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SOUTHERN COMPANY

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U.S. Nuclear Regulatory Commission
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Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Response to Request for Additional Information Related to
License Amendment Request (LAR) 14-001 (LAR-14-001S)

Ladies and Gentlemen:

By letter dated July 3, 2014, SNC submitted a request for a license amendment (LAR-14-001, SNC correspondence ND-14-0748) to depart from Tier 2* information in the Updated Final Safety Analysis Report (UFSAR), plant-specific Tier 1 and corresponding COL Appendix C information, and UFSAR Tier 2 information that involves Tier 2* information to address changes in the UFSAR and design documents related to containment internal structural wall module design details.

The Nuclear Regulatory Commission (NRC) staff issued Request for Additional Information (RAI) No. 1, also referred to as electronic RAI (eRAI) 7645, associated with License Amendment Request (LAR) 14-001 via electronic mail dated July 29, 2014 [ADAMS Accession No. ML14210A265]. The RAI and responses to the individual items are provided in Enclosure 5 of this LAR. Enclosures 1, 2, 3, and 4 were provided with the original submittal of the LAR.

The supplemental information provided in this letter does not impact the scope of the original LAR or conclusions of the technical evaluation, regulatory evaluation (including the significant hazards consideration determination), or environmental considerations of the original LAR or exemption request.

This letter contains no regulatory commitments.

In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia of this LAR supplement by transmitting a copy of this letter and enclosure to the designated State Official.

Should you have any questions, please contact Mr. Jason Redd at (205) 992-6435.

Mr. Brian H. Whitley states that: he is the Regulatory Affairs Director of Southern Nuclear Operating Company; he is authorized to execute this oath on behalf of Southern Nuclear Operating Company; and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

Brian H. Whitley

BHW/DRG/kms

Sworn to and subscribed before me this 28th *day of* August, *2014*

Notary Public: Kristen Marie Seibert

My commission expires: August 16, 2016

Enclosure 5 Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Response to NRC Staff's Questions Related to License Amendment Request (LAR) 14-001 (LAR-14-001S)

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Southern Nuclear Operating Company

ND-14-1351

Enclosure 5
(Note that Enclosures 1 through 4 were provided with the original LAR submittal.)

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Response to NRC Staff's Questions Related to License Amendment Request (LAR) 14-001 (LAR-14-001S)

eRAI Tracking No. 7645

Question 1:

Cover Letter: The second paragraph states in part, the amendment proposes to depart from Tier 2* and it involves Tier 2 information. Whereas Summery [sic] of Description (Enclosure 1, second paragraph) states that the proposed changes to UFSAR Tier 2 information and it involves Tier 2* information. These two sentences are not consistent. Please clarify. Also, it is also not clear which Tier 2 changes involve Tier 2* and Tier 1 information. Please identify those Tier 2 changes (See licensing Basis Change Description starting on page 7 of 23 of Enclosure 1).

Response to Question 1:

In accordance with 10 CFR 52, Appendix D, "Design Certification Rule for the AP1000 Design," Section VIII, paragraph B.5.a, a licensee who references Appendix D may 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 TS, or requires a license amendment under paragraphs B.5.b or B.5.c of Appendix B. In accordance with these requirements, some of the proposed changes included in LAR-14-001 are to Tier 2 information. These changes have been included in LAR-14-001 because it has determined that these changes involve changes to Tier 2* information.

The characterization of the relationship of the proposed changes to Tier 2 information included in LAR-14-001 can be clarified. Thus, the following changes to the LAR-14-001 cover letter, and Enclosure 1 are proposed.

The following paragraph replaces the second paragraph of the LAR-14-001 cover letter:

> "The requested amendment proposes to depart from Tier 2* information incorporated in the Updated Final Safety Analysis Report (UFSAR), plant-specific Tier 1 and corresponding COL Appendix C information, and ~~involved UFSAR~~ Tier 2 information that involves Tier 2* information to address changes in the UFSAR and design documents related to containment internal structural wall module design details."

