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October 27, 2016
NND-16-0365
10 CFR 50.90
10 CFR 52.63

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

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

Subject: VCSNS Units 2 & 3 LAR 15-10: Request for License Amendment and Exemption: Resolution of Auxiliary Building Wall Thickness and Description Inconsistencies

In accordance with the provisions of 10 CFR 50.90, South Carolina Electric & Gas Company (SCE&G), acting on behalf of itself and the South Carolina Public Service Authority (Santee Cooper), requests an amendment to the Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 combined license (COL) numbers NPF-93 and NPF-94, respectively. Because the proposed change impacts Tier 1 of the Plant-Specific DCD, with corresponding changes to the associated COL Appendix C information and Tier 2* information in the Updated Final Safety Analysis Report (UFSAR), this activity has been determined to require prior NRC approval. Also, because the change requires a departure from Tier 1 information, an exemption is requested from the requirements of the Generic AP1000 DCD Tier 1 pursuant to the provisions of 10 CFR 52.63(b) and 10 CFR 52.7.

The proposed changes are to the auxiliary building structural design, specifically the design thicknesses of the auxiliary building column line 1 wall and column line I wall, and the location description for the auxiliary building labyrinth wall.

The description, technical evaluation, regulatory evaluation (including the significant hazards consideration determination), and environmental considerations for the proposed changes in the License Amendment Request (LAR) are contained in Enclosure 1 to this letter. Enclosure 2 includes an exemption request to support the proposed departures from Tier 1 material, which includes the background and supporting basis for this requested exemption. Enclosure 3 provides markups depicting the requested changes to the plant-specific licensing basis documents.

In order to support timely closure of VCSNS Unit 2 ITAAC, SCE&G requests NRC staff review and approval of the license amendment and exemption no later than October 20, 2017. Approval by this date will allow sufficient time to implement licensing basis changes to support ITAAC closure. SCE&G expects to implement the proposed

amendment within thirty days of approval. SNC has stated that the current requested approval date for Vogtle Electric Generating Plant (VEGP) Unit 3 is October 26, 2017.

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 publicly-available enclosures to the designated State Official.

Should you have any questions, please contact Mr. Nick R. Kellenberger by telephone at (803) 941-9834, or by email at nicholas.r.kellenberger@scana.com.

This letter contains no regulatory commitments.

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

Executed on this 27th day of October, 2016.

Sincerely,

April R. Rice
Manager
New Nuclear Licensing

MHK/ARR/mhk

Enclosure 1: Request for License Amendment: Resolution of Auxiliary Building Wall Thickness and Description Inconsistencies (LAR 15-10)

Enclosure 2: Exemption Request: Resolution of Auxiliary Building Wall Thickness and Description Inconsistencies (LAR 15-10)

Enclosure 3: Proposed Changes to Licensing Basis Documents (LAR 15-10)

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South Carolina Electric and Gas Company

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

NND-16-0365

Enclosure 1

Request for License Amendment:
Resolution of Auxiliary Building Wall Thickness and Description Inconsistencies
(LAR 15-10)

(This Enclosure consists of 20 pages, including this cover page.)

Table of Contents

1. SUMMARY DESCRIPTION

2. DETAILED DESCRIPTION

3. TECHNICAL EVALUATION

4. REGULATORY EVALUATION

    4.1. Applicable Regulatory Requirements/Criteria

    4.2. Precedent

    4.3. Significant Hazards Consideration Determination

    4.4. Conclusions

5. ENVIRONMENTAL CONSIDERATION

6. REFERENCES

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

1. SUMMARY DESCRIPTION

The proposed changes affect the Combined License (COL) and Updated Final Safety Analysis Report (UFSAR) concerning the auxiliary building structural design, specifically the design thicknesses of the auxiliary building column line 1 wall (i.e., south wall of the auxiliary building) between elevation 100'-0" and 109'-3". The proposed changes update COL Appendix C (and plant-specific Tier 1) Table 3.3-1 and UFSAR Tier 2* Subsection 3H.5.1.1 information to conform to the structural design of the auxiliary building as described elsewhere in COL Appendix C (and plant-specific Tier 1) and the UFSAR. In addition, a change is proposed to the wall thickness of the auxiliary building column line I wall between column lines 3 and 4 and between elevations 100'-0" to the roof as shown in COL Appendix C (and plant-specific Tier 1) Table 3.3-1. This change corrects an inconsistency identified between COL Appendix C (and plant-specific Tier 1) Table 3.3-1 and UFSAR Tier 2* Figure 3.7.2-12 Sheets 3 and 10. A change is also proposed to correct the wall location description of the auxiliary building labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6" in COL Appendix C (and plant-specific Tier 1) Table 3.3-1. This change corrects an inconsistency identified between the COL Appendix C (and plant-specific Tier 1) and the design of the labyrinth wall.

The proposed changes require revisions to COL Appendix C (and plant-specific Tier 1), and UFSAR Tier 2* information. This enclosure requests approval of the proposed revisions to COL Appendix C and UFSAR Tier 2*. Enclosure 2 requests the exemption necessary to implement the changes to the plant-specific Tier 1 information.

2. DETAILED DESCRIPTION

Design Description

COL Appendix C (and plant-specific Tier 1) Table 3.3-1 defines wall thicknesses for the nuclear island buildings, turbine building, and annex building. These design characteristics are required to be verified by Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC) during construction.

As described in COL Appendix C (and plant-specific Tier 1) Section 3.3, the nuclear island structures include the containment (the steel containment vessel and the containment internal structure) and the shield and auxiliary buildings. The containment, shield and auxiliary buildings are structurally integrated on a common basemat, which is embedded below the finished plant grade level. The auxiliary building is reinforced concrete and houses the safety-related mechanical and electrical equipment located outside the containment and shield buildings. Systems, structures, and components identified as essential targets are protected from the dynamic and environmental effects of postulated pipe ruptures by the design of the auxiliary building flood barriers described in UFSAR Subsection 3.4.1.2.2.2 and identified in COL Appendix C (and plant-specific Tier 1) Table 3.3-2.

As described in UFSAR Subsection 1.2.4.3, the primary function of the auxiliary building is to provide protection and separation for the seismic Category I mechanical and electrical equipment located outside the containment building. The auxiliary building is a seismic Category I (per UFSAR Table 3.2-2) reinforced concrete structure. It shares a common basemat with the containment building and the shield building. The auxiliary building provides protection for the safety-related equipment against the consequences of either a postulated internal or external event. The auxiliary building also provides shielding for the radioactive equipment and piping that is housed within the building.

The auxiliary building column line 1 wall forms an outside boundary for fuel handling and radwaste equipment areas. The primary function of the fuel handling area is to provide for the handling and storage of new and spent fuel. The fuel handling area provides for transferring new fuel assemblies from the auxiliary building rail car bay to and from the new fuel storage area to the containment building and for transferring spent fuel assemblies from the containment building to the spent fuel storage pit within the auxiliary building. The fuel handling area provides the means for removing the spent fuel assemblies from the spent fuel storage pit and loading the assemblies into a shipping cask for transfer from the facility.

The fuel handling area is protected from external events such as tornadoes and tornado produced missiles. Protection is provided for the spent fuel assemblies, the new fuel assemblies and the associated radioactive systems from external events.

The fuel handling area is constructed so that the release of airborne radiation following any postulated design basis accident that could result in damage to the fuel assemblies or associated radioactive systems does not result in unacceptable site boundary radiation levels.

As described in UFSAR Appendix 9A, the fire protection analysis evaluates the potential for occurrence of fires within the plant and documents the capabilities of the fire protection system and the capability to safely shut down the plant. The auxiliary building column line 1 wall is a three hour fire barrier between elevation 100’-0” and 135’-3” as shown in UFSAR Figure 9A-1, Sheets 5 and 6. This wall forms the fire rated boundary between auxiliary building Fire Area 1200 AF 02 and the radwaste building, as described in UFSAR Subsections 9A.3.1.3.1.2 and 9A.3.5.1, respectively. The mechanical equipment located in radiological control areas of the auxiliary building are the normal residual heat removal pumps and heat exchangers, the spent fuel cooling system pumps and heat exchangers, the solid, liquid, and gaseous radwaste pumps, tanks, demineralizers and filters, the chemical and volume control pumps, and the heating, ventilating and air conditioning exhaust fans.

