.2-19 (Sh 4), 3.7.2-19 (Sh 7), 9A-3 (Sh 3), 12.3-1 (Sh 13), 12.3-2 (Sh 13), and 12.3-3 (Sh 13). The resulting plant-specific Tier 1 changes are:

- To maintain consistency with the annex building design and UFSAR subsection 9.4.7.2.1 and UFSAR Figures 1.2-20, 3.7.2-19 (Sh 4), 3.7.2-19 (Sh 7), 9A-3 (Sh 3), 12.3-1 (Sh 13), 12.3-2 (Sh 13) and 12.3-3 (Sh 13), it is proposed that in Table 3.3-1, the "Floor Elevation" for the annex building "Containment Filtration Rm B (Floor)" row, be changed from El. 146'-3" to 150'-3".
- In Tier 1 Table 3.3-1, it is proposed that the upper value of the "Elevation Range" for the annex building "Containment Filtration Rm A (West wall)" be changed from El. 158'-0" to 150'-3". (Note: the current 158'-0" value is an existing inconsistency between the design figures in the UFSAR and the values presented in Tier 1 Table 3.3-1. A change is proposed to identify the upper value for the Room A west wall "Elevation Range" as 150'-3", which is consistent with the proposed change to the Room B floor from El. 146'-3" to 150'-3".)
- In Tier 1 Table 3.3-1, it is proposed that the lower value for the annex building "Elevation Range" for the "Containment Filtration Rm B (West wall)" be changed from El. 146'-3" to 150'-3".

The proposed Tier 1 Table 3.3-1 changes to refer to the "Containment Filtration Rm A (North Wall)" and "Containment Filtration Rm A (East Wall)" as "Containment Filtration Rms A and B (North Wall)" and "Containment Filtration Rms A and B (East Wall)" are editorial (i.e., non-technical) changes for clarity and consistency. No design change is involved.

The proposed change to clarify the column lines for the first annex building "Floor" row in Tier 1 Table 3.3-1 as "From 2 to 4 and E to H" is an editorial change for clarity and to be consistent with other similar row entries. No design change is involved.

Table 2-1, below, lists the changes to the licensing basis text, tables, and figures sought with regard to the following proposed change descriptions, and organizes the changes to identify the Tier 2 changes with their associated Tier 1 and/or Tier 2\* changes.

Note: Figures identified below as Sensitive Unclassified Non-Safeguards Information (SUNSI) contain security-related information and are withheld from public disclosure in accordance with 10 CFR 2.390(d).

		Plant Specific Licensing Basis Change				
	Description of Proposed Change	UFSAR Tier 2	UFSAR Tier 2*	COL Appendix C (and Tier 1)		
1	Annex Building El. 100'-0" and 117'-6" layout changes					
	a. Add new nonsafety-related battery	<ul><li>Table 8.3.1-3</li><li>Subsection 9A.3.4.8</li></ul>		Involves Tier 1 Fig. 3.3-11A (SUNSI) changes for Item 1.c.		
	b. Change Room 40412 from a "Shift Turnover Room" to a "Battery Room."	<ul> <li>Fig. 1.2-19 (SUNSI)</li> <li>Subsection 9.4.1.2.1.1</li> <li>Subsection 9.4.2.2.1.3</li> <li>Table 9.4.2-2</li> <li>Fig. 9.4.1-1</li> <li>Fig. 9.4.2-1</li> <li>Subsection 9A.3.4.8</li> <li>Table 9A-3</li> <li>Fig. 9A-3 (Sh 2) (SUNSI)</li> <li>Fig. 12.3-1 (Sh 12) (SUNSI)</li> <li>Fig. 12.3-2 (Sh 12) (SUNSI)</li> <li>Fig. 12.3-3 (Sh 12) (SUNSI)</li> <li>Table 15.6.5-2</li> </ul>		Involves Tier 1 Fig. 3.3-11A (SUNSI) changes for Item 1.c.		
	c. Add a new battery equipment room (40315), and reconfigure rooms 40301, 40304, and 40305	<ul> <li>Fig. 1.2-201 (SUNSI)</li> <li>Fig. 3.7.2-19 (Sh 1) (SUNSI)</li> <li>Fig. 3.7.2-19 (Sh 7) (SUNSI)</li> <li>Subsection 9A.3.4.9</li> <li>Table 9A-3 (SUNSI)</li> <li>Fig. 9A-201 (SUNSI)</li> <li>Fig. 12.3-201 (SUNSI)</li> <li>Fig. 12.3-202 (SUNSI)</li> <li>Fig. 12.3-203 (SUNSI)</li> </ul>		Tier 1 Fig. 3.3-11A (SUNSI)		

# Table 2-1 Licensing Basis Changes

		Plant Specific Licensing Basis Change					
	Description of Proposed Change	UFSAR Tier 2	UFSAR Tier 2*	COL Appendix C (and Tier 1)			
	d. Fire area wall change between corridor 40301 and rooms 40300 and 40302.	<ul> <li>Fig. 1.2-201 (SUNSI)</li> <li>Fig. 3.7.2-19 (Sh 1) (SUNSI)</li> <li>Fig. 3.7.2-19 (Sh 7) (SUNSI)</li> <li>Table 9A-3</li> <li>Fig. 12.3-201 (SUNSI)</li> <li>Fig. 12.3-202 (SUNSI)</li> <li>Fig. 12.3-203 (SUNSI)</li> </ul>	Fig. 9A-201 (SUNSI)	Tier 1 Fig. 3.3-11A (SUNSI)			
	e. Fire loads analysis change	Table 9A-3	Involves Tier 2* Fig. 9A-201 changes for Item 1.d.	Involves Tier 1 Fig. 3.3-11A (SUNSI) changes for Item 1.c.			
2	Annex Building floor thickness increase from six inches to eight inches						
	a. El. 117'-6" floor slab thickness changes between Column Lines 9 and 13 and Column Lines E and I.1	<ul> <li>Fig. 3.7.2-19 (Sh 7)</li> <li>Fig. 3.7.2-19 (Sh 10, Sect. H-H) (SUNSI)</li> </ul>		Tier 1 Table 3.3-1			
	b. El. 135'-3" floor slab thickness changes between Column Lines 2 and 4 and Column Lines E and H.	<ul> <li>Fig. 3.7.2-19 (Sh 7) (SUNSI)</li> <li>Fig. 3.7.2-19 (Sh 8) (SUNSI)</li> <li>Fig. 3.7.2-19 (Sh 9, Sect. D-D and E-E) (SUNSI)</li> </ul>		Tier 1 Table 3.3-1			
	c. Containment Filtration Room B (Room 40552) floor slab thickness changes	• Fig. 3.7.2-19 (Sh 7) (SUNSI)		Tier 1 Table 3.3-1			
3	Annex Building Containment Filtration Room A height increase	<ul> <li>Fig. 1.2-20 (SUNSI)</li> <li>Fig. 3.7.2-19 (Sh 4) (SUNSI)</li> <li>Fig. 3.7.2-19 (Sh 7) (SUNSI)</li> <li>Subsection 9.4.7.2.1</li> <li>Fig. 9A-3 (Sh 3) (SUNSI)</li> <li>Fig. 12.3-1 (Sh 13) (SUNSI)</li> <li>Fig. 12.3-2 (Sh 13) (SUNSI)</li> <li>Fig. 12.3-3 (Sh 13) (SUNSI)</li> </ul>		Tier 1 Table 3.3-1			

# Table 2-1 Licensing Basis Changes

		Plant Specific Licensing Basis Change				
	Description of Proposed Change	UFSAR Tier 2	UFSAR Tier 2*	COL Appendix C (and Tier 1)		
4	Consistency Tier 1 changes					
	a. Annex Building corridor wall between G and H between elevations 100'-0" and 117'-6"			Tier 1 Table 3.3-1		
	<ul> <li>Annex Building corridor wall between G and H between elevations 117'-6" and 135'-3"</li> </ul>			Tier 1 Table 3.3-1		
5	Plant-Specific Tier 1 editorial changes to Table 3.3-1					
	<ul> <li>a. Entries for "Containment Filtration Rm A (North Wall)" and "Containment Filtration Rm A (East Wall)" from El. 135'-3" to 158'-0"</li> </ul>			Tier 1 Table 3.3-1		
	b. Entries for Annex Building "Floor" for El. 135-3"			Tier 1 Table 3.3-1		

# 3. Technical Evaluation

The nonsafety-related electric power supply, which is to include the new battery, is not described in the UFSAR. Compliance with separation requirements prevents any direct or indirect interconnection of the new battery to safety-related equipment. The specifics of the battery design, load analysis and load requirement are not within the scope of the UFSAR. The battery related design changes are not directly or indirectly related to a design function in the UFSAR. However, the new battery connects through Load Center 71. To maintain the equivalent available capacity (for existing loads), the Load Center 71 transformer rating is being increased from 1000 kVA to 1500 kVA. The Load Center 71 rating change does not adversely affect any design function described in the UFSAR.