The following replaces the first two sentences of the second paragraph of LAR-14-001, Enclosure 1, Section 1, "Summary Description,":

> "The proposed changes to ~~UFSAR Tier 2 information and the involved~~ Tier 2* and plant-specific Tier 1 and associated COL Appendix C information allow for the use of thicker than nominal faceplates to accommodate local demand or connection loads in certain areas without the use of overlay plates or additional backup structures. Additional proposed changes to ~~Tier 2~~ Tier 2* and ~~involved Tier 2*~~ Tier 2 information that involves Tier 2* information allow:"

LAR-14-001 does not propose any changes to Tier 2 information that involve Tier 1 information. The proposed changes to Tier 2 information that involve Tier 2* information are as follows:

Structural Wall Module Out-Of-Plane Reinforcement Proposed Tier 2 Changes

UFSAR Subsection 3.8.3.1.3

LAR Enclosure 3, Page 3

– Steel plates, structural shapes, reinforcement bars, or tie bars are installed between the structural wall module faceplates and embedded in the concrete as additional structural elements that support out-of plane loads and structural integrity. This reinforcement is designed to the applicable requirements of ACI 349 and AISC N690.

UFSAR Subsection 3.8.3.5.3.5

LAR Enclosure 3, Page 5

– As described in subsection 3.8.3.1.3, additional structural capacity is provided between the module faceplates in some areas to support localized loads. The trusses, connecting steel plates, structural shapes, reinforcement bars, and tie bars, are designed according to the applicable requirements of AISC N690 and ACI 349.

Structural Wall Module Out-Of-Plane Reinforcement Involved Tier 2* Information

UFSAR Subsection 3.8.3.5.8.1

LAR Enclosure 3, Page 6

– *The design implemented in fabrication and construction drawings and instructions may have alternative structural shapes or reinforcement arrangements if they provide equal or better load capacity. As described in subsection 3.8.3.1.3, steel plates, structural shapes, reinforcement bars, or tie bars are used in other locations between the structural module faceplates to address local out-of-plane loads.*

Structural Module Connection to the Base Concrete Proposed Tier 2 Changes

UFSAR Subsection 3.8.3.1.3

LAR Enclosure 3, Page 5

– The structural wall modules are anchored to the concrete base by reinforcing steel dowels or other types of connections mechanically connected or welded to the modules and embedded in the reinforced concrete below or adjacent to the module.

UFSAR Subsection 3.8.3.1.3

LAR Enclosure 3, Page 5

– Typical design details of the structural modules are shown in Figures 3.8.3-2 and 3.8.3-8. Shear-friction reinforcement may be included in construction joints at the transition between the base concrete and concrete in the modules and is not part of the mechanical connection between the module and base concrete described above. The shear-friction reinforcement at the construction joints is spaced and sized in accordance with ACI 349 requirements and is not connected to the module faceplates.

UFSAR Subsection 3.8.3.5.3 LAR Enclosure 3, Page 5	–	Figure 3.8.3-8 shows the typical design details of the structural modules, typical configuration of the wall modules, typical anchorages of the wall modules to the reinforced base concrete, and connections between adjacent modules. Variations in the module design details and design elements used are described in the Figure 3.8.3-8 notes and in subsections 3.8.3.1 and 3.8.3.1.3.
UFSAR Subsection 3.8.3.5.3 LAR Enclosure 3, Page 5	–	The steel plate modules are anchored to the reinforced concrete basemat by mechanical connections welded to the steel plate. Loads are transferred directly from the faceplates to the base concrete using reinforcing bars, structural shapes, and shear studs connected directly to the modules with mechanical connectors, or welds. The reinforcing steel used to anchor the modules to the concrete has a development that satisfies the requirements of ACI 349.

Structural Module Connection to the Base Concrete Involved Tier 2* Information:

UFSAR Subsection 3.8.3.1.3 LAR Enclosure 3, Page 4	–	[*Shear studs, structural shapes, or horizontally oriented reinforcement bars mechanically connected or welded to the module faceplates may be used to anchor the CA01 and CA05 structural modules to the base concrete. Shear lugs designed in accordance with ACI 349 may also be used to transfer loads at the connection. Where horizontal bars are attached perpendicular to the faceplate, they function like shear studs to provide for faceplate development. Where additional reinforcement is required for detailing base concrete at module walls with offsets in faceplate elevation, the reinforcement is developed in accordance with ACI 349. Where horizontal bars are attached to the edge of a faceplate at an elevation offset, the bars are designed for a combination of applicable demand and developed in accordance with ACI 349.*]*
UFSAR Subsection 3.8.3.1.3 LAR Enclosure 3, Page 5	–	[*The reinforcing steel used to anchor the modules to the concrete may be oriented horizontally or vertically and has a development that satisfies the requirements of ACI 349.*]*
UFSAR Figure 3.8.3-8 (Sheet 1 of 3) LAR Enclosure 3, Page 16	–	Figure 3.8.3-8, [*Structural Modules – Typical Design Details*]* showing in-containment structural wall module “typical design details.”