The auxiliary building column line I wall between column lines 3 and 4 and between elevations 100’-0” to the roof forms the exterior wall of Stairwell S04. This wall is a three hour fire barrier as shown in UFSAR Figure 9A-1 Sheet 5. The wall forms the exterior fire rated boundary for fire area 1205 AF 01, as described in UFSAR Subsection 9A.3.1.3.2.3. There are no safety-related components and no radioactive systems in this fire area.

The labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82’-6” to 92’-6” forms the north wall of piping/valve room 12262, which contains Normal Residual Heat Removal System (RNS) pressure boundary and Spent Fuel Pool Cooling System (SFS) piping. This wall forms the boundary for fire zone 1225 AF 12262 as shown in UFSAR Figure 9A-1 Sheet 3, and is part of module CA20.

Supporting Technical Details

COL Appendix C (and plant-specific Tier 1) Table 3.3-1 define concrete wall thicknesses for the nuclear island buildings, turbine building, and annex building, and identify the walls that provide radiation shielding. These design characteristics are required to be verified by Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC) during construction.

The auxiliary building column line 1 wall, column line I wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6" are required to be: 1) designed and constructed in accordance with UFSAR Subsection 1.2.4.3, Subsection 3.7.2, Subsection 3.8.4, and Appendix 3H structural and seismic requirements, and 2) designed to provide appropriate radiation shielding to meet UFSAR Subsection 1.2.4.3, and Subsections 12.3.2.2.3 and 12.3.2.2.4, requirements.

A. Auxiliary Building Column Line 1 Wall Thickness

In COL Appendix C (and plant-specific Tier 1) Table 3.3-1, the thicknesses of the auxiliary building column line 1 wall above elevation 100'-0" are defined as follows:

- 2'-3", from column line I to 5'-6" east of column line L-2, from elevation 100'-0" to 180'-0";
- 3'-0", from 5'-6" east of column line L-2 to column line N, from elevation 100'-0" to 125'-0"; and
- 2'-3", from 5'-6" east of column line L-2 to column line N, from elevation 125'-0" to 180'-0".

These wall thicknesses are inconsistent with the wall thicknesses that are inferred or specifically identified in COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-6, 3.3-7, 3.3-8, and 3.3-9; and associated UFSAR Figures 1.2-8, 1.2-9, 1.2-10, 1.2-11, 1.2-13, and 3.7.2-12 Sheets 2, 4, 5, 6, 8; and the AP1000 design documentation, which are as follows:

- 2'-3", from column line I to 5'-7" west of column line K-2, from elevation 100'-0" to 109'-3";
- 3'-0", from 5'-7" west of column line K-2 to column line N, from elevation 100'-0" to 109'-3";
- 2'-3", from column line I to 5'-6" east of column line L-2, from elevation 109'-3" to 180'-0";
- 3'-0", from 5'-6" east of column line L-2 to column line N, from elevation 109'-3" to 125'-0"; and
- 2'-3", from 5'-6" east of column line L-2 to column line N, from elevation 125'-0" to 180'-0".

In addition, UFSAR Tier 2* text in UFSAR Subsection 3H.5.1.1 states that the thickness of the column line 1 wall is 3'-0" below the grade and 2'-3" above the grade. This statement is inconsistent with the wall thickness shown in the COL Appendix C (and plant-specific Tier 1) and associated UFSAR figures described above. To address these inconsistencies, changes to COL Appendix C (and plant-specific Tier 1) Table 3.3-1, and UFSAR Tier 2* Subsection 3H.5.1.1 are proposed to correct the thicknesses for the auxiliary building column line 1 wall between elevation 100'-0" and 109'-3". These Table 3.3-1 wall thickness changes will establish consistency between the structural design of the auxiliary building described elsewhere in COL Appendix C (and plant-specific Tier 1) and the UFSAR. These changes are consistent with COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-6, 3.3-7, 3.3-8, and 3.3-9; and UFSAR Figures 1.2-7, 1.2-8, 1.2-9, 1.2-10, 1.2-11, 1.2-13, 1.2-14, and 3.7.2-12; and the AP1000 detailed design documentation.

B. Auxiliary Building Column Line I Wall Thickness

In COL Appendix C (and plant-specific Tier 1) Table 3.3-1, the thickness of the auxiliary building column line I wall between column lines 3 and 4 from elevation 100'-0" to 107'-2" is defined as 3'-0". The thickness of this wall is correctly shown in Tier 2* Figure 3.7.2-12 Sheet 3 as 2'-0". This wall thickness requires revision to conform to the structural design of the auxiliary building described elsewhere in COL Appendix C (and plant-specific Tier 1) and the UFSAR, and to be consistent with COL Appendix C (and plant-specific Tier 1) Figure 3.3-6 and UFSAR Figure 3.7.2-12, and the AP1000 detailed design documentation.

C. Auxiliary Building Labyrinth Wall Description

In COL Appendix C (and plant-specific Tier 1) Table 3.3-1, the description of the labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6" states that the wall is described as ending 7'-3" from column line J-2. The AP1000 detailed design documentation shows the distance from the center line of column line J-2 to the end of the labyrinth wall as 5'-2". The AP1000 detailed design documentation has shown the distance from the center line of column line J-2 as 5'-2" since the initial issuance of the design. During Revision 15 of the DCD, this distance was incorrectly transcribed into Tier 1 Table 3.3-1 as 7'-3".

COL Appendix C (and Plant-specific Tier 1) changes:

- Table 3.3-1 is revised to identify the listed thicknesses of the auxiliary building column line 1 wall, while identifying the same radiation shielding function as the current column line 1 wall entries, as follows:
  - 2'-3", from column line I to 5'-7" west of column line K-2, from elevation 100'-0" to 109'-3";
  - 3'-0", from 5'-7" west of column line K-2 to column line N, from elevation 100'-0" to 109'-3";
  - 2'-3", from column line I to 5'-6" east of column line L-2, from elevation 109'-3" to 180'-0";
  - 3'-0", from 5'-6" east of column line L-2 to column line N, from elevation 109'-3" to 125'-0"

- Table 3.3-1 is revised to identify the listed thickness of the auxiliary building column line I wall as follows:
  - 2'-0", from column line 3 to column line 4, from elevation 100'-0" to the roof.

- Table 3.3-1 is revised to identify the wall location for the labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" and 92'-6" as being 5'-2" from J-2.

UFSAR Tier 2* changes:

- Subsection 3H.5.1.1 is revised to identify that the thicknesses of the auxiliary building column line 1 wall above grade (elevation 100'-0") are as follows:
  - 2'-3", from column line I to 5'-7" west of column line K-2, from elevation 100'-0" to 109'-3";

- 3'-0", from 5'-7" west of column line K-2 to column line N, from elevation 100'-0" to 109'-3";
- 2'-3", from column line I to 5'-6" east of column line L-2, from elevation 109'-3" to 180'-0";
- 3'-0", from 5'-6" east of column line L-2 to column line N, from elevation 109'-3" to 125'-0";
- 2'-3", from 5'-6" east of column line L-2 to column line N, from elevation 125'-0" to 180'-0".

3. TECHNICAL EVALUATION

Plant-Specific Tier 1 (and corresponding COL Appendix C) Table 3.3-1 and UFSAR Figure Consistency Evaluation

The dimensions of the auxiliary building column line 1 wall, auxiliary building column line I wall, and general location of the auxiliary building labyrinth wall between column lines 3 and 4 and between column lines J-1 and J-2 can be inferred or specifically identified from a review of the associated COL Appendix C (and plant-specific Tier 1) and UFSAR figures, including column locations, elevations, and floor and wall thicknesses. The thicknesses of the auxiliary building column line 1 wall and auxiliary building column line I wall as described in these associated COL Appendix C (and plant-specific Tier 1) and UFSAR figures accurately reflect the intended design and construction of the auxiliary building as described in the UFSAR Subsection 1.2.4.3, Subsection 3.7.2, Subsection 3.8.4, and Appendix 3H structural and seismic analysis requirements. These thicknesses are also the basis for the analysis of radiation shielding in UFSAR Subsection 1.2.4.3, and Subsections 12.3.2.2.3 and 12.3.2.2.4. These actual design dimensions are shown throughout this discussion in square brackets along with UFSAR figure references where applicable. COL Appendix C (and plant-specific Tier 1) Table 3.3-1 is not consistent with these design dimensions and requires the proposed changes described. No changes are required to the associated COL Appendix C (and plant-specific Tier 1) and UFSAR figures.