The annex building is primarily a non-seismic structure, with a seismic Category II interface with the nuclear island. The new battery room is in the seismic Category II portion of the building. The latest annex building seismic-structural analysis confirms that the building with the battery room change is structurally acceptable. (The seismic analysis description in the UFSAR is not affected.) Therefore, adding the new battery room does not adversely affect the nuclear island, including the adjacent main control room (MCR).

With the conversion of Room 40412 to a battery room, the portion of the building volume that is serviced by the VBS decreases from 105,500 ft<sup>3</sup> to 100,700 ft<sup>3</sup> (i.e., 4,800 ft<sup>3</sup>). This approximate five percent decrease in volume that the VBS has to service, does not adversely affect the performance of the VBS. This reduced volume is factored into the post-accident main control room dose portion of the UFSAR Subsection 15.6.5 loss-of-coolant accident (LOCA) radiological analysis, as shown in Table 15.6.5-2. The reduction in MCR HVAC has been evaluated and is bounded by the current post-accident main control room dose analysis presented in Table 15.6.5-3. It is concluded that the change in MCR HVAC volume has no significant effect on the MCR dose analysis with either VES or VBS in operation.

The proposed conversion of Room 40412 to a battery room requires that the (currently nonfire rated) Room 40412 floor be changed to a 2-hour fire rated barrier, and the (currently non-fire rated) partition wall between the new battery room and Computer Room B (Room 40411) be changed to a 2-hour fire rated wall. Room 40412 is to be designated as (new) fire zone 4031 AF 40412, and remains within Fire Area 4031 AF 02. The dimensions and fire barrier rating of Fire Area 4031 AF 02 are not affected. The fire loads analysis in UFSAR Table 9A-3 is updated to include the changes resulting from the creation of fire zone 4031 AF 40412. The fire duration times remain within their 2-hour design value, thus fire load protection is not adversely affected.

The walls to be moved to make room for the new (annex building El. 100'-0") battery equipment room are not structural walls, thus the structural wall descriptions and analyses in the UFSAR are not affected by the proposed room layout changes.

The proposed wall relocation adjacent to Corridor 40301 decreases the size of Fire Area 4031 AF 05. Therefore, the UFSAR Table 9A-3 fire protection analysis for Fire Area 4031 AF 05 is updated for the decrease in floor area and the fire loads associated with the new battery equipment room. (Note: the revised square footage for Fire Areas 4031 AF 05 and 4031 AF 06 in UFSAR Table 9A-3 also reflect changes to the dimensions of these fire areas associated with previous access control area modifications that were incorporated into

the generic AP1000 DCD plant layout figures [general area, fire area figures, etc.] prior to certification of Revision 19. The changes to the floor areas in Table 9A-3 were not identified when the access control modifications were incorporated into DCD Revision 19, but are now reflected in the changes proposed by this LAR.) The updated Table 9A-3 fire protection analysis results show that the fire durations remain well within (i.e., less than 1 hour) the two-hour fire boundary rating.

The proposed wall relocation increases the size of the Fire Area 4031 AF 06. Therefore, the UFSAR Tier 2 Table 9A-3 fire loads analysis for Fire Area 4031 AF 06 is updated for the increase in floor area. The updated Table 9A-3 fire loads analysis results show that the fire durations remain well within (i.e., less than 1 hour) the two-hour fire boundary rating.

The proposed annex building floor slab thickness increases (a) at El. 117'-6" between Column Lines 9 and 13 and Column Lines E and I.1, (b) at El. 135'-3" between Column Lines 2 and 4 and Column Lines E and H, and (c) at El. 150'-3" in the Containment Filtration Room B (Room 40552), and wall relocations on El. 117'-6" are accounted for in the structural configuration model of the annex building that was updated in 2012 to analyze the structure for safe shutdown earthquake (SSE) and other design loads and load combinations. Therefore, the structural analysis is not adversely affected. This analysis used equivalent loads to bound the specific equipment loads (including the battery and battery support equipment) in the final design. The structural analysis description and results in the UFSAR are unchanged. As the proposed changes satisfy the design methods specified for seismic Category I structures, the proposed changes do not adversely affect the seismic Category II structural capability of this portion of the annex building. Because the floor slab thicknesses are increasing, their radiation shielding function is not adversely affected.

The proposed Containment Filtration Room A (Room 40551) ceiling height increase, and resulting Containment Filtration Room B (Room 40552) floor elevation increase, are accounted for in the structural configuration model of the annex building that was updated in 2012 to analyze the structure for SSE and other design loads and load combinations, thus the structural analysis is not affected. Fire Area 4052 AF 01 encompasses both Rooms 40551 and 40552. The volume of Room 40551 increases, and the volume of Room 40552 consequently decreases, but the floor areas of these rooms do not change and the total Fire Area 4052 AF 01 volume does not change. The fire loads analysis is based on combustible loads per square foot of floor area, which are not changed by the proposed room height changes. Therefore, the fire loads analysis is not affected. No radiation zone designation, shielding requirement, or radiological access control is affected. The floor elevation change is within the existing fire area, thus does not affect a fire area dimension, boundary, volume or function. Therefore, this proposed change does not constitute a Tier 2\* information change.

The annex building is not a seismic Category I building. Portions of the annex building are seismic Category II. The seismic Category II portions are designed so that a SSE could not cause unacceptable structural interaction or failure, and are analyzed using the same methods as specified for Seismic Category I structures. The UFSAR Section 3.7 seismic analyses, including UFSAR seismic interaction criteria for displacements, bound the structural changes resulting from the relocation of the (non-structural) west wall to annex building Rooms 40300 and 40302, the annex building floor slab increases, and the

modifications related to adding Room 40315. Therefore, the proposed changes do not adversely affect the seismic Category II structural capacity of the annex building.

The proposed annex building changes do not affect the UFSAR Section 3.8, Design of Category I Structures, descriptions and analyses, nor do they affect the building's key design features credited in UFSAR Appendix 19F, Malevolent Aircraft Impact.

The proposed annex building changes do not involve a feature used for the prevention or mitigation of accidents or their safety / design analyses. The proposed changes neither involve, nor interface with, any SSC accident initiator or initiating sequence of events. The proposed changes do not involve any safety-related SSC or function used to mitigate an accident.

The proposed changes do not involve or indirectly affect safety-related equipment. Because the updated fire loading analyses (covering the annex building El. 100'-0" and 117'-6" changes) demonstrate that the fire loads remain within their two-hour fire boundary rating, no nonsafety-related equipment that could be used to achieve safe shutdown in the event of a fire is affected. Therefore, the safe shutdown fire analysis is not affected.

The proposed annex building changes do not involve a change to a fission product barrier. The combustible material loads in the affected fire areas are not significantly changed, and the analyzed fire duration times remain within their 2-hour design value, thus no fire load analysis is adversely affected. The proposed changes do not result in a new failure mode, malfunction or sequence of events that could affect safety. 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.

The proposed annex building changes do not affect any safety-related equipment, design code limit, safety-related function, safety-related design analysis, safety analysis input or result, or design or safety margin. Therefore, no safety analysis or design basis acceptance limit or criterion would be challenged or exceeded.