UFSAR Figure 3.8.3-8 (Sheet 2 of 3)	–	Figure 3.8.3-8, [*Structural Modules – Typical Design Details*]* showing in-containment structural wall module "typical design details."
LAR Enclosure 3, Page 17		

Question 2:

Enclosure 1 of the LAR describes the scope and applicability of the UFSAR changes. Specifically, it states that the proposed changes are for Modules CA01, CA02, and CA05. It is our understanding that there are other structural modules inside containment and the information provided in UFSAR Subsections 3.8.3.1, 3.8.3.5.3, and 3.8.3.5.8.1 is for all Structural Wall Modules (inside containment). Once NRC approves this LAR, It could be construed that these changes are also applicable for other structural wall modules inside containment. Therefore, please clarify which portions of the description included in these Subsections are for CA01, CA02 and CA05.

Response to Question 2:

As identified in the applicability table included in Vogtle Electric Generating Plant Units 3 and 4 License Amendment Request LAR-14-001, Enclosure 1, Section 2, "Detailed Description," the proposed changes are limited to in-containment structural wall modules CA01, CA02, and CA05. There are additional structural modules inside containment; however the proposed changes are limited to "structural wall modules," as defined in UFSAR Subsection 3.8.3.1.3.

As defined in UFSAR Subsection 3.8.3.1.3, in the first sentence of the second paragraph, "structural wall modules" are defined as consisting of "steel faceplates connected by steel trusses." Additionally, UFSAR Subsection 3.8.3.1.3, in the first sentence of the first paragraph, identifies that "structural wall modules" are used for:

- "the primary shield wall around the reactor vessel" (CA01),
- "the wall between the vertical access and the CVS room" (CA05),
- "secondary shield walls around the steam generators and pressurizer" (CA01),
- "for the east side of the in-containment refueling water storage tank" (CA02), and
- "for the refueling cavity" (CA01).

Other in-containment structural modules reside within containment, but are not configured with "steel faceplates connected by steel trusses," and thus do not constitute "structural wall modules." These include:

Structural Module CA03 – As shown in UFSAR Figure 3.8.3-1 (Sheet 4 of 7), CA03 is an arc-shaped in-containment structural module that forms a portion of the perimeter of the In-Containment Refueling Water Storage Tank (IRWST). As described in UFSAR Subsection 3.8.3.5.3, CA03 is essentially a stiffened steel shell, and is not comprised of steel faceplates connected by steel trusses, and does not contain any concrete fill. Thus, CA03 is defined as an in-containment "structural module," but not an in-containment "structural wall module."

Structural Module CA04 – As shown in UFSAR Figure 3.8.3-1 (Sheet 2 of 7), CA04 is the in-containment structural module that forms the liner of the reactor vessel cavity. CA04 is not a wall module, but a stiffened steel cavity liner, anchored to the concrete placed around its circumference, with integral plant component supports and associated reinforcement and anchorage.

Other modules are depicted in UFSAR Figure 3.8.3-1, that in accordance with the figure, are not "structural wall modules" as defined in UFSAR Subsection 3.8.3.1.3. These include modules CB65 and CB66, shown in UFSAR Figure 3.8.3-1, Sheet 1 of 7, which are concrete "form" modules and module CA31, shown in UFSAR Figure 3.8.3-1, Sheets 4, 5, 6, and 7, which is a floor module.