The Tier 2* text in UFSAR Subsection 3H.5.1.1 requires clarification to be consistent with these actual design dimensions when applying the UFSAR Appendix 3H structural and seismic analysis requirements. In addition, the wall description in COL Appendix C (and plant-specific Tier 1) Table 3.3-1 for the auxiliary building labyrinth wall between column lines 3 and 4 and between column lines J-1 and J-2 is inconsistent with the AP1000 design, and requires a correction to COL Appendix C (and plant-specific Tier 1) Table 3.3-1.

A. Auxiliary Building Column Line 1 Wall Thickness

COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-6, 3.3-7, 3.3-8, and 3.3-9 show section and plan views of the auxiliary building column line 1 wall from elevation 100'-0" to 180'-0". Although the drawings do not contain dimensions, the figures do show the relative scale, elevations, and thicknesses of floors and walls.

UFSAR Figures 1.2-7, 1.2-8, 1.2-9, 1.2-10, 1.2-11, 1.2-13, and 1.2-14 show section and plan views of the auxiliary building column line 1 wall from elevation 100'-0" to 180'-0". These drawings also do not contain dimensions, but the figures do show the relative scale, elevations,

and thicknesses of floors and walls and are consistent with the associated COL Appendix C (and plant-specific Tier 1) figures.

UFSAR Figure 3.7.2-12 Sheets 3, 4, 5, 6, 8, 10 and 11, show section and plan views of the auxiliary building column line 1 wall from elevation 100’-0” to 180’-0”. These drawings do contain some dimensional information from which the dimensions in COL Appendix C (and plant-specific Tier 1) Table 3.3-1 can be inferred or specifically identified.

COL Appendix C (and plant-specific Tier 1) Figure 3.3-6 (and associated UFSAR Figures 1.2-7 and 3.7.2-12 Sheet 3) show a plan view of the auxiliary building column line 1 between column lines I and N at elevation 100’-0”. The rooms which have column line 1 as their outside wall include the rail car bay/filter storage area room 12371 with a column line 1 wall thickness [2’-3”] at elevation 100’-0”, and the waste disposal container area room 12374 and spent resin tank room 12373 with a column line 1 wall thickness [3’-0”] at elevation 100’-0”. COL Appendix C (and plant-specific Tier 1) Figure 3.3-1 (and associated UFSAR Figures 1.2-13, 1.2-14, and 3.7.2-12 Sheet 8) show a sectional view of auxiliary building column line 1 between column lines K-2 and L-2. For this section view, there is a decrease in the column line 1 wall thickness [3’-0”] at elevation 100’-0” to a thinner wall thickness [2’-3”] at a shelf near the top of the waste disposal container area room 12374 [at elevation 109’-3”]. Although the [3’-0”] dimension is not explicitly stated on the UFSAR figures, it can be inferred by reviewing the relative scale of the wall thickness as shown on the figure and by reviewing the dimensional information provided in the AP1000 concrete outline and nuclear island key dimension drawings. The supporting AP1000 concrete outline and nuclear island key dimension drawings, which the structural analysis is based on, are consistent with the dimensions as revised with this LAR. Therefore, the transition from column line 1 wall thickness of [3’-0”] to [2’-3”] at elevation 100’-0” through 109’-3” occurs at the east wall of the waste disposal container area room 12374 [5’-7” west of column line K-2]. These dimensions are consistent with the depictions of the wall in associated UFSAR Figure 3.7.2-12 Sheets 3 and 8.

COL Appendix C (and plant-specific Tier 1) Figure 3.3-7 (and associated UFSAR Figures 1.2-8, 1.2-9, and 3.7.2-12 Sheet 4) show a plan view of the auxiliary building column line 1 between column lines I and N at elevation 117’-6”. The rooms which have column line 1 as their outside wall include the rail car bay/filter storage area room 12371 with a column line 1 wall thickness of [2’-3”] at elevation 117’-6”, and the solid radwaste system (WSS) valve/piping area room 12471 with a column line 1 wall thickness of [3’-0”] at elevation 117’-6” up to the top of the room at elevation 125’-0”. As shown on UFSAR Figure 3.7.2-12 (Sheet 4), the WSS valve/piping area room 12471 roof (corner of the auxiliary building between [5'-6" east of column line L-2 to column line N]) is shown at elevation 125'-0". Although there is no section view of the column line 1 wall between elevation 117'-6" and 125'-0" in the UFSAR, the AP1000 concrete outline and nuclear island key dimension drawings show the column line 1 wall of the WSS valve/piping area room 12471 as [3'-0"] in thickness. Therefore, the transition from column line 1 wall thickness of [3’-0”] to [2’-3”] at elevation 125’-0” occurs at the east wall of the WSS valve/piping area room 12471 [5’-6” east of column line L-2]. The column line 1 wall thickness below elevation 125’-0” for the WSS valve/piping area room 12471 and the underlying spent resin tank room 12373 is [3’-0”] from [5’-6” east of column line L-2 to column line N]. As discussed in the structural, radiation shielding, and fire evaluation sections of this technical evaluation, this change activity does not change the structural design, fire protection characteristics, or radiation shielding characteristics of the wall, and the same regulatory acceptance criteria, codes, and industry standards specified in the UFSAR Chapter 3 continue to be met.

COL Appendix C (and plant-specific Tier 1) Figures 3.3-8 and 3.3-9 (and associated UFSAR Figures 1.2-10, 1.2-11, and 3.7.2-12 Sheets 5 and 6) show a plan view of the auxiliary building column line 1 between column lines I and N at elevations 135'-3", 153'-3", 160'-6", and at the south auxiliary building roof (room 12693). The auxiliary building column line 1 wall thickness for these elevations between column lines I and N is [2'-3"]. These dimensions are consistent with those shown in associated UFSAR Figures 3.7.2-12 Sheets 5, 6, and 7.

B. Auxiliary Building Column Line I Wall Thickness

UFSAR Figure 3.7.2-12 Sheet 3 shows column line I wall between column lines 3 and 4 and from elevation 100'-0" to 107'-2". This drawing does contain some dimensional information from which the dimensions in COL Appendix C (and plant-specific Tier 1) Table 3.3-1 can be specifically identified. UFSAR Figure 3.7.2-12 Sheet 10, Section H-H shows a section view of the column line I wall. This drawing does not explicitly show the dimension of the column line I wall, however it does show the relative scale of the wall in relation to other dimensions and walls shown on the figure.

COL Appendix C (and plant-specific Tier 1) Figure 3.3-6 shows a plan view of the auxiliary building column line I wall between column lines 3 and 4 at elevation 100'-0". UFSAR Figure 3.7.2-12 Sheet 3 shows the wall thickness of column line I wall between column lines 3 and 4 between elevation 100'-0" and 107'-2" as [2'-0"]. Furthermore, UFSAR Figure 3.7.2-12 Sheet 10 shows a sectional view of the auxiliary building at Section H-H. For this section view, there is a decrease in the wall thickness [2'-0"] of the column line I wall beginning at elevation 100'-0". Therefore, the transition of column line I wall thickness of [3'-0"] to [2'-0"] occurs at elevation 100-0". This wall thickness of [2'-0"] continues from elevation 100'-0" to the roof.