The proposed editorial and consistency changes to Tier 1 Table 3.3-1 are included to provide a complete and accurate description of the north and east walls for the containment filtration rooms that are consistent with the depictions of the annex building layout currently provided in UFSAR Figure 3.7.2-19 (Sh 1 and 2) and to describe the location of the floor area between column lines 2 and 4 and E and H in a manner that is consistent with other table entries. These editorial and consistency changes to Tier 1 Table 3.3-1 do not involve a design, function or analysis change. These changes support the translation of the information portrayed in the UFSAR figures to the text descriptions in the Tier 1 ITAAC table.

The SSCs affected by this license amendment request are not used to contain, control, channel, monitor, process or release radioactive and non-radioactive materials. The new battery, building and related heating, ventilation, and air conditioning system changes do not adversely affect the types and quantities of expected effluents, and no effluent release path is affected by the proposed changes. Therefore, radioactive or non-radioactive material effluents are not affected by the proposed changes.

The thicknesses of certain floors that provide radiation shielding are proposed to increase, but only for structural purposes. Their shielding function is not adversely affected. No

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

#### **Physical Security Evaluation**

A new battery is being installed to meet nonsafety-related loads requiring an uninterruptable power supply (UPS). The additional nonsafety-related battery does not adversely affect any physical security feature or function.

The new battery is being located in an existing room (Room 40412) in the Annex Building on elevation 117'-6". Room 40412 is located within the protected security boundary, and the changes required to convert the room to support the battery do not affect plant security.

A review of the proposed changes to the annex building addressed in this LAR was conducted by SCE&G Security personnel who are subject matter experts (SME), knowledgeable of current security regulations and industry practices in the security field and who possess design-specific knowledge of the AP1000 security systems. This review was accomplished by analyzing the proposed layout changes when incorporated into multistepped table top exercises (a standard practice in which a scenario is time-stepped using expected adversary tactics and expected response force reactions) which consider the Design Basis Threat and adversary characteristics.

It was determined that certain aspects of the LAR (i.e. Annex Building floor thickness increase, Containment Air Filtration Room A height increase, and editorial clarifications to Tier 1 Table 3.3-1) would not change any building layout or structural element that could affect physical security. However, the proposed changes to annex building El. 100'-0" to facilitate the use of Room 40315 as a battery equipment room were determined to have the potential for impact to the physical security program. During review of this aspect of the LAR, various security scenarios, based on potentially affected APP-GW-GLR-066, "AP1000 Safeguards Assessment Report," (also referred to as Technical Report [TR]-94) scenarios, were table-topped using the proposed layouts for the affected rooms and personnel pathways. While the proposed changes affect some of the scenario descriptions and drawings in TR-94, the overall impact was deemed by SCE&G SMEs to be negligible (Note: TR-94 is a Safeguards Information (SGI) document, and is not available to the public.).

Based on the review, it was determined that the proposed changes to annex building El. 100'-0 to facilitate the use of Room 40315 as a battery equipment room have minimal effect on the previously analyzed security timelines, strategies, or scenarios credited in the previous annex building configuration. The changes have a potential effect on physical barriers credited for adversary delays, and ingress pathways to vital areas, but not on pathways (and associated timelines) utilized by security force personnel to respond to security response positions.

The proposed changes to annex building El. 100'-0 to facilitate the use of Room 40315 as a battery equipment room do not create or change any Vital Area (VA) boundaries. Additionally, because the room configuration changes are internal to the annex building, there is no effect on external security features used for the detection of, assessment of, or response to a potential adversary action at the site Protected Area (PA) boundary.

The proposed changes to annex building El. 100'-0 to facilitate the use of Room 40315 as a battery equipment room do not affect any perimeter walls acting as a security barrier. A review of the Physical Security Program was completed regarding the proposed changes to annex building El. 100'-0 to facilitate the use of Room 40315 as a battery equipment room as identified in this license amendment request. (Note: The Physical Security Program includes the Physical Security Plan and other documents that are classified as Safeguards Information (SGI) and are not available to the public.) The review confirmed that the proposed changes do not adversely affect the Physical Security Program, because:

- The proposed changes do not result in the addition, deletion or relocation of securityrelated equipment associated with detection, assessment, or access control as described in the Physical Security Program.
- The proposed changes do result in the addition, deletion or relocation of a security responder or response position as described in the Physical Security Program, but these changes have no negative impact.
- The proposed changes have no effect on the pathways (or associated timelines) utilized by security force personnel to respond to security events or by Operations personnel and emergency responders to respond to emergency events related to plant operation.
- A revision to the Physical Security Plan (PSP) will not be required as the PSP does not describe the configuration of the annex building El. 100'-0" to the level of detail associated with the proposed changes.

Similarly, a review of the Physical Security ITAAC was completed regarding the proposed changes to annex building El. 100'-0" layout to add Room 40315, as identified in this license amendment request. As these changes do not directly or indirectly impact any security equipment or systems utilized for detection, assessment, or access control, there is no impact on the Physical Security ITAAC. Room 40412, (which changed to a battery room to house the new battery), remains within the ITAAC required boundary and therefore there is no impact to the ITAAC.

In summary, the proposed changes to the annex building structure and layout, as identified in this license amendment request have been reviewed against security design and program documents. This review has determined that the changes have no negative impact on the Physical Security Program or the Physical Security ITAAC.

## <u>Summary</u>

The proposed annex building reconfiguration and layout changes affect various UFSAR text, tables, and figures. The UFSAR figure changes require corresponding changes to plant-specific Tier 1 Table 3.3-1 and Figure 3.3-11A. In UFSAR Figure 9A-201, moving the common west (north-south) wall to annex building Rooms 40300 and 40302 by two feet affects part of the boundary between Fire Areas 4031 AF 05 and 4031 AF 06, thus this change constitutes a Tier 2\* information change. This license amendment request describes and evaluates the UFSAR Tier 2 changes and the plant-specific Tier 1 and Tier 2\* changes that are associated with the Tier 2 changes.

The 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 Part 50, Appendix A, General Design Criterion (GDC) 1 requires that structures be designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety functions to be performed. The proposed changes do not change the criteria for the design, analysis, and construction of the floors and roof in the annex building. The design of the portions of the annex building affected by this activity remains in conformance with the code requirements specified in the UFSAR.

10 CFR Part 50, Appendix A, GDC 2 states that structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions. The proposed changes do not adversely affect structural capability of the seismic Category II portions of the annex building. Compliance with GDC 2 is maintained for the seismic Category II portions of the annex building to which this criterion applies.

10 CFR Part 50, Appendix A, GDC 4 states that structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. The proposed changes do not adversely affect the capabilities of the annex building to protect structures, systems, and components from the environmental and dynamic effects of plant operating conditions or events addressed by GDC 4. Therefore, compliance with GDC 4 is not altered by this activity.

10 CFR Part 50, Appendix A, GDC 19 states a control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. With the conversion of annex building Room 40412 to a battery room, the building volume serviced by nuclear island nonradioactive ventilation system decreases by approximate five percent. This reduced volume is factored into the post-accident main control room dose portion of the UFSAR Section 15.6.5 LOCA radiological analysis. However, the volume decrease is not sufficient to change the calculated main control room dose reported in the UFSAR, thus the main control room dose remains below the 5 rem limit. Therefore, compliance with GDC 19 is not altered by the activity.

10 CFR Part 50, Appendix S provides the earthquake engineering criteria necessary for nuclear power plants to implement GDC 2 insofar as it requires structures, systems,

and components important to safety to withstand the effects of earthquakes. As described in UFSAR subsections 3.2.1.1.1 and 3.7.1.1, 10 CFR 50, Appendix S, applies to seismic Category I structures. As described in UFSAR subsection 3.2.1.1.2, seismic Category II structures, such as portions of the annex building, are designed to prevent their collapse during a safe shutdown earthquake, to preclude interactions with seismic Category I structures that could degrade the functioning of a safety-related structure, system or component. The proposed changes to the annex building do not adversely affect the structural capability of the seismic Category II portions of the annex building. Therefore, compliance with 10 CFR 50, Appendix S, is not affected by this activity.