These differences are depicted in UFSAR Figure 3.8.3-1. The UFSAR Figure 3.8.3-1 key identifies the nomenclature used to depict the structural modules for each elevation depicted. "Structural wall modules" are depicted as wall sections with dual faceplates connected by trusses. "Structural modules with single surface plate" are depicted as a single bold line with angles to represent a single faceplate with shear studs/steel. As discussed in UFSAR Subsection 3.8.3.1.3, a "structural module with single surface plate" nomenclature identifies a structural wall module at a location where an offset occurs in the structural module faceplates; thus, a single faceplate is depicted. In contrast, in-containment structural modules CA03 and CA04 are shown as heavy bold lines with additional detail that approximate their configurations. Likewise, modules CA31, CB65, and CB66 are depicted uniquely.

Where applicable, the proposed changes requested were qualified, in the licensing basis markups, to identify their applicability. The table below identifies each change proposed in UFSAR Subsections 3.8.3.1, 3.8.3.5.3, and 3.8.3.5.8.1, the applicability of each change, and how the applicability of each change is identified within the proposed licensing basis changes.

Applicability of LAR-14-001 Proposed Changes				
Item	**UFSAR Subsect (Encl. 3 Page)**	**Change**	**App**	**Justification**
1	3.8.3.1.3 (3 of 18)	[*In some locations within the CA01 and CA05 structural wall modules, the faceplate thickness is greater than the nominal thickness to support local demand. For areas subject to these high out-of-plane loads, the faceplate thickness may be increased up to a thickness of 1.5 inches. To support loading associated with the steam generator lateral supports, the faceplate thickness is increased to 3.0 inches.*]*	CA01 CA05	Applicability stated in proposed change.
2	3.8.3.1.3 (3 of 18)	Steel plates, structural shapes, reinforcement bars, or tie bars are installed between the structural wall module faceplates and embedded in the concrete as additional structural elements that support out-of plane loads and structural integrity. This reinforcement is designed to the applicable requirements of ACI 349 and AISC N690.	CA01 CA02 CA05	Applicability based on inclusion in Subsection 3.8.3.1.1 which applies only to in-containment structural wall modules.
3	3.8.3.1.3 (4 of 18)	[*Shear studs, structural shapes, or horizontally oriented reinforcement bars mechanically connected or welded to the module faceplates may be used to anchor the CA01 and CA05 structural modules to the base concrete. Shear lugs designed in accordance with ACI 349 may also be used to transfer loads at the connection. Where horizontal bars are attached perpendicular to the faceplate, they function like shear studs to provide for faceplate development. Where additional reinforcement is required for detailing base concrete at module walls with offsets in faceplate elevation, the reinforcement is developed in accordance with ACI 349. Where horizontal bars are attached to the edge of a faceplate at an elevation offset, the bars are designed for a combination of applicable demand and developed in accordance with ACI 349.*]*	CA01 CA05	Applicability stated in proposed change.
4	3.8.3.1.3 (4 of 18)	*As shown in Figure 3.8.3-1, Sheets 2 and 4, some CA01 and CA05 wall thicknesses are different than the wall thicknesses listed in Figure 3.8.3-8. Wall thickness increase due to local faceplate thickness increase is below the level of detail depicted in Figure 3.8.3-1. The module wall thicknesses are determined based on radiation protection considerations and are designed to the applicable requirements of AISC N690 and ACI 349.*	CA01 CA05	Applicability stated in proposed change.

Applicability of LAR-14-001 Proposed Changes				
Item	**UFSAR Subsect (Encl. 3 Page)**	**Change**	**App**	**Justification**
5	3.8.3.1.3 (5 of 18)	The structural wall modules are anchored to the concrete base by reinforcing steel dowels or other types of connections mechanically connected or welded to the modules and embedded in the reinforced concrete below or adjacent to the module. [*The reinforcing steel used to anchor the modules to the concrete may be oriented horizontally or vertically and has a development that satisfies the requirements of ACI 349.*]*	CA01 CA02 CA05	Applicability based on inclusion in Subsection 3.8.3.1.3 which applies only to in-containment structural wall modules. However, as this is stated as a connection option or permissive, and the CA02 design does not require or use horizontal rebar in its base connection, it is not expected for this option or permissive to be used for CA02.