C. Auxiliary Building Labyrinth Wall Location Description

UFSAR Figure 3.7.2-12 Sheet 2 depicts the location of the auxiliary building labyrinth wall between column lines 3 and 4 and between column lines J-1 and J-2 at elevation 82'-6". While UFSAR Figure 3.7.2-12 Sheet 2 does not define the dimension of the space between the end of the labyrinth wall and the wall along column line J-2, the figure does show the relative scale of the labyrinth wall in relation to listed dimensions on the figure. In addition, COL Appendix C (and plant-specific Tier 1) Figure 3.3-4 does not define the dimension between the end of the labyrinth wall and column line J-2. Therefore, the correct distance must be inferred by reviewing the AP1000 design documentation and reviewing the relative scale shown on UFSAR Figure 3.7.2-12 Sheet 2.

In COL Appendix C (and plant-specific Tier 1) Table 3.3-1, the description of the labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6" states that the wall is located 7'-3" from column line J-2. The AP1000 design documentation has shown the distance from column line J-2 as [5'-2"] since the initial issuance of the design. As discussed in the structural, radiation shielding, and fire evaluation sections of this technical evaluation, this change activity does not change the structural design, fire protection characteristics, or radiation shielding characteristics of the wall, and the same regulatory acceptance criteria, codes, and industry standards specified in the UFSAR Chapter 3 continue to be met.

Structural Evaluation

The nuclear island structures, including the critical sections listed in COL Appendix C (and plant-specific Tier 1) Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads, as specified in the COL Appendix C (and plant-specific Tier 1) Section 3.3 Design Description, without loss of structural integrity and the safety-related functions. This includes the south wall of auxiliary building (column line 1) from elevation 100'-0" to elevation 180'-0" and the east wall of the auxiliary building (column line I) between column lines 3 and 4 between elevations 100'-0" and 107'-2".

The design basis loads are those loads associated with:

- Normal plant operation (including dead loads, live loads, lateral earth pressure loads, and equipment loads, including hydrodynamic loads, temperature and equipment vibration);
- External events (including rain, snow, flood, tornado, tornado generated missiles and earthquake); and
- Internal events (including flood, pipe rupture, equipment failure, and equipment failure generated missiles).

As previously discussed, the updated wall thicknesses for auxiliary building column line 1 wall, column line I wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6" in COL Appendix C (and plant-specific Tier 1) Table 3.3-1, and the clarification proposed for UFSAR Tier 2* Subsection 3H.5.1.1 are made to correct inconsistencies between this information and COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-8, and 3.3-9; associated UFSAR Figures 1.2-10, 1.2-11, 1.2-13, 1.2-14, and 3.7.2-12 Sheets 3, 5, 6, 8, and 10; and the AP1000 design drawings. For the auxiliary building column line 1 and column line I walls, the dimensional information contained within the AP1000 concrete outline drawings forms the basis for the detailed design basis structural calculations. For the impacted auxiliary building labyrinth wall, the dimensions contained within the CA20 module fabrication level drawings form the basis for the design basis structural calculations. The thicknesses of the auxiliary building column line 1 wall and column line I wall as described in the associated COL Appendix C (and plant-specific Tier 1) and UFSAR figures accurately reflect the intended design and construction of the auxiliary building as described in the UFSAR Subsections 1.2.4.3, 3.7.2, 3.8.4, Appendix 3H, and the depictions of the Auxiliary building column line 1 and column line I wall are consistent with the AP1000 design drawings. The updated wall thicknesses of the auxiliary building column line 1 wall and column line I wall are consistent with the design basis structural calculations, including seismic analysis, which are not impacted by these proposed changes. The updated locational description for the labyrinth wall is consistent with the locational information shown in the AP1000 design drawings and does not affect the design basis structural calculations. The proposed changes to the auxiliary building continue to meet the same regulatory acceptance criteria, codes, and industry standards specified in the UFSAR Chapter 3. The proposed changes comply with the requirements in 10 CFR 50 Appendix A, General Design Criteria (GDC) 2 and 4 as stated in the UFSAR.

There is no impact to the structural design and analysis addressed in UFSAR Subsection 3.8.4 and Appendix 3H by this change to COL Appendix C (and plant-specific Tier 1) Table 3.3-1. However, UFSAR Tier 2* text in UFSAR Subsection 3H.5.1.1 requires a change to the stated thicknesses of the auxiliary building column line 1 wall above grade (elevation 100'-0") to conform to the actual structural design of the auxiliary building as described elsewhere in COL

Appendix C (and plant-specific Tier 1) and the UFSAR, and to be consistent with COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-6, 3.3-7, 3.3-8, and 3.3-9; UFSAR Figures 1.2-7, 1.2-8, 1.2-9, 1.2-10, 1.2-11, 1.2-13, 1.2-14, and 3.7.2-12; and AP1000 design drawings.

Based on the above, the proposed changes do not affect any of the auxiliary building safety-related or nonsafety-related design functions described in the UFSAR.

Radiation Shielding Evaluation

As described in UFSAR Subsection 12.3, specific design features for maintaining personnel exposure as low as reasonably achievable (ALARA) are implemented in the design. The design feature recommendations given in Regulatory Guide 8.8 are utilized to minimize exposures to personnel. Walls and floors of the nuclear island structures as defined in COL Appendix C (and plant-specific Tier 1) Table 3.3-1, except for designed openings and penetrations, provide shielding during normal operations. The auxiliary building column line 1 wall, column line I wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6", along with the 6" thick radwaste building perimeter walls, provide shielding for personnel in the adjacent radwaste and annex building areas. There are no changes to the thicknesses of the auxiliary building column line 1 wall from elevation 100'-0" to 109'-3", column line I wall between column lines 3 and 4 and from elevation 100'-0" to the roof, and labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6" as shown in COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-4, 3.3-6, 3.3-7, 3.3-8, and 3.3-9, and the associated UFSAR figures. The thicknesses of the auxiliary building column line 1 wall and auxiliary building column line I wall as described in these associated COL Appendix C (and plant-specific Tier 1) and UFSAR figures are the basis for the analysis of radiation shielding in UFSAR Subsections 12.3.2.2.3 and 12.3.2.2.4.

The radwaste and annex building shielding calculations are not impacted by these proposed changes, and the updated wall thicknesses provide acceptable shielding as required to be verified by Table 3.3-6 Item 3.d). UFSAR Figures 12.3-1 Sheets 6 through 14 and 12.3-2 Sheets 6 through 14 identify the radiation zones for normal operations/shutdown and post-accident radiological condition, respectively, for the nuclear island, annex building, and radwaste building, including the areas bordered by the auxiliary building column line 1 wall and column line I wall. UFSAR Figure 12.3-3 Sheets 6 through 14 identify the radiological access controls during normal operations/shutdown for the nuclear island, annex building, and radwaste building. The radiation zones and radiological access controls for the nuclear island, annex building, and radwaste building are not impacted by these proposed changes. Furthermore, there are no radiation zone changes or radiological access control changes required because of these proposed changes. Therefore, the effectiveness of the auxiliary building column line 1 wall, column line I wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2 as an acceptable radiological shielding barrier is not changed by these proposed changes.

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

The proposed changes do not affect plant radiation zones, controls under 10 CFR 20, and expected amounts and types of radioactive materials, as the previously evaluated and approved

structural design of the auxiliary building is not changed. Therefore, individual and cumulative radiation exposures do not change.

Fire Evaluation

As described in UFSAR Appendix 9A, the fire protection analysis evaluates the potential for occurrence of fires within the plant and documents the capabilities of the fire protection system and the capability to safely shut down the plant. The auxiliary building column line 1 wall is a three hour fire barrier between elevation 100'-0" and 135'-3" as shown in UFSAR Figure 9A-1, Sheets 5 and 6. The wall forms the fire rated boundary between the auxiliary building and the radwaste building for fire area 1200 AF 02, as described in UFSAR Subsections 9A.3.1.3.1.1 and 9A.3.1.3.1.2. The auxiliary building column line I wall between column lines 3 and 4 and between elevations 100'-0" and 107'-2" forms the exterior wall of Stairwell S04. This wall is a three hour fire barrier as shown in UFSAR Figure 9A-1 Sheet 5. The wall forms the exterior fire rated boundary for fire area 1205 AF 01, as described in UFSAR Subsection 9A.3.1.3.2.3. There are no safety-related components and no radioactive systems in this fire area. The labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6" forms the north wall of piping/valve room 12262, which contains Normal Residual Heat Removal System (RNS) pressure boundary and Spent Fuel Pool Cooling System (SFS) piping. This wall forms the boundary for fire zone 1225 AF 12262 as shown in UFSAR Figure 9A-1 Sheet 3. There are no changes to the thicknesses of the auxiliary building column line 1 wall, auxiliary building column line I wall, or the labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6" as originally described in Revision 19 of the AP1000 DCD, and as shown in COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-4, 3.3-6, 3.3-7, 3.3-8, and 3.3-9, and the associated UFSAR figures. Therefore, the fire protection analysis as described in UFSAR Appendix 9A is not impacted by this change to COL Appendix C (and plant-specific Tier 1) Table 3.3-1.