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 change to COL Appendix C, and a corresponding departure from plant-specific Tier 1 information, Inspections, Tests, Analyses and Acceptance Criteria information; therefore, this activity requires an 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, VIII.B.6.b(4) requires prior NRC approval for Tier 2\* information departures. The proposed changes to the annex building layout affect a fire area boundary, which constitutes UFSAR Tier 2\* information. Therefore, a license amendment request (LAR) (as supplied herein) is required.

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 revisions to plant-specific Tier 1 information (and corresponding COL Appendix C information) and Tier 2\* information, thus requires NRC approval for the Tier 1, Tier 2\*, and associated Tier 2 departures.

10 CFR 50.48 requires a fire protection plan that satisfies 10 CFR 50, Appendix A, General Design Criterion (GDC) 3, *Fire protection*. GDC 3 requires "Structures, systems, and components important to safety to be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions." Although this activity involves the relocation of a fire area boundary, it does not change the performance requirements for any fire boundary barriers. The proposed annex building changes necessitate an update to the fire loads analysis, but these changes do not adversely affect the fire protection analysis results; i.e., the affected fire loads remain within the design limits. Therefore, the proposed changes maintain compliance with GDC 3 and 10 CFR 50.48.

10 CFR 73.55(b) requires a licensee to establish and maintain a physical protection program which implements the Commission regulations including protection against the design basis threat of radiological sabotage as stated in 10 CFR 73.1. The proposed changes will be factored into the facility's physical protection program, as applicable. Because the proposed changes do not adversely affect the Licensee's ongoing efforts to establish and maintain a physical protection program for this facility, compliance with 10 CFR 73.55 is maintained.

# 4.2 Precedent

No precedent is identified.

# 4.3 Significant Hazards Consideration Determination

The proposed changes would revise the Combined Licenses (COLs) by revising the Annex Building internal configuration to include an additional nonsafety-related battery, battery room and battery equipment room, moving a fire area wall, increasing the height of a room, and increasing certain floor thicknesses. The changes include reconfiguring existing rooms, and related room, wall, and access path changes.

The requested amendment involves changes to Updated Final Safety Analysis Report (UFSAR) information that include changes to Tier 2\* information and result in changes to COL Appendix C, and corresponding changes to plant-specific Tier 1 information. This enclosure requests approval of the license amendment necessary to implement the Tier 2\* and COL Appendix C changes, and the associated UFSAR Tier 2 changes.

An evaluation to determine whether or not a significant hazards consideration is involved with the requested 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 additions of a new nonsafety-related battery, battery room and battery equipment room, the room height increase, the floor thickness changes, the relocation of a non-structural internal wall, and the associated wall, room and corridor changes within the annex building do not adversely affect the fire loading analysis durations of the affected fire zones and areas (i.e., the calculated fire durations remain less than their design values). Thus, the fire loads analysis is not adversely affected (i.e., analysis results remain acceptable). The safe shutdown fire analysis is not affected. The proposed changes to the structural configuration, including anticipated equipment loading, room height, and floor thickness are accounted for in the updated structural configuration model that was used to analyze the Annex Building for safe shutdown earthquake (SSE) and other design loads and load combinations, thus the structural analysis is not adversely affected. The structural analysis description and results in the UFSAR are unchanged. The relocated internal Annex Building wall is non-structural, thus this change does not affect the structural analyses for the Annex Building. The proposed changes do not involve any accident initiating event or component failure, thus the probabilities of the accidents previously evaluated are not affected. The rooms affected by the proposed changes do not contain or interface with safety-related equipment, thus the proposed changes would not affect any safety-related equipment or accident mitigating function. The radioactive material source terms and release paths used in the safety analyses are unchanged, thus the radiological releases in the accident analyses are not affected.

With the conversion of an annex building room to a battery room, the building volume serviced by nuclear island nonradioactive ventilation system decreases by approximate five percent. This reduced volume is used in the post-accident main control room dose portion of the UFSAR LOCA radiological analysis. However, the volume decrease is not sufficient to change the calculated main control room dose reported in the UFSAR, and control room habitability is 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 additions of a new nonsafety-related battery, battery room and battery equipment room, the room height increase, the floor thickness changes, the relocation of a non-structural internal wall, and their associated wall, room and corridor changes do not change fire barrier performance, and the fire loading analyses results remain acceptable. The room height and floor thickness changes are consistent with the annex building configuration used in the building's structural analysis. The relocated internal wall is non-structural, thus the structural analyses for the annex building are not affected. The affected rooms and associated equipment do not interface with components that contain radioactive material. The affected rooms do not contain equipment whose failure could initiate an accident. The proposed changes do not create a new fault or sequence of events that could result in a radioactive material release.

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

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

## Response: No

The proposed additions of a new nonsafety-related battery, battery room and battery equipment room, the room height increase, the floor thickness changes, the relocation of a non-structural internal wall, and their associated wall, room and corridor changes do not change the fire barrier performance of the affected fire areas. The affected rooms do not contain safety-related equipment, and the safe shutdown fire analysis is not affected. Because the proposed change does not alter compliance with the construction codes to which the annex building is designed and constructed, the proposed changes to the structural configuration, including anticipated equipment loading, room height, and floor thickness do not adversely affect the safety margins associated with the seismic Category II structural capability of the annex building.

The floor areas and amounts of combustible material loads in affected fire zones and areas do not significantly change, such that their fire duration times remain

within their two-hour design value, thus the safety margins associated with the fire loads analysis are not affected.

No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the proposed changes, thus no margin of safety is reduced.

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

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

## 4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. Pursuant to 10 CFR 50.92, the requested change does not involve a Significant Hazards Consideration.

## 5. Environmental Considerations

The proposed changes would revise the Combined Licenses (COLs) by (a) installing an additional nonsafety-related battery, (b) revising the annex building internal configuration by converting a shift turnover room to a battery room, adding an additional battery equipment room, and moving a fire area wall, (c) increasing the height of a room, and (d) increasing certain floor thicknesses. The changes include reconfiguring existing rooms and related room, wall, and access path changes.

The requested amendment involves changes to Updated Final Safety Analysis Report (UFSAR) information, which involve changes to Tier 2\* and plant-specific Tier 1 and corresponding changes to COL Appendix C information. This enclosure requests approval of the license amendment necessary to implement the Tier 2\* and plant-specific Tier 1 changes, and their associated UFSAR Tier 2 changes.

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

## (i) There is no significant hazards consideration.

As documented in Section 4.3, Significant Hazards Consideration Determination, of this license amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment." The Significant Hazards Consideration

Determination determined that (1) the requested amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the requested amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the requested amendment does not involve a significant reduction in a margin of safety. Therefore, it is concluded that the requested 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 requested amendment involves an additional battery and annex building floor thickness and layout changes. The proposed changes do not adversely affect 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 change does 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 requested 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 requested floor thickness increases are only for structural purposes. The requested new battery equipment room, floor thickness increases, and annex building layout changes do not affect any equipment that could contain radioactive material. Plant radiation zones (addressed in UFSAR Section 12.3) are not affected, and controls under 10 CFR Part 20 preclude a significant increase in occupational radiation exposure. Therefore, the requested 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 requested amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the 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

Virgil C. Summer Nuclear Station Units 2 & 3

NND-14-0525

Enclosure 2

**Exemption Request:** 

Annex Building Structure and

Layout Changes

(LAR 13-22)

(This enclosure contains 8 pages, including this cover sheet)

# 1.0 PURPOSE

South Carolina Electric & Gas Company (the Licensee) requests a permanent exemption from the provisions of 10 CFR 52, Appendix D, Section III.B, "Design Certification Rule for the AP1000 Design, Scope and Contents," to allow a departure from elements of the certification information in Tier 1 of the generic AP1000 Design Control Document (DCD). The regulation, 10 CFR 52, Appendix D, Section III.B, requires an applicant or licensee referencing Appendix D to 10 CFR Part 52 to incorporate by reference and comply with the requirements of Appendix D, including certified information in DCD Tier 1. Tier 1 includes ITAAC that must be satisfactorily performed prior to fuel load. The design details to be verified by these ITAAC are specified in the text, tables, and figures that are referenced in each individual ITAAC. The Tier 1 information for which a plant-specific departure and exemption is being requested includes non-system based design descriptions and other detailed information related to these design descriptions and the associated ITAAC, such as changes to concrete floor thicknesses, annex building wall location descriptions, and the interior configuration of the annex building.