Applicability of LAR-14-001 Proposed Changes				
Item	**UFSAR Subsect (Encl. 3 Page)**	**Change**	**App**	**Justification**
6	3.8.3.1.3 (5 of 18)	Typical design details of the structural modules are shown in Figures 3.8.3-2 and 3.8.3-8. Shear-friction reinforcement may be included in construction joints at the transition between the base concrete and concrete in the modules and is not part of the mechanical connection between the module and base concrete described above. The shear-friction reinforcement at the construction joints is spaced and sized in accordance with ACI 349 requirements and is not connected to the module faceplates.	CA01 CA02 CA05	Applicability based on inclusion in Subsection 3.8.3.1.3 which applies only to in-containment structural wall modules. Although shear friction reinforcement is not required or used in CA02, use of additional reinforcement meeting ACI 349 should not be limited in the licensing basis to only CA01 and CA05, if determined to be required in the future to address unanticipated loads.
7	3.8.3.5.3 (5 of 18)	Variations in the module design details and design elements used are described in the Figure 3.8.3-8 notes and in subsections 3.8.3.1 and 3.8.3.1.3.	CA01 CA02 CA05	Applicable to structural wall modules only, since paragraph makes reference to Figure 3.8.3-8 which illustrates only structural wall modules. This is only an internal reference.

Applicability of LAR-14-001 Proposed Changes				
Item	**UFSAR Subsect (Encl. 3 Page)**	**Change**	**App**	**Justification**
8	3.8.3.5.3 (5 of 18)	Loads are transferred directly from the faceplates to the base concrete using reinforcing bars, structural shapes, and shear studs connected directly to the modules with mechanical connectors~~,~~ or ~~and~~ welds. The reinforcing steel used to anchor the modules to the concrete has a development that satisfies the requirements of ACI 349.	CA01 CA02 CA05	Applicable to structural wall modules only, since paragraph makes reference to Figure 3.8.3-8 which illustrates only structural wall modules.
9	3.8.3.5.3 (5 of 18)	The trusses provide a structural framework for the modules, maintain the separation between the faceplates, support the modules during transportation and erection, and act as "form ties" between the faceplates when concrete is being placed. After the concrete has cured, the trusses are not required to contribute to the strength or stiffness of the completed modules. However, they do provide additional shear capacity between the steel plates and concrete as well as additional strength similar to that provided by stirrups in reinforced concrete. As described in subsection 3.8.3.1.3, additional structural capacity is provided between the module faceplates in some areas to support localized loads. The trusses, connecting steel plates, structural shapes, reinforcement bars, and tie bars are designed according to the applicable requirements of AISC - N690 and ACI 349.	CA01 CA02 CA05	Applicable to structural wall modules only, since paragraph is discussing trusses and additional structural capacity between structural wall module faceplates. This proposed change addresses additional reinforcement to address out-of-plane loads, applicable to CA01, CA02, and CA05.

Applicability of LAR-14-001 Proposed Changes				
Item	**UFSAR Subsect (Encl. 3 Page)**	**Change**	**App**	**Justification**
10	3.8.3.5.8.1 (6 of 18)	*Plate thickness, structural shape size, and reinforcement provided may be increased ~~due to~~ locally ~~higher loads~~. The design implemented in fabrication and construction drawings and instructions may have alternative structural shapes or reinforcement arrangements if they provide equal or better load capacity. As described in Subsection 3.8.3.1.3, steel plates, structural shapes, reinforcement bars, or tie bars are used in other locations between the structural module faceplates to address local out-of-plane loads.]* The structural analyses are described in Subsection 3.8.3.4 and summarized in Table 3.8.3-2. The design procedures are described in Subsection 3.8.3.5.3.*	CA01 CA02	Applicability based on UFSAR Subsection 3.8.3.5.8.1 first sentence, identifying section addresses the critical sections comprising 1) the southwest wall of the refueling cavity (CA01), 2) the south wall of the west steam generator cavity (CA01), and 3) the northeast wall of the IRWST (CA02).

To remove potential ambiguity in the licensing basis concerning the differentiation of an in-containment “structural wall module” versus an in-containment “structural module,” it is proposed that the first sentence of the first paragraph of UFSAR Subsection 3.8.3.5.3, Structural Wall Modules be revised, as follows:

> Structural ~~wall~~ modules without concrete fill, such as the west wall of the incontainment refueling water storage tank, are designed as steel structures, according to the requirements of AISC-N690.