There are no fire area changes required because of these proposed changes. The previously approved structural design of the auxiliary building does not result in changes to the effectiveness of the auxiliary building column line 1 wall, column line I wall between column lines 3 and 4, and labyrinth wall between column line 3 and 4 and between J-1 and J-2 as an acceptable fire barrier, or to fire loading as no combustible materials were added or affected. The structural design of the auxiliary building was previously evaluated and approved in Revision 19 of the AP1000 DCD, and thus there are no changes required to the fire protection analysis described in UFSAR Appendix 9A.

ITAAC Evaluation

COL Appendix C (and plant-specific Tier 1) Table 3.3-6 specifies the ITAAC for the auxiliary building. Updating the auxiliary building column line 1 and column line I wall thicknesses in COL Appendix C (and plant-specific Tier 1) Table 3.3-1 is necessary to complete the following ITAAC requirements:

- ITAAC 1 requires verification of the physical arrangement of the auxiliary building column line 1 wall as described in the Design Description of COL Appendix C (and plant-specific Tier 1) Section 3.3 and Figures 3.3-1 through 3.3-14.

- ITAAC 2.a)i.d) requires a report that reconciles deviations during construction and concludes that the as-built structures in the radiologically controlled area of the auxiliary building, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description of COL Appendix C (and plant-specific Tier 1) Section 3.3 without loss of structural integrity or the safety-related functions.

- ITAAC 2.a)ii.d) requires a report that concludes that the as-built concrete thicknesses of the radiologically controlled area of the auxiliary building sections conform to the building sections defined in COL Appendix C (and plant-specific Tier 1) Table 3.3-1.

- ITAAC 3.d) requires a report that concludes that the shield walls and floors of the radiologically controlled area of the auxiliary building as defined in COL Appendix C (and plant-specific Tier 1) Table 3.3-1, except for designed openings or penetrations, are consistent with the concrete wall thicknesses provided in the table.

Therefore, the updated wall thicknesses provide acceptable basis for the verification of the physical arrangement of the auxiliary building column line 1 wall and column line I wall as required by ITAAC 1, and the verification of the as-built auxiliary building column line 1 wall and column line I wall as required by ITAAC 2.a)i.d), 2.a)ii.d), and 3.d).

The correction to the wall description for the auxiliary building labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82’-6” to 92’-6” is made to correct an inconsistency between the COL Appendix C (and plant-specific Tier 1) Table 3.3-1 and the AP1000 auxiliary building design. As previously discussed, neither COL Appendix C (and plant-specific Tier 1) Figure 3.3-4, nor UFSAR Figure 3.7.2-12, depicts the dimension between the end of the labyrinth wall and column line J-2. Thus, the general location of the labyrinth wall and wall thickness provides the acceptable basis for verification of the physical arrangement as required by ITAAC 1. The thickness of the labyrinth wall provides the acceptable basis for the verification of the labyrinth wall for COL Appendix C ITAAC 2.a)i.d), 2.a)ii.d), and 3.d).

PRA Evaluation

An impact review determined these proposed changes do not affect or require any change to the AP1000 Probabilistic Risk Assessment (PRA) presented in UFSAR Chapter 19, including the Fire PRA, results and insights (e.g., core damage frequency (CDF) and large release frequency (LRF)). The design was previously evaluated and approved in Revision 19 of the AP1000 DCD, and thus there are no changes to the AP1000 PRA required to address the proposed changes to the licensing basis. As described in UFSAR Subsection 19.55.2.2.3, a seismic fragility analysis is performed to define the maximum limit, seismic capacity, of functional capability or operability with the associated uncertainty for plant components and structures that could have an effect on safe shutdown of the plant following a seismic event. Because there is no change to the auxiliary building structure as shown in COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-4, 3.3-6, 3.3-7, 3.3-8, and 3.3-9 and the associated UFSAR figures, the auxiliary building seismic fragility analysis is not affected by this change. There are no new postulated failures of the auxiliary building required in the PRA model. Therefore, there are no changes required to initiating event frequencies and system logic

models of the PRA, including the Seismic Margins Analysis. The existing PRA risk significance investment protection determination for the auxiliary building is not affected.

There is no change to the risk-significant designation of SSCs within the Design Reliability Assurance Program (D-RAP) as described in UFSAR Table17.4-1, as the previously evaluated and approved structural design of the auxiliary building is not changed.

The proposed changes do not affect the results of the aircraft impact assessment described in UFSAR Subsection 19F.4. The proposed changes do not affect any key AIA design features identified in UFSAR Appendix 19F. The structural design of auxiliary building column line 1 wall, column line I wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2 as described UFSAR Subsections 1.2.4.3, 3.7.2, 3.8.4, and Appendix 3H and the fire protection features of these walls described in UFSAR Appendix 9A are not affected by this change.

Physical Security Evaluation

The proposed changes do not affect the structural design of the auxiliary building column line 1 wall, column line I wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2. The same regulatory acceptance criteria, codes, and industry standards specified in the UFSAR Chapter 3 continue to be met for the design of these walls. The proposed changes are consistent with the previously evaluated and approved structural design of the auxiliary building column line 1 wall, column line I wall, and labyrinth wall, and do not involve a change to the size or shape of the auxiliary building column line 1 wall, column line I wall, and labyrinth wall as shown in COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-6, 3.3-7, 3.3-8, and 3.3-9 and associated UFSAR Figures 1.2-10, 1.2-11, 1.2-13, and 3.7.2-12 Sheets 3, 5, 6, 8, and 10. In addition, the proposed changes do not involve the addition or removal of an opening to the affected auxiliary building walls. Therefore, the proposed changes have no impact on the physical security evaluation because these changes are consistent with the approved structural design of walls, doors, or access to the Nuclear Island.

Summary

The proposed changes do not affect the structural design, fire protection characteristics, or radiation shielding characteristics of the auxiliary building column line 1 wall, column line I wall between column lines 3 and 4 wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2. The same regulatory acceptance criteria, codes, and industry standards specified in the UFSAR Chapter 3 continue to be met for the design of these walls. The proposed changes to the auxiliary building column line 1 wall and column line I wall in the COL Appendix C (and plant-specific Tier 1) Table 3.3-1 maintain and update the necessary information in the table to confirm that the SSCs related to this activity are constructed in accordance with the design certification as verified by COL Appendix C (and plant-specific Tier 1) Table 3.3-6 ITAAC. The proposed correction to the wall description for auxiliary building labyrinth wall between column line 3 and 4 and between J-1 and J-2 aligns the description of the labyrinth wall in the COL Appendix C (and plant-specific Tier 1) to more accurately reflect the design of the AP1000 auxiliary building.

The proposed changes do 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 52, Appendix D, VIII.B.6, requires prior NRC approval for departure from Tier 2* information. The proposed amendment includes a departure from Tier 2* information. Therefore, a license amendment request (LAR) (as supplied herein) is required.

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

10 CFR Part 50, Appendix A, General Design Criteria Criterion (GDC) 1, Quality standards and records, states: “Structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. Where generally recognized codes and standards are used, they shall be identified and evaluated to determine their applicability, adequacy, and sufficiency and shall be supplemented or modified as necessary to assure a quality product in keeping with the required safety function.” The proposed changes to increase auxiliary building wall thicknesses will continue to follow the applicable guidelines in NRC Regulatory Guides and industry standards, and the requirements of GDC 1 therefore continue to be met.