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

- Table 3.3-1, Definition of Wall Thicknesses for Nuclear Island Buildings, Turbine Building, and Annex Building: Revise the annex building information as follows:
  - Change the Column Line description for the "Corridor Wall between G and H" from "9 to 13" to "9 to near 13", and change the Floor Elevation Range upper range value from 135'-3" to 117'-6"
  - Insert an additional corridor wall line item for the "Corridor Wall between G and H" from Column Lines "9 to 13", at the Elevation Range From 117'-6" to 135'-3". The Concrete Thickness for this radiation shielding wall is 1'-6".
  - For the first "Floor" row at Elevation 135'-3", change the Column Line description from "2 to 4 from shield wall between E and F to column line H" to "From 2 to 4 and E to H", and change the Concrete Thickness from 0'-6" to 0'-8"
  - For the third "Floor" row, located between Column Lines 9 to 13 and E to I.1 at Elevation 117'-6", change the Concrete Thickness from 0'-6" to 0'-8"
  - Change the Wall Description for the "Containment Filtration Rm A (North Wall)" to "Containment Filtration Rms A and B (North Wall)"
  - Change the Wall Description for the "Containment Filtration Rm A (East Wall)" to "Containment Filtration Rms A and B (East Wall)"
  - Change the Floor Elevation Range upper range value for the "Containment Filtration Rm A (West Wall)" from 158'-0" to 150'-3"
  - Change the Floor Elevation for the "Containment Filtration Rm B (Floor)" from 146'-3" to 150'-3", and the Concrete Thickness from 0'-6" to 0'-8"
  - Change the Floor Elevation Range lower range value for the "Containment Filtration Rm B (West wall)" lower elevation is changed from 146'-3" to 150'-3"
- Figure 3.3-11A, Annex Building Plan View at Elevation 100'-0" [sensitive unclassified non-safeguards information (SUNSI)] Reconfigure the Security Area layout between Column Lines 11 and 13 and F and I.1 by:

- Reconfiguring the access corridor (Room 40301) to reduce the north-south portion of the corridor, and reconfigure the access corridor and security rooms (Rooms 40304 and 40305) to include the addition of new battery equipment room (Room 40315)
- Reducing the width of the north-south portion of the access corridor by two feet and increasing the east-west dimensions of the adjoining rooms (Rooms 40300 and 40302) to the east by two feet

This request will apply 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

The Licensee 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 Units 2 and 3, respectively. A battery room on annex building Elevation (El.) 117'-6" is not large enough to house both the battery and the battery's associated equipment (e.g., chargers, inverters, etc.), thus a new (nonsafety-related) battery (i.e., direct current [DC]) equipment room is needed. As a result, the layout in annex building El. 100'-0" is to be modified to house this new battery equipment room. This activity requests exemption from the generic DCD Tier 1 descriptions, tables and figures that are involved with the plant-specific DCD Tier 2 departures, and which support the associated COL Appendix C ITAAC.

This activity requests exemption from elements of the AP1000 (Tier 1) design information to allow a departure from a figure and associated ITAAC for the annex building. The proposed departure would reconfigure the annex building to allow the addition of a battery equipment room, increase the thickness of certain annex building floors from six inches to eight inches, and revise descriptive information in Tier 1 Table 3.3-1 to more accurately reflect the wall and floor configuration depicted in UFSAR Tier 2 figures.

As discussed above, an exemption from elements of the AP1000 certified (Tier 1) design information is requested to allow plant-specific departures to be taken from non-system based design description and ITAAC Figures and Tables.

# 3.0 TECHNICAL JUSTIFICATION OF ACCEPTABILITY

An exemption is requested to depart from AP1000 generic Design Control Document (DCD) Tier 1 material by departing from the description of the annex building structures in Tier 1 Table 3.3-1, Definition of Wall Thicknesses for Nuclear Island Buildings, Turbine Building, and Annex Building, and departing from the annex building layout depicted in Tier 1 Figure 3.3-11A, Annex Building Plan View at Elevation 100'-0". The proposed changes are necessary to implement a reconfiguration of the annex building that includes the addition of a battery equipment room and relocation of a fire area wall, increase the slab thickness of certain floors in the annex building from 0'-6" to 0'-8", and increase the height of the Containment Filtration Room A ceiling. The proposed changes do not adversely impact the ability of the annex building to support security, health physics, maintenance, or operations support functions. The structural changes

do not adversely affect the seismic Category II structural capability of portions of the annex building, nor will they adversely affect the radiological shielding function performed by the annex building structural components. Furthermore, editorial changes to the wall and floor descriptions in Tier 1 Table 3.3-11A will provide the detail necessary to implement the corresponding Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC). Therefore, the annex building structure will continue to meet its required functionality following implementation of the proposed changes.

Detailed technical justification supporting this request for exemption is provided in Section 3 of the associated License Amendment Request in Enclosure 1 of this letter.

# 4.0 JUSTIFICATION OF EXEMPTION

10 CFR Part 52, Appendix D, Section VIII.A.4 and 10 CFR 52.63(b)(1) govern the issuance of exemptions from elements of the certified design information for AP1000 nuclear power plants. Because the Licensee has identified changes to the Tier 1 information related to the annex building's layout and structures as a result of design finalization 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.1].

The requested exemption to change the configuration and layout of the annex building satisfies the criteria for granting specific exemptions, as described below.

## 1. This exemption is authorized by law

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

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

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

The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow changes to elements of the plant-specific Tier 1 DCD to depart from the AP1000 certified (Tier 1) design information. The plant-specific DCD Tier 1 will continue to reflect the approved licensing basis for VCSNS Units 2 and 3, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the DCD. Therefore, the affected plant-specific DCD Tier 1 ITAAC will continue to serve its required purpose.

The changes to annex building do not represent any adverse impact to their design functions or the systems, structures and components therein and will continue to protect the health and safety of the public in the same manner. The annex building changes do not introduce any new industrial, chemical, or radiological hazards that would represent a public health or safety risk, nor do they modify or remove any design or operational controls or safeguards intended to mitigate any existing on-site hazards. Furthermore, the proposed changes would not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in fuel cladding failures. Accordingly, these changes do not present an undue risk from any existing or proposed equipment or systems.

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

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

The exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would change elements of the annex building layout and structures as presented in the non-system based design descriptions and ITAAC figures and tables in the plant-specific DCD Tier 1, thereby departing from the AP1000 certified (Tier 1) 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, tables, and figures that are referenced in these ITAAC. The exemption does not adversely impact the design, function, or operation of any plant SSCs associated with the facility's physical or cyber security, and therefore does not adversely affect any plant equipment that is necessary to maintain a safe and secure plant status. The proposed exemption has no adverse 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 "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

The rule under consideration in this request for exemption is 10 CFR 52, Appendix D, Section III.B, which requires that a licensee referencing the AP1000 Design Certification

Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information. The 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.

Changes are being made to reconfigure the annex building security area to add a battery equipment room and relocate a fire wall resulting in narrowing a corridor, increase a containment ventilation room ceiling height, increase certain floor slab thicknesses, and enhance the accuracy of details presented in a Tier 1 ITAAC table.

The security area reconfiguration is proposed to add a battery equipment room to house the equipment necessary to support the nonsafety-related battery housed in a separate annex building location that does not have sufficient room to house the support equipment. The containment ventilation room ceiling height increase is proposed to accommodate the as-designed size of equipment and provide adequate space for access and maintenance. The concrete floor slab thickness is proposed to be increased to 8" for certain areas to support the applied loads in the final structural design analyses. The editorial changes to the Tier 1 ITAAC table are proposed to more accurately describe the wall and floor locations and key parameters, as depicted in the current design drawings and UFSAR Figure 3.7.2-19 (Sh 1 and 2). These changes have been evaluated and confirmed to support the conclusions of the structural design analyses, radiation shielding analyses, and security evaluations.