The above proposed revision is a Tier 2 change that involves each of the Tier 2* changes proposed in this request for the “structural wall modules” since it is related to an appropriate understanding of the applicability of those changes.

Question 3:

Enclosure 1, Page 4 provides a table which describes the applicability of changes to the affected modules. For location, 'Structural Module Faceplate Thickness', it states that it is applicable only to CA01 and CA05. However, one before last sentence in 'Structural Module Faceplate Thickness' paragraph on page 5 of 23 implies that the change is also applicable to CA02. In addition, CA02 changes are described in Technical Evaluation sections for "structural Module Connection to the Base Concrete". Please clarify.

Response to Question 3:

As identified in the applicability table provided in Enclosure 1, page 4, and as identified in the proposed changes to UFSAR Figure 3.8.3-8, Sheets 1 and 2, variation of the in-containment structural wall module faceplate thicknesses from the nominal 0.5 faceplate thickness is limited to in-containment structural wall modules CA01 and CA05 only. The "second-to-last" sentence in the above referenced paragraph states, "Overlay plates are used in the CA01, CA02, and CA05 structural modules." Overlay plates are not attached to, and thus are not considered part of the in-containment structural wall module faceplates. The overlay plates are anchored to the concrete of the in-containment structural wall module independently from the faceplates. Accordingly, the use of overlay plates does not constitute an increase in faceplate thickness. See the response to Question 7 for more information on the configuration of the overlay plates.

Question 4:

Structural Module Out-of Plane Reinforcement (page 7 of 23 and page 15 of 23 of Enclosure 1). It states that these changes are applicable for CA01, CA02 and CA05. Are there any calculations/ evaluations preformed to support changes to CA02? If so, please provide a summary of calculations/ evaluation performed to support changes to Module CA02.

Response to Question 4:

LAR-14-001 proposes that to support out-of-plane loads and structural integrity, steel plates, structural shapes, reinforcement bars, or tie bars be installed between the structural wall module faceplates and embedded in the concrete as additional structural elements. This reinforcement is designed to the applicable requirements of ACI 349 and AISC N690. As identified in LAR-14-001, Enclosure 1, Section 2, "Detailed Description," the proposed changes to support the addition of steel reinforcement to in-containment structural wall modules applies to in-containment structural wall module CA02 as well as in-containment structural wall modules CA01 and CA05.

Calculation APP-CA02-S3C-004, "CA02 Module Detailed Analysis and Qualification Report," which evaluates the out-of-plane shear loadings on the CA02 in-containment structural wall module has been completed. This calculation addresses mechanical loading only; a separate

analysis is being performed to address the thermal stresses on the module in accordance with the methodology previously provided. These analyses evaluate the out-of-plane shear loadings on the in-containment CA02 structural wall module that will determine the size of the steel plates, structural shapes, reinforcement bars, or tie bars and their embedment lengths needed to meet the applicable requirements of ACI 349 and AISC N690. The results of these analyses do not change the LAR proposal to use steel plates, structural shapes, reinforcement bars, or tie bars as additional structural elements. The analyses will only determine the type, size, or location of the additional structural elements needed to meet the applicable code requirement. Therefore, even though these calculations are needed to support the final design of CA02 before installation, these analyses are not needed to support the LAR proposal.

Question 5:

In Enclosure 3, on Pages 6 and 7, the description of Note #4 (page 6) is inconsistent with Note #4 described in Table 3.8.3-3 (Page 7). Enclosure 3, changes to Table 3.8.3-3: Note 4 is added to the Table 3.8.3-3. Note 4 (proposed) of Table 3.8.3-3 includes reference to Note 3 (embedded reference). By referring Note 3 (tier 2) into Note 4 (this is Tier 2* information), note 3 (Tier 2 information) will be become Tier 2* and will be subject to the change process provided in 10 CFR 52 Appendix D § VIII.B.6. Please Clarify.