10 CFR 50 Appendix A, GDC 2, Design bases for protection against natural phenomena, states: “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 design bases for these structures, systems, and components shall reflect: (1) Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena and (3) the importance of the safety functions to be performed.” The proposed changes do not change the structural design of the auxiliary building as described elsewhere in COL Appendix C (and plant-specific Tier 1) and the UFSAR, thus this criterion remains satisfied.

10 CFR 50 Appendix A, GDC 4, Environmental and dynamic effects design bases, states: “Structures, systems, and components important to safety shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit. However, dynamic effects associated with postulated pipe ruptures in nuclear power units may be excluded from the design basis when analyses reviewed and approved by the Commission demonstrate that the probability of fluid system piping rupture is extremely low under conditions consistent with the design basis for the piping.” The proposed changes do not change the structural design of the auxiliary building as described

elsewhere in COL Appendix C (and plant-specific Tier 1) and the UFSAR, thus this criterion remains satisfied.

4.2 Precedent

No precedent is identified.

4.3 Significant Hazards Consideration Determination

The proposed changes revise the Combined License (COL) and Updated Final Safety Analysis Report (UFSAR) Tier 2* to be consistent with the previously evaluated and approved design of the thicknesses of the auxiliary building column line 1 wall between elevation 100'-0" and 109'-3" and the auxiliary building column line I wall between column lines 3 and 4 and between elevations 100'-0" and the roof. In addition, a correction is proposed to revise the wall description of the auxiliary building labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6" to be consistent with the detailed structural design of the AP1000 auxiliary building. COL Appendix C (and plant-specific Tier 1) Table 3.3-1 define concrete wall thicknesses for the nuclear island buildings, turbine building, and annex building, and identify the walls that provide radiation shielding. These design characteristics are required to be verified by Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC) during construction.

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

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

Response: No

The wall thickness and location changes do not affect the operation of any systems or equipment that initiate an analyzed accident or alter any structures, systems, and components (SSC) accident initiator or initiating sequence of events. The changes are consistent with the wall thicknesses and locations previously evaluated and the approved structural design of the auxiliary building column line 1 wall, column line I wall between column lines 3 and 4, and labyrinth wall between column line 3 and 4 and between J-1 and J-2. The proposed changes do not involve a change to the thicknesses of the auxiliary building column line 1 wall, column line I wall, and labyrinth wall as shown in COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-6, 3.3-7, 3.3-8, and 3.3-9 and associated UFSAR Figures 1.2-10, 1.2-11, 1.2-13, and 3.7.2-12 Sheets 3, 5, 6, 8, and 10. Failure of the auxiliary building is not an accident initiator or part of an initiating sequence of events for an accident previously evaluated. Therefore, the probabilities of the accidents evaluated in the UFSAR are not affected.

The changes do not have an adverse impact on the ability of the auxiliary building to perform its design functions. The design of the auxiliary building

continues to meet the same regulatory acceptance criteria, codes, and standards as required by the UFSAR. As a result, the changes do not result in any adverse impacts on the ability of the auxiliary building to mitigate the consequences of an accident, meet the applicable regulatory acceptance criteria, and there is no adverse effect on any safety-related SSC or function used to mitigate an accident. The changes do not affect the prevention and mitigation of other abnormal events, e.g., anticipated operational occurrences, earthquakes, floods and turbine missiles, or their safety or design analyses. Therefore, the consequences of the accidents evaluated in the UFSAR are not affected.

Therefore, the changes do 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 wall thickness and location changes do not affect the operation of any systems or equipment that may initiate a new or different kind of accident, or alter any SSC such that a new accident initiator or initiating sequence of events is created. The proposed changes are consistent with the previously evaluated and approved structural design of the auxiliary building column line 1 wall, column line I wall between column lines 3 and 4 from elevation 100'-0" to the roof, and labyrinth wall between column line 3 and 4 and between J-1 and J-2. The proposed changes do not involve a change to the thicknesses of the auxiliary building column line 1 wall, column line I wall, and labyrinth wall as shown in COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-6, 3.3-7, 3.3-8, and 3.3-9 and associated UFSAR Figures 1.2-10, 1.2-11, 1.2-13, and 3.7.2-12 Sheets 3, 5, 6, 8, and 10. These changes do not adversely affect any other auxiliary building or SSC design functions or methods of operation in a manner that results in a new failure mode, malfunction, or sequence of events that affect safety-related or nonsafety-related equipment. Therefore, this activity does not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that results in significant fuel cladding failures.

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

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

Response: No

The wall thickness and location changes maintain existing safety margins. The proposed changes ensure that auxiliary building design requirements and design functions are met. The proposed changes maintain existing safety margin through continued application of the existing requirements of the UFSAR, while

updating the acceptance criteria for verifying the design features necessary to ensure the auxiliary building performs the design functions required to meet the existing safety margins. Therefore, the proposed changes satisfy the same design functions in accordance with the same codes and standards as stated in the UFSAR. These proposed changes do not adversely affect any design code, function, design analysis, safety analysis input or result, or design/safety margin. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the proposed changes.

Because no safety analysis or design basis acceptance limit/criterion is challenged or exceeded by these proposed changes, no margin of safety is reduced. Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

4.4 Conclusions

This assessment addresses the considerations discussed above. The plant licensing bases, safety analyses, and design bases evaluations demonstrate that the requested changes are accommodated without an increase in the probability or consequences of an accident previously evaluated, without creating the possibility of a new or different kind of accident from any accident previously evaluated, and without a significant reduction in a margin of safety. Having arrived at negative declarations with regard to the criteria of 10 CFR 50.92, this assessment determined that the requested change does not involve a Significant Hazards Consideration.

5. ENVIRONMENTAL CONSIDERATIONS

Sections 2 and 3 of this license amendment request provide the details of the proposed changes.

This review supports a request to amend the Combined License (COL) and Updated Final Safety Analysis Report Tier 2*, and involve changes to COL Appendix C and UFSAR Tier 2* Subsection 3H.5.1.1, and departures from plant-specific Tier 1 information. The proposed amendment does not require departure from the certification information in the Updated Final Safety Analysis Report (UFSAR) Tier 2 of the plant-specific Design Control Document (DCD). The proposed amendment is consistent with the previously evaluated and approved design of the auxiliary building column line 1 wall, column line I wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2. During construction, inconsistencies were identified that necessitate changes to COL Appendix C (and plant-specific Tier 1) Table 3.3-1 and UFSAR Tier 2* Subsection 3H.5.1.1 for defining the thicknesses of the auxiliary building column line 1 wall between elevation 100’-0” and 109’-3”, COL Appendix C (and plant-specific Tier 1) Table 3.3-1 for defining the thickness of the column line I wall between column lines 3 and 4 from elevation 100’-0” to the roof, and COL Appendix C (and plant-specific Tier 1) Table 3.3-1 for describing the distance from the labyrinth wall between column lines 3 and 4 and column line J-2 in the wall description. These design and licensing basis changes are collectively called “proposed changes.”

The Licensee has determined that the anticipated construction and operational effects of the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

(i) There is no significant hazards consideration.