Based on the above, each of the requested changes will facilitate plant construction and maintain or enhance future safe plant operation, security, and maintenance, while maintaining the current seismic design rating and providing the radiation shielding necessary to maintain radiation doses As Low As is Reasonably Achievable (ALARA). Accordingly, this change to the certified information will enable the licensee to safely construct, maintain, and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR Part 52, Appendix D.

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

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

The exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would change elements of the plant-specific DCD Tier 1 by departing from standard AP1000 certified (Tier 1) design information. This exemption would allow a change to a non-system based ITAAC figure and table. Based on the nature of the proposed changes to the generic Tier 1 information and the understanding that these changes were identified during the design finalization process for the AP1000, it is expected that this exemption will be requested by other AP1000 licensees and applicants. However, even if other AP1000 licensees and applicants do not request this same departure, the special circumstances will continue to outweigh any decrease in safety from the reduction in standardization because the key design functions of the annex building structure associated with this request will continue to be maintained. Furthermore, the

justification provided in the license amendment request and this exemption request and the associated mark-ups demonstrate that there is a limited change from the standard information provided in the generic AP1000 DCD, which is offset by the special circumstances identified above.

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

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

The proposed exemption would allow changes to the annex building structure and layout as presented in a non-system based ITAAC figure and table. The level of safety presented by plant structures is defined by the ability of the structures to protect the SSCs contained within these structures from hazards and to minimize the propagation of damage resulting from postulated events to the degree practical.

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

Because the proposed changes to the annex building structure and layout will not adversely affect the ability of this building to perform its design functions and the level of safety provided by the annex building and the systems and equipment contained therein is unchanged, it is concluded that the design change associated with the proposed exemption will not result in a significant decrease in the level of safety.

# 5.0 RISK ASSESSMENT

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

# 6.0 **PRECEDENT EXEMPTIONS**

None identified.

# 7.0 ENVIRONMENTAL CONSIDERATION

The Licensee requests a departure from elements of the certified information in Tier 1 of the generic AP1000 DCD. The Licensee has determined that the proposed departure would require a permanent exemption from the requirements of 10 CFR 52, Appendix D, Section III.B, "Design Certification Rule for the AP1000 Design, Scope and Contents" with respect to installation or use of facility components located within the restricted area, as defined in 10 CFR Part 20, or which changes an inspection or a surveillance requirement; however, the Licensee evaluation of the proposed exemption has determined that the proposed exemption meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.25(c)(9).

Based on the above review of the proposed exemption, the Licensee has determined that the proposed activity does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed exemption meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed exemption is not required.

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

## 8.0 CONCLUSION

The Licensee requests a permanent exemption for elements of AP1000 design certification information reflected in Tier 1. The proposed changes to Tier 1 are necessary to revise a non-system based design description and ITAAC figure and table in the plant-specific DCD Tier 1 to reflect proposed plant-specific design. The proposed exemption would allow departure from AP1000 generic Tier 1 DCD information by reconfiguring the annex building security area to add a battery equipment room and relocate a fire wall resulting in narrowing a corridor, increasing a containment ventilation room ceiling height, increasing certain floor slab thicknesses, and enhancing the accuracy of details presented in a Tier 1 ITAAC table. The exemption request meets the requirements of 10 CFR 52.63, "Finality of design certifications," 10 CFR 52.7, "Specific exemptions," 10 CFR 50.12, "Specific exemptions," and 10 CFR 52 Appendix D, "Design Certification Rule for the AP1000." Specifically, the exemption request meets the criteria of 10 CFR 50.12(a)(1) in that the request is authorized by law, presents no undue risk to public health and safety, and is consistent with the common defense and security. Furthermore, approval of this request does not result in a significant decrease in the level of safety, satisfies the underlying purpose of the AP1000 Design Certification Rule, and does not present a significant decrease in safety as a result of a reduction in standardization.

## 9.0 REFERENCES

None

# South Carolina Electric & Gas Company

Virgil C. Summer Nuclear Station Units 2 & 3

NND-14-0525

Enclosure 3

**Proposed Changes to Licensing Basis Documents:** 

Annex Building Structure and

Layout Changes

(LAR 13-22)

(This enclosure contains 13 pages, including this cover sheet)

# Tier 1 (and COL Appendix C) Table 3.3-1, Definition of Wall Thicknesses for Nuclear Island Buildings, Turbine Building, and Annex Building

Table 3.3-1 Definition of Wall Thicknesses for Nuclear Island Buildings, Turbine Building, and Annex Building <sup>(1)</sup>									
Wall or Section Description	Column Lines <sup>(7)</sup>	Floor Elevation or Elevation Range <sup>(7)(8)</sup>	Concrete Thickness <sup>(2)(3)(4)(5)(9)</sup>	Applicable Radiation Shielding Wall (Yes/No)					
Annex Building									
* * *									
Corridor Wall between G and H	From 9 to <u>near</u> 13	From 100'-0" to 135'-3" 117'-6"	1'-6"	Yes					
Corridor Wall between G and H	<u>From 9 to 13</u>	From 117'-6" to 135'-3"	<u>1'-6"</u>	Yes					
Column Line 9 wall	From E to H	From 117'-6" to 158'-0"	2'-0"	Yes					
Floor	2 to 4 from shield wall between E and F to column line H From 2 to 4 and E to H	135'-3"	<del>0'-6</del> " <u>0'-8"</u>	Yes					
Floor	From 4 to 4.1 and E to H	135'-3"	1'-0"	Yes					
Floor	From 9 to 13 and E to I.1	117'-6"	<del>0'-6</del> " <u>0'-8"</u>	Yes					
Floor	From 9 to 13 and E to I.1	135'-3"	0'-8"	Yes					
Containment Filtration Rm A Rms A and B (North Wall)	Between column line E to H	From 135'-3" to 158'-0"	1'-0"	Yes					
Containment Filtration Rm A Rms A and B (East wall)	Between column line E to F	From 135'-3" to 158'-0"	1'-0"	Yes					
Containment Filtration Rm A (West wall)	Between column line G to H	From 135'-3" to <del>158'-0" <u>150'-3"</u></del>	1'-0"	Yes					
Containment Filtration Rm A (Floor)	Between column line E to H	135'-3"	1'-0"	Yes					
Containment Filtration Rm B (Floor)	Between column line E to H	<del>146'-3"</del> <u>150'-3"</u>	<del>0'-6</del> " <u>0'-8"</u>	Yes					
Containment Filtration Rm B (West wall)	Between column line G to H	From <del>146'-3"</del> <u>150'-3"</u> to 158'-0"	1'-0"	Yes					
* * *									

# <u>UFSAR Section 8.3, Table 8.3.1-3, Component Data – Main AC Power System (Nominal Values)</u>

#### Revise Tier 2 information by changing the rating on Load Center 71, as shown in the excerpt below:

	Table 8.3.1-3						
	COMPONENT DATA – MAIN AC POWER SYSTEM (NOMINAL VALUES)						
	* * *						
4.	480 V Load Centers						
	Transformers – Indoor, Air-Cooled Ventilated Dry-Type, Fire Retardant:	2500 kVA, AA 3 phase, 60 Hz 6900 – 480 V					
		<mark>1000-<u>1500</u> kVA, AA (Load Center 71) 3 phase, 60 Hz 6900 – 480 V</mark>					
	Main Bus Ampacity	4000 amperes continuous					
		2000 amperes continuous (Load Center 71)					
	480V Breakers	Metal enclosed draw-out circuit breaker or motor- starter (contactor)					
		65,000 A RMS symmetrical interrupting rating					
		* * *					

## UFSAR Section 9.4, Subsection 9.4.1.2.1.1, Main Control Room/Control Support Area HVAC Subsystem

# Revise Tier 2 information by deleting the reference to the shift turnover room in the first paragraph, fourth sentence, as shown in the excerpt below:

The main control room/control support area HVAC subsystem serves the main control room and control support area with two 100 percent capacity supply air handling units, return/exhaust air fans, supplemental air filtration units, associated dampers, instrumentation and controls, and common ductwork. The supply air handling units and return/exhaust air fans are connected to common ductwork which distributes air to the main control room and CSA areas. The main control room envelope consists of the main control room, shift manager's office, operation work area, toilet, and operations break room area. The CSA area consists of the main control support area operations area, conference rooms, NRC room, computer rooms, shift turnover room, kitchen/rest area, and restrooms. The main control room and control support area toilets have separate exhaust fans.