Response to Question 5:

The markup adding new "Note 4" to UFSAR Table 3.8.3-3, "Definition of Critical Locations and Thicknesses for Containment Internal Structures," in LAR-14-001, Enclosure 3, page 7 contains an error which was incurred during the assembly of the final LAR package for submittal. The Enclosure 3, page 7 markup identifies Note 4 as:

> [*4. Portions of the module faceplate may have a design thickness ranging from the nominal 0.5 inches to 1.5 inches to provide additional strength for localized loads due to attachments or connections beyond the operating and design basis loads addressed in Note 3*]*

As identified in LAR-14-001, Enclosure 3, page 6, the UFSAR Table 3.8.3-3 Note 4 on Enclosure 3, page 7 should read:

> [*4. As described in subsection 3.8.3.1.3, some CA01 and CA05 module wall faceplate thicknesses are greater than the 0.5-inch nominal faceplate thickness.*]*

Correction of this markup will resolve the issue concerning Tier 2* information referencing Tier 2 information.

Corrected Table 3.8.3-3 is shown on the following page (page 14 of 20) and replaces Table 3.8.3-3 shown on page 7 of 18 of Enclosure 1.

Table 3.8.3-3
Definition of Critical Locations and Thicknesses for Containment Internal Structures(1)(4)

Wall Description (see detail in subsection 3.8.3.5.8.1)	Applicable Column Lines	Applicable Elevation Range	[*Concrete Thickness*(2)]*	Required Thickness of Surface Plates (inches)(3) ~~(Maximum)~~	[*Thickness of Surface Plates Provided (inches)*]*
Containment Structures					
Module Wall 1	West wall of refueling cavity	Wall separating IRWST and refueling cavity from elevation 103′ to 135′-3″	[*4′-0″ concrete-filled structural wall module with 0.5-in.-thick steel plate on inside and outside of wall*]*	0.30	[*0.5 - ~~.~~0.01 +0.1*]*
Module Wall 2	South wall of west steam generator cavity	Wall separating IRWST and west steam generator cavity from elevation 103′ to 135′-3″	[*2′-6″ concrete-filled structural wall module with 0.5-in.-thick steel plate on inside and outside of wall*]*	0.44	[*0.5 - ~~.~~0.01 +0.1*]*
CA02 Module Wall	North east boundary wall of IRWST	Wall separating IRWST and maintenance floor from elevation 103′ to 135′-3″	[*2′-6″ concrete-filled structural wall module with 0.5-in.-thick steel plate on inside and outside of wall*]*	0.37	[*0.5 - ~~.~~0.01 +0.1*]*

Notes:

1. The applicable column lines and elevation levels are identified and included in Figures 1.2-9, 3.7.2-12 (sheets 1 through 12), 3.7.2-19 (sheets 1 through 3) and on Table 1.2-1.

[2. *The concrete thickness includes the steel face plates. Thickness greater than 3′-0″ have a construction tolerance of +1″, -3/4″. Thickness less than or equal to 3′-0″ have a construction tolerance of +1/2″, -3/8″.*]*

3. These plate thicknesses represent the thickness required for operating and design basis loads except for designed openings or penetrations. These values apply for each face of the applicable wall unless specifically indicated on the table. For load combinations with thermal loads, the evaluation is performed as described in Subsection 3.8.3.5.3.4.

[*4 As described in subsection 3.8.3.1.3, some CA01 and CA05 module wall faceplate thicknesses are greater than the 0.5-inch nominal faceplate thickness.*]*

*NRC Staff approval is required prior to implementing a change in this information.

Question 6:

Enclosure 1, Page 4 provides a table which describes the applicability of changes to the affected modules. For location, 'Structural Module Faceplate Thickness', it states that it is applicable only to CA01 and CA05. On page 8 of 23 of Enclosure 1 (Structural Module Faceplate Thickness), the licensee describes changes to Appendix C of the COL Table 3.3-1, Note 3. However, Enclosure 2, Exemption request, Section-Purpose, fourth paragraph implies that note 3 is also applicable to CA02. Please clarify.

Response to Question 6:

LAR-14-001, Enclosure 2, "Request for Exemption Regarding Containment Internal Structural Wall Module Design Details (LAR-14-001)," Section 1.0, "Purpose," states in the fourth and fifth paragraphs:

> The use of thicker than nominal faceplates permits larger attachment or connection loads without the use of overlay plates. Structural modules CA01 and CA05 use thicker faceplates in some locations. In addition, overlay plates are attached in some locations to structural modules CA01, CA02, and CA05 to support equipment attachment. A thicker faceplate is also used in the area inside the northeast corner of the CA05 structural module where it transitions at lower elevations from 2′-0″ (where the wall thickness is reduced to accommodate equipment) to 4′-6″.
>
> The additional thickness from the use of thicker faceplates or overlay plates is applicable to the outer surface of the module and, as a result, the overall module wall thickness is greater in these areas. This change affects dimensions specified in plant-specific DCD Tier 1, Table 3.3-1 and requires a revision to a note to the table.