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

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

The proposed changes are consistent with the previously evaluated and approved structural design of the auxiliary building column line 1 wall, column line I wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2, and do not involve a change to the thicknesses of the auxiliary building column line 1 wall, column line I wall, and labyrinth wall as shown in COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-6, 3.3-7, 3.3-8, and 3.3-9, and associated UFSAR Figures 1.2-10, 1.2-11, 1.2-13, and 3.7.2-12 Sheets 3, 5, 6, 8, and 10. During construction, inconsistencies were identified that necessitate changes to COL Appendix C (and plant-specific Tier 1) Table 3.3-1 and UFSAR Tier 2* Subsection 3H.5.1.1 for defining the thicknesses of the auxiliary building column line 1 wall between elevation 100'-0" and 109'-3", and COL Appendix C (and plant-specific Tier 1) Table 3.3-1 for defining the thickness of the column line I wall between column lines 3 and 4 from elevation 100'-0" to the roof. These design characteristics are required to be verified by Inspection, Tests, Analyses, and Acceptance Criteria (ITAAC) during construction. In addition, an inconsistency was identified for describing the distance from the labyrinth wall between column lines 3 and 4 and column lines J-1 and J-2 in the wall description within COL Appendix C (and plant-specific Tier 1) Table 3.3-1. Therefore, the proposed changes are unrelated to any aspect of plant construction or operation that introduces any change to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents), or affect any plant radiological or non-radiological effluent release quantities. Furthermore, the proposed changes do not diminish the functionality of any design or operational features credited with controlling the release of effluents during plant operation. Therefore, it is concluded that the proposed amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

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

The proposed changes do not affect a potentially radioactive system, but do involve an area of the plant (radiologically controlled area of the auxiliary building) that contains radioactive plant systems. However, the proposed changes do not result in an additional source or quantity of radioactive materials being introduced into the affected area. The proposed changes are consistent with the structural design of the auxiliary building that was previously evaluated and approved, and do not involve a change to the thicknesses of the auxiliary building column line 1 wall, column line I wall between column lines 3 and 4, and labyrinth wall between column line 3 and 4 and between J-1 and J-2 as shown in COL Appendix C (and plant-specific Tier 1) Figures 3.3-1, 3.3-6, 3.3-7, 3.3-8, and 3.3-9, and associated UFSAR Figures 1.2-10, 1.2-11, 1.2-13, and 3.7.2-12 Sheets 3, 5, 6, 8, and 10. As a result, the changes do not adversely affect individual or cumulative occupational radiation exposure during plant operation. The proposed changes to the identification of the design characteristics to be verified during construction conform to the original design of the auxiliary building, do not change the manner of operating any system located in the auxiliary building, and thus do not adversely affect individual or cumulative occupational radiation exposure during plant operation. The proposed changes verify the as-built shielding provided by the auxiliary building column line 1 wall, column line I wall, and labyrinth wall between column line 3 and 4 and between J-1 and J-2 is in conformance with the radiological shielding analyses. Consequently, the proposed changes have no effect on individual or cumulative occupational radiation exposure during plant operation. Therefore, it is concluded that the proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

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

6. REFERENCES

None.

South Carolina Electric and Gas Company

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

NND-16-0365

Enclosure 2

Exemption Request:

Resolution of Auxiliary Building Wall Thickness and Description Inconsistencies

(LAR 15-10)

(This Enclosure consists of 7 pages, including this cover page)

1.0 PURPOSE

South Carolina Electric and 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 plant-specific departure from elements of the certification information in Tier 1 of the plant-specific AP1000 Design Control Document (DCD). The regulation, 10 CFR 52, Appendix D, Section III.B, requires an applicant or licensee referencing Appendix D to 10 CFR Part 52 to incorporate by reference and comply with the requirements of Appendix D, including certified information in DCD Tier 1. The Tier 1 information for which a plant-specific departure and exemption is being requested is related to the auxiliary building structural design, specifically the design thicknesses of the auxiliary building column line 1 wall, column line I wall, and the location description for the auxiliary building labyrinth wall.

This request for exemption will apply the requirements of 10 CFR 52, Appendix D, Section VIII.A.4 to allow departures from Tier 1 information due to the following proposed changes to the system-based design descriptions in Table 3.3-1:

- Table 3.3-1 is revised to identify the listed thicknesses of the auxiliary building column line 1 wall, while identifying the same radiation shielding function as the current column line 1 wall entries, as follows:
  - 2'-3", from column line I to 5'-7" west of column line K-2, from elevation 100'-0" to 109'-3";
  - 3'-0", from 5'-7" west of column line K-2 to column line N, from elevation 100'-0" to 109'-3";
  - 2'-3", from column line I to 5'-6" east of column line L-2, from elevation 109'-3" to 180'-0";
  - 3'-0", from 5'-6" east of column line L-2 to column line N, from elevation 109'-3" to 125'-0".

- Table 3.3-1 is revised to identify the listed thickness of auxiliary building column line I wall between column lines 3 and 4 and between elevation 100'-0" to the Roof as follows:
  - 2'-0", from column line 3-4, from elevation 100'-0" to the roof.

- Table 3.3-1 is revised to identify the wall location for the labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" and 92'-6" as being 5'-2" from column line J-2.

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

2.0 BACKGROUND

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 (VCSNS) Units 2 and 3, respectively.

During construction, inconsistencies were identified that necessitate changes to plant-specific Tier 1 Table 3.3-1 and UFSAR Tier 2* Subsection 3H.5.1.1 for defining the thicknesses of the auxiliary building column line 1 wall between elevation 100'-0" and 109'-3", and plant-specific Tier 1 Table 3.3-1 for defining the thickness of the column line I wall between column lines 3 and 4 from elevation 100'-0" to the roof.

In addition, an inconsistency was identified during construction that necessitates a correction to the dimensions describing the labyrinth wall between column line 3 and 4 and between J-1 and J-2 from elevation 82'-6" to 92'-6".

An exemption from elements of the AP1000 certified (Tier 1) design information to allow a departure from the design description is requested.

3.0 TECHNICAL JUSTIFICATION OF ACCEPTABILITY

An exemption is requested to depart from AP1000 plant-specific DCD Tier 1 material with regard to the design thicknesses of the auxiliary building column line 1 wall and column line I wall, and the location description for the auxiliary building labyrinth wall.

The proposed changes to the description information presented in plant-specific Tier 1 are at a level of detail that is consistent with the information currently provided therein. The proposed changes neither adversely impact the ability to meet the design functions of the components, nor involve a significant decrease in the level of safety provided by the components. The proposed changes to information in plant-specific Tier 1 continue to provide the detail necessary to implement the corresponding ITAAC. Further, application of the current plant-specific certified design information in Tier 1 as required by 10 CFR Part 52, Appendix D, Section III.B, in the particular circumstances discussed in this request would not serve the underlying purpose of the rule since it could be read to be inconsistent with design and programmatic information currently provided in Tier 2 of the plant-specific DCD related to dose reduction.

4.0 JUSTIFICATION FOR PROPOSED EXEMPTION

10 CFR Part 52, Appendix D, Section VIII.A.4 and 10 CFR 52.63(b)(1) govern the issuance of exemptions from elements of the certified design information for AP1000 nuclear power plants. Since SCE&G has identified changes to the Tier 1 information as discussed in Enclosure 1 of the accompanying License Amendment Request, an exemption from the certified design information in Tier 1 is needed.

10 CFR Part 52, Appendix D, and 10 CFR 50.12, §52.7, and §52.63 state that the NRC may grant exemptions from the requirements of the regulations provided six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12(a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)]; 5) the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the

exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, App. D, VIII.A.4].

The requested exemption to allow changes to the description of the components satisfies the criteria for granting specific exemptions, as described below.

1. This exemption is authorized by law

The NRC has authority under 10 CFR 52.63, §52.7, and §50.12 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR 50.12 and §52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 upon a proper showing. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Accordingly, this requested exemption is "authorized by law," as required by 10 CFR 50.12(a)(1).

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

The proposed exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow changes to elements of the Tier 1 DCD to depart from the AP1000 certified (Tier 1) design information. The plant-specific 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 Tier 1 ITAAC will continue to serve its required purpose.

The proposed changes to the auxiliary building column line 1 wall and column line I wall in plant-specific Tier 1 Table 3.3-1 maintain and update the necessary information in the table to confirm that the SSCs related to this activity are constructed in accordance with the design certification as verified by plant-specific Tier 1 Table 3.3-6 ITAAC. The proposed correction to the wall description for auxiliary building labyrinth wall between column line 3 and 4 and between J-1 and J-2 aligns the description of the labyrinth wall in the plant-specific Tier 1 to more accurately reflect the design of the AP1000 auxiliary building.

Because the changes will not alter the operation of any plant equipment or system's ability to perform their design function, these changes do not present an undue risk to existing equipment or systems. The changes do not introduce any new industrial, chemical, or radiological hazards that would represent a public health or safety risk, nor do they modify or remove any design or operational controls or safeguards that are intended to mitigate any existing on-site hazards. Furthermore, the proposed changes would not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in significant fuel cladding failures. Accordingly, these changes do not present an undue risk from any new equipment or systems.