# UFSAR Section 9.4, Subsection 9.4.2.2.1.3, Equipment Room HVAC Subsystem

# Revise Tier 2 information by changing the number of battery exhaust fans from "two" to "three" in the first paragraph, sixth sentence, as shown in the excerpt below:

The equipment room HVAC subsystem serves electrical and mechanical equipment rooms in the annex and auxiliary buildings. These rooms include the non-Class 1E battery charger Rooms 1 and 2, the non-Class 1E battery Rooms 1 and 2, the reactor trip switchgear Rooms I and II, the non-Class 1E penetration room on elevation 100'-0" and the non-Class 1E penetration room on elevation 100'-0" and the non-Class 1E penetration room on elevation 100'-0" and the non-Class 1E penetration room on elevation 117'-6". This subsystem also serves the rooms and areas in the annex building. These include two rest rooms, access areas, and corridors. The equipment room HVAC system consists of two 100 percent capacity air handling units, two three battery room exhaust fans, a toilet exhaust fan, a ducted supply and return air system, and automatic controls and accessories.

# Revise Tier 2 information by including a reference to the additional battery room in the annex building in the fourth paragraph, first sentence, as shown in the excerpt below:

Each non-Class 1E battery room and the additional battery room in the annex building are is provided with an individual exhaust system to prevent the buildup of hydrogen gas in the room. Each exhaust system consists of an exhaust fan, an exhaust air duct and gravity back draft damper located in the fan discharge. Air supplied to the battery rooms by the air handling units is exhausted to atmosphere. Air from the rest rooms is exhausted to atmosphere by a separate exhaust fan.

# UFSAR Section 9.4, Subsection 9.4.7.2.1, General Description

# Revise Tier 2 information by changing the elevation in the second paragraph, first sentence, as shown in the excerpt below:

The exhaust air filtration units are located within the radiologically controlled area of the annex building at elevation 135'-3" and 146'-3" 150'-3". The filtration units are connected to a ducted system with isolation dampers to provide HEPA filtration and charcoal adsorption of exhaust air from the containment, fuel handling area, auxiliary and annex buildings. A gaseous radiation monitor is located downstream of the exhaust air filtration units in the common ductwork to provide an alarm if abnormal gaseous releases are detected. The plant vent exhaust flow is monitored for gaseous, particulate and iodine releases to the environment. During containment purge, the exhaust air filtration units satisfy 10 CFR 50 Appendix I guidelines (Reference 20) for offsite releases and meets 10 CFR 20 (Reference 21) allowable effluent concentration limits when combined with gaseous releases from other sources. During conditions of abnormal airborne radioactivity in the fuel handling area, auxiliary and/or annex buildings, the filtration units provide filtered exhaust to minimize unfiltered offsite releases.

## <u>UFSAR Section 9.4, Table 9.4.2-2, Component Data – Annex/Auxiliary Buildings</u> <u>Nonradioactive HVAC System, Equipment Room HVAC System (Nominal Values)</u>

## Revise Tier 2 information by including the new battery room exhaust fan to service Room 40412, as shown in the excerpt below:

Table 9.4.2-2 COMPONENT DATA - ANNEX/AUXILIARY BUILDINGS NONRADIOACTIVE HVAC SYSTEM Equipment Room HVAC System							
(Nominal V	/alues)						
***	* * *						
Battery Room <u>s 40307 and 40309</u> Exhaust Fans							
Quantity	2						
System capacity per unit (%)	100						
Туре	Centrifugal						
Design airflow (scfm)	750						
Static pressure (in. wg)	1.5						
Battery Room 40412 Exhaust Fan							
Quantity	<u>1</u>						
System capacity per unit (%)	<u>100</u>						
<u>Type</u>	<u>Centrifugal</u>						
Design airflow (scfm)	<u>330</u>						
<u>Static pressure (in. wg)</u>	<u>0.8</u>						





# UFSAR Section 9.4, Figure 9.4.2-1 (Sheet 3 of 7), Annex/Aux Non-Radioactive Ventilation System Piping and Instrumentation Diagram



## UFSAR Appendix 9A, Subsection 9A.3.4.8, Fire Area 4031 AF 02

# Revise Tier 2 information in the first paragraph and the list of fire zones and room numbers, as shown below:

This annex building fire area contains one train of the non-Class 1E batteries, <u>one additional</u> <u>battery bank</u>, and battery charging equipment. This fire area is subdivided into the following fire zones:

<u>Fire Zone</u>	Room No.	
• 4031 AF 40309	40309	Battery room 2
• 4031 AF 40310	40310	Battery charger room 2
<ul> <li>40414031 AF 40411</li> </ul>	40411	Computer room B
• 4041 <u>4031</u> AF <u>40412</u>	40412	Shift turnover room Battery
		room

# Revise Tier 2 information by adding 4031 AF 40412 to the fire zones serviced by the VXS in the first sentence of the first paragraph under the heading, <u>Smoke Control Features</u>, as follows:

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing fire zones 4031 AF 40309, and 4031 AF 40310, and 4031 AF 40412 stops upon detection of smoke in the supply duct. Combination-fire dampers close automatically in response to a smoke detector signal or high temperature to isolate fire zone 4031 AF 40310. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. This subsystem may be restarted and manually realigned to the once-through smoke exhaust ventilation mode to minimize the potential migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

# Revise Tier 2 information by changing fire zone number 4041 AF 40411 to 4031 AF 40411 in the first sentence of the second paragraph under the heading, <u>Smoke Control</u> <u>Features</u>, as follows:

Fire dampers in the main control room/control support area HVAC subsystem of the NI nonradioactive ventilation system (VBS) close automatically on high temperature to isolate fire zone 4041-4031 AF 40411. Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The balance of this and other VBS subsystems continues to provide ventilation to the unaffected fire areas. The subsystem may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke and hot gases. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers.

# Revise Tier 2 information by including batteries to the combustible materials in Fire Area 4031 AF 02 in the first sentence of the second paragraph under the heading, <u>Fire</u> <u>Protection Adequacy Evaluation</u>, as follows:

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of <u>batteries and</u> electrical cable insulation. The combustible materials are relatively uniformly distributed throughout the fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided. The battery room is also separated from the adjacent charging room by a 1-hour fire barrier, which limits the spread of fire within the fire area.

# UFSAR Appendix 9A, Subsection 9A.3.4.9, Fire Area 4031 AF 05

# Revise Tier 2 information by adding a new line item for Fire Zone 4031 AF 40300 with Room No. 40315, Security Room, as shown in the excerpt below:

This fire area is subdivided into the following fire zones:

<u>Fire Zone</u>		Room No.	Room No.			
•	4031 AF 40300	40301	Access Corridor			
•	4031 AF 40300	40305	Security Room			
•	<u>4031 AF 40300</u>	<u>40315</u>	Security Room			
•	4031 AF 40303	40303	Corridor			
•	4031 AF 40303	40304	Restroom			

# UFSAR Appendix 9A, Table 9A-3, Fire Protection Summary

Revise Tier 2 information by:

- Deleting the Shift Turnover Room, including floor area, combustible load and equivalent duration from Fire Zone 4031 AF 40411
- > Adding a new Fire Zone for Fire Zone 4031 AF 40412, Battery Room
- Changing total heat value, combustible load, and equivalent duration for Fire Area 4031 AF 02
- Changing combustible data, floor areas, equivalent durations, and totals in Fire Area 4031 AF 05
- Changing the total floor area, combustible load, and equivalent duration in Fire Area 4031 AF 06

as shown in the following table excerpt:

(NOTE: New values are shown in blue underlined font directly <u>above</u> the current deleted text shown in red strike-through font.):

Fire Area/Zone <sup>(1)</sup> Safety Area?       4031 AF 02     NO	Area Sq Ft	Combust. Material <sup>(3)</sup>	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/Sq Ft	Equiv. Dur.	Boundary Fire	Detect.	Fixed Suppression
4031 AF 02 NO	·						(19111)	Res. (nouis)	cap.	Capability <sup>(8)</sup>
					* *	*				
				1000	1.05.07					
COMPUTER ROOM		PLASTIC	D	1000 100 250	1.0E+07 1.3E+06 2.1E+06					
SHIFT TURNOVER	575	CLOTH NET CAT.	BC	50 TOTAL:	4.0E+05 1.4E+07	24000	18			
	<del>915</del>					<del>15000</del>	44			
4031 AF 40412 BATTERY ROOM		BATTERIES CABLE INS	AC	<u>60</u> 500	<u>1.2E+07</u> 5.1E+06					
	<u>340</u>	NET CAT.	Č	TOTAL:	<u>1.7E+07</u>	<u>50000</u>	<u>37</u>			
FIRE AREA TOTAL:	2375	NET CAT.	D	TOTAL:	9.4E+07	40000	31			
					<del>7.7E+0</del> 7	<del>32000</del>	<del>25</del>			
4031 AF 05 NO								2/0	SMOKE	HOSE STATION
4031 AF 40300		CABLE INS	С	<u>2000</u>	2.0E+07					
SECURITY ACCESS, CONTROL AREA		PAPER	С	<del>1000</del> <u>1300</u>	1.0E+07 1.0E+07					
		PLASTIC	D	1200 500 500	9.2E+06 6.6E+06 4.2E+06					
		CLOTH	В	250 200	<u>2.0E+06</u> <u>1.6E+06</u>					
	4575		D	TOTAL	4.25.07	27000	24			
	<del>1975</del> <del>1920</del>	NET CAT.	D	TOTAL	4.3E+07 3.2E+07	<del>27000</del> <del>17000</del>	<u>42</u>			
					* *	*				
4031 AF 40303		CABLE INS	C	2000	2.0E+07 7.7E+06				SMOKE	HOSE STATION
RESTROOM		PLASTIC	D C	500 500	6.6E+06 4.2E+06					
	1220	CLOTH	В	500	4.0E+06	25000	27			
	1220 1600	NET CAT.	D	TOTAL	4.3E+07	<del>27000</del> 27000	<del>20</del>			
FIRE AREA TOTAL:	2795	NET CAT.	D	TOTAL:	8.6E+07	<u>31000</u>	<u>24</u>			
	3020				<del>1.3E+01</del>	21000	-10			
4031 AF 06 NO									SMOKE	HOSE STATION
SECURITY AREA		CABLE INS	С	1075	1.1E+07					
		PAPER PLASTIC	C D	200 175	1.5E+06 2.3E+06					
		WOOD CLOTH TRASH	C B P	500 100 20	4.2E+06 8.0E+05					
FIRE AREA TOTAL:	<u>1115</u>	NET CAT.	D	ZU TOTAL:	2.0E+07	<u>18000</u>	<u>14</u>			
	<del>640</del>					31000	23			

## UFSAR Section 15.6, Table 15.6.5-2, Assumptions and Parameters used in Calculating Radiological Consequences of a Loss-of-Coolant Accident

# Revise Tier 2 information by changing the volume of HVAC assumed in the main control room model, as shown in the excerpt below:

Table 15.6.5-2 (Sheet 1 of 3)								
ASSUMPTIONS AND PARAMETERS USED IN CALCULATING RADIOLOGICAL CONSEQUENCES OF A LOSS-OF-COOLANT ACCIDENT								
* * *								
Main control room model								
35,700								
<del>105,500-</del> <u>100,700</u>								
1925								
Not applicable								
See Table 15A-6								

## <u>The following UFSAR figures are Withheld from Public Disclosure</u> (See Enclosure 4 for markups to these figures)

- COL Appendix C (Tier 1) Figure 3.3-11A, Annex Building Plan View at Elevation 100'-0"
- UFSAR Section 1.2, Tier 2 Figure 1.2-201, Annex Building General Arrangement Plan at Elevation 100'-0" & 107'-2"
- UFSAR Section 1.2, Tier 2 Figure 1.2-19, Annex Building General Arrangement Plan at Elevation 117'-6" & 126'-3"
- UFSAR Section 1.2, Tier 2 Figure 1.2-20, Annex Building General Arrangement Plan at Elevation 135'-3", 156'-0" & 158'-0"
- UFSAR Section 3.7, Tier 2 Figure 3.7.2-19 (Sheet 1 of 10), Annex Building Key Structural Dimensions Plan at Elevation 100'-0"
- UFSAR Section 3.7, Tier 2 Figure 3.7.2-19 (Sheet 4 of 10), Annex Building Key Structural Dimensions Plan at Elevation 158'-0" & 146'-3"

- UFSAR Section 3.7, Tier 2 Figure 3.7.2-19 (Sheet 7 of 10), Annex Building Key Structural Dimensions Section B-B"
- UFSAR Section 3.7, Tier 2 Figure 3.7.2-19 (Sheet 8 of 10), Annex Building Key Structural Dimensions Section C-C"
- UFSAR Section 3.7, Tier 2 Figure 3.7.2-19 (Sheet 9 of 10), Annex Building Key Structural Dimensions Sections D-D, E-E, & F-F
- UFSAR Section 3.7, Tier 2) Figure 3.7.2-19 (Sheet 10 of 10), Annex Building Key Structural Dimensions Sections G-G, H-H, & J-J
- UFSAR Appendix 9A, Tier 2\* Figure 9A-201, [Annex I & II Building Fire Areas Plan at Elevations 100'-0" & 107'-2"]\*
- UFSAR Appendix 9A, Tier 2\* Figure 9A-3 (Sheet 2 of 3), [Annex I & II Building Fire Area Plan at Elevation 117'-6']\*
- UFSAR Appendix 9A, Tier 2\* Figure 9A-3 (Sheet 3 of 3), [Annex I & II Building Fire Areas Plan at Elevation 135'-3"]\*
- UFSAR Section 12.3, Tier 2 Figure 12.3-201, Radiation Zones, Normal Operations / Shutdown Annex Building, Elevation 100'-0" & 107'-2"
- UFSAR Section 12.3, Tier 2 Figure 12.3-1 (Sheet 12 of 16), Radiation Zones, Normal Operations/Shutdown Annex Building, Elevation 117'-6" and 126'-3"
- UFSAR Section 12.3, Tier 2 Figure 12.3-1 (Sheet 13 of 16), Radiation Zones, Normal Operations / Shutdown Annex Building, Elevation 135'-3", 146'-3", 156'-0" & 158'-0"
- UFSAR Section 12.3, Tier 2 Figure 12.3-202, Radiation Zones, Post-Accident, Annex Building, Elevation 100'-0" & 107'-2"
- UFSAR Section 12.3, Tier 2 Figure 12.3-2 (Sheet 12 of 16), Radiation Zones, Normal Operations/Shutdown Annex Building, Elevation 117'-6" and 126'-3"
- UFSAR Section 12.3, Tier 2 Figure 12.3-2 (Sheet 13 of 15), Radiation Zones, Post-Accident, Annex Building, Elevation 135'-3", 146'-3", 156'-0" & 158'-0"
- UFSAR Section 12.3, Tier 2 Figure 12.3-203, Radiological Access Controls, Normal Operations / Shutdown Annex Building, Elevation 100'-0" & 107'-2"
- UFSAR Section 12.3, Tier 2 Figure 12.3-3 (Sheet 12 of 16), Radiological Access Controls, Normal Operations/Shutdown Annex Building, Elevation 117'-6" and 126'-3"
- UFSAR Section 12.3, Tier 2 Figure 12.3-3 (Sheet 13 of 16), Radiological Access Controls, Normal Operations / Shutdown Annex Building, Elevation 135'-3", 146'-3", 156'-0" & 158'-0"