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

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

The exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would revise the design thicknesses of the auxiliary building column line 1 wall and column line I wall, and the location description for the auxiliary building labyrinth wall, as presented in plant-specific Tier 1 information, thereby departing from the AP1000 certified design information. The proposed exemption will enable performance of the ITAAC associated with these changed elements, by reflecting the corrected design information in the text, and tables that are referenced in these ITAAC. The exemption does not alter or impede the design, function, or operation of any plant structures, systems, or components (SSCs) associated with the facility's physical or cyber security, and therefore does not affect any plant equipment that is necessary to maintain a safe and secure plant status. The proposed exemption has no impact on plant security or safeguards.

Therefore, the requested exemption is consistent with the common defense and security.

4. Special circumstances are present

10 CFR 50.12(a)(2) lists six “special circumstances” for which an exemption may be granted. Pursuant to the regulation, it is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii). That subsection defines special circumstances as when “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.

The proposed changes to the auxiliary building column line 1 wall and column line I wall in plant-specific Tier 1 Table 3.3-1 maintain and update the necessary information in the table to confirm that the SSCs related to this activity are constructed in accordance with the design certification as verified by COL Appendix C and plant-specific Tier 1 Table 3.3-6 ITAAC. The proposed correction to the wall description for auxiliary building labyrinth wall between column line 3 and 4 and between J-1 and J-2 aligns the description of the labyrinth wall in the COL Appendix C (and plant-specific Tier 1) to more accurately reflect the design of the AP1000 auxiliary building.

The proposed change to Tier 1 information is to the design thicknesses of the auxiliary building column line 1 wall and column line I wall, and the location description for the auxiliary building labyrinth wall. These changes do not impact the ability of any SSCs to

perform their functions or negatively impact safety. Accordingly, this exemption from the certification information will enable the licensee to safely construct and operate the AP1000 facility consistent with the design certified by the NRC in 10 CFR 52, Appendix D. Therefore, special circumstances are present, because application of the current plant-specific certified design information in Tier 1 as required by 10 CFR Part 52, Appendix D, Section III.B in the particular circumstances discussed in this request is not necessary to achieve the underlying purpose of the rule.

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

Based on the nature of the changes to the plant-specific Tier 1 information and the understanding that these changes are necessary to support the actual system functions, it is likely that other AP1000 licensees will request this exemption. However, if this is not the case, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization because the design functions of the systems associated with this request will continue to be maintained. The proposed change to the design thicknesses of the auxiliary building column line 1 wall and column line I wall, and the location description for the auxiliary building labyrinth wall, are departures from Table 3.3-1 in the plant-specific AP1000 DCD. This exemption request and the associated marked-up table demonstrate that there is a minimal change from the plant-specific AP1000 DCD, minimizing the reduction in standardization and consequently the safety impact from the reduction.

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

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

The proposed exemption would allow revision to the design thicknesses of the auxiliary building column line 1 wall and column line I wall, and the location description for the auxiliary building labyrinth wall, as described in the plant-specific Tier 1 information.

The proposed changes to the auxiliary building column line 1 wall and column line I wall in plant-specific Tier 1 Table 3.3-1 maintain and update the necessary information in the table to confirm that the SSCs related to this activity are constructed in accordance with the design certification as verified by plant-specific Tier 1 Table 3.3-6 ITAAC. The proposed correction to the wall description for auxiliary building labyrinth wall between column line 3 and 4 and between J-1 and J-2 aligns the description of the labyrinth wall in plant-specific Tier 1 to more accurately reflect the design of the AP1000 auxiliary building.

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

5.0 RISK ASSESSMENT

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

6.0 PRECEDENT EXEMPTIONS

None identified.

7.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed exemption does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Specific justification is provided in Section 5 of the corresponding license amendment request. Accordingly, the proposed exemption meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed exemption.

8.0 CONCLUSION

The proposed changes to DCD Tier 1 are necessary to revise information in design descriptions in plant-specific Tier 1 information. The exemption request meets the requirements of 10 CFR 52.63, 10 CFR 52.7, 10 CFR 50.12, 10 CFR 51.22 and 10 CFR 52 Appendix D. Specifically, the exemption request meets the criteria of 10 CFR 50.12(a)(1) in that the request is authorized by law, presents no undue risk to public health and safety, and is consistent with the common defense and security. Furthermore, approval of this request does not result in a significant decrease in the level of safety, presents special circumstances, does not present a significant decrease in safety as a result of a reduction in standardization, and meets the eligibility requirements for categorical exclusion.

9.0 REFERENCES

None

South Carolina Electric and Gas Company

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

NND-16-0365

Enclosure 3

Proposed Changes to Licensing Basis Documents

(LAR 15-10)

Note: Added text is **Blue Underline**

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

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

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 - Revise the information in the locations shown below.

Table 3.3-1 (cont.)
Definition of Wall Thicknesses for Nuclear Island Buildings, Turbine Building, and Annex Building[1]

Wall or Section Description	Column Lines[7]	Floor Elevation or Elevation Range[7][8]	Concrete Thickness[2][3][4][5][9]	Applicable Radiation Shielding Wall (Yes/No)
….	….	….	….	….
Auxiliary Building Walls/Floors Radiologically Controlled				
….	….	….	….	….
Column Line 1 wall	From I to 5’-7” west of K-2	From 100’-0” to 109’-3”	2’-3”	Yes
Column Line 1 wall	From 5’-7” west of K-2 to N	From 100’-0” to 109’-3”	3’-0”	Yes
Column Line 1 wall	From I to 5'-6" east of L-2	From ~~100'-0"~~109’-3” to 180'-0"	2'-3"	Yes
Column Line 1 wall	From 5'-6" east of L-2 to N	From ~~100'-0"~~109’-3” to 125'-0"	3'-0"	Yes
Column Line 1 wall	From 5'-6" east of L-2 to N	From 125’-0” to 180'-0"	2’-3"	Yes
….	….	….	….	….
~~Column Line I wall~~	~~From 3 to 4~~	~~From100’-0” to 107’-2”~~	~~3’-0”~~	~~Yes~~
….	….	….	….	….
Column Line I wall	From 3 to 4	From~~107'-2"~~100’-0” to roof	2’-0”	Yes
….	….	….	….	….
Labyrinth Wall between Col. Line 3 and 4 and J-1 to ~~7’-3”~~5’-2” from J-2	Not Applicable	From 82’-6” to 92’-6”	2’-6”	Yes
….	….	….	….	….

Updated Final Safety Analysis Report

UFSAR subsection 3H.5.1.1, Exterior Wall at Column Line 1 – Revise the subsection as shown below.

3H.5.1.1 Exterior Wall at Column Line 1

[*The wall at column line 1 is the exterior wall at the south end of the nuclear island. The reinforced concrete wall extends from the top of the basemat at elevation 66'-6" to the roof at elevation 180'-0". It is 3'-0" thick below the grade.* ~~*and 2'-3" thick a*~~*Above the grade*~~*.*~~*, the wall thickness is as follows:*

- *2'-3", from column line I to 5'-7" west of column line K-2, from elevation 100'-0" to 109'-3";*
- *3'-0", from 5'-7" west of column line K-2 to column line N, from elevation 100'-0" to 109'-3";*
- *2'-3", from column line I to 5'-6" east of column line L-2, from elevation 109'-3" to 180'-0";*
- *3'-0", from 5'-6" east of column line L-2 to column line N, from elevation 109'-3" to 125'-0";*
- *2'-3", from 5'-6" east of column line L-2 to column line N, from elevation 125'-0" to 180'-0".*

The wall is designed for the applicable loads including dead load, live load, hydrostatic load, static and dynamic lateral soil pressure loads, seismic loads, and thermal loads. For various segments of this wall, Table 3H.5-2 provides the listing and magnitude of the various design loads and Table 3H.5-3 presents the details of the wall reinforcement. The sections where the required reinforcement is calculated are shown in Figure 3H.5-2 (Sheet 1). Typical wall reinforcement is shown on Figure 3H.5-3.]*