As discussed in the response to Question 3, the use of overlay plates does not result in thicker faceplates at the location of their use. As described in more detail in the response to Question 7, the overlay plates are not attached to the in-containment structural wall module faceplates where used. Rather, they are anchored to the in-containment structural wall module concrete independently of the faceplates. Thus, the overlay plates are not integral to, or considered part of the in-containment structural module faceplates where used.

The proposed change to Tier 1 Table 3.3-1, Note 3 included in LAR-14-001 reads as follows:

3. For walls that are part of structural modules, the concrete thickness also includes the steel face plates. Where faceplates with a nominal thickness of 0.5 inches are used in the construction of the wall modules, the wall thicknesses in this column apply. Where faceplates thicker than the nominal

> 0.5 inches or overlay plates are used in the construction of the structural wall modules, the wall thicknesses in the area of the thicker faceplates and overlay plates are greater than indicated in this column by the amount of faceplate and/or overlay plate thickness increase over the nominal 0.5 inches.

The reference to overlay plates in this Note 3 is important, because even though the overlay plates are not part of the faceplates, they will be in place following setting of the structural wall modules and placement of the structural wall module concrete. Therefore, while the change described in LAR-14-001 regarding increased faceplate thickness does not apply to in-containment structural wall module CA02, the conditional Note 3 of Table 3.3-1 concerning overlay plates does apply to CA02.

To provide greater clarity concerning the relationship of overlay plates to structural wall module faceplates and wall thicknesses, the following replaces the proposed change to Tier 1 Table 3.3-1, Note 3 included in LAR-14-001 and the revised table is shown on page 17 of this enclosure:

> 3. For walls that are part of structural modules, the concrete thickness also includes the steel face plates. Where faceplates with a nominal thickness of 0.5 inches are used in the construction of the wall modules, the wall thicknesses in this column apply. Where faceplates thicker than the nominal 0.5 inches are used in the construction of the structural wall modules, the wall thicknesses in the area of the thicker faceplates are greater than indicated in this column by the amount of faceplate thickness increase over the nominal 0.5 inches. Overlay plates are not considered part of the faceplates, and thus are not considered in the wall thicknesses identified in this column.

Additionally, LAR-14-001, Enclosure 2, Section 1.0, “Purpose,” fifth paragraph will be revised as follows:

> The additional thickness from the use of thicker faceplates ~~or overlay plates~~ is applicable to the outer surface of the module and, as a result, the overall module wall thickness is greater in these areas. This change affects dimensions specified in plant-specific DCD Tier 1, Table 3.3-1 and requires a revision to a note to the table. Overlay plates are not considered part of the structural wall module faceplates, and thus are not considered in the determination of wall thicknesses identified in Tier 1, Table 3.3-1.

Table 3.3-1
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)
Containment Building Internal Structure				
Shield Wall between Reactor Vessel Cavity and RCDT Room	E-W wall parallel with column line 7 (Inside face is 3'-0" north of column line 7. Width of wall section with stated thickness is defined by inside wall of reactor vessel cavity.)	From 71'-6" to 83'-0"	3'-0"	Yes
West Reactor Vessel Cavity Wall	N-S wall parallel with column line N (Width of wall section with stated thickness is defined by inside wall of reactor vessel cavity).	From 83'-0" to 98'-0"	7'-6"	Yes
North Reactor Vessel Cavity Wall	E-W wall parallel with column line 7 (Width of wall section with stated thickness is defined by inside wall of reactor vessel cavity).	From 83'-0" to 98'-0"	9'-0"	Yes

1. The column lines and floor elevations are identified and included on Figures 3.3-1 through 3.3-13.
2. These wall (and floor) thicknesses have a construction tolerance of ±1 inch, except for exterior walls below grade where the tolerance is +12 inches, -1 inch. These tolerances are not applicable to the nuclear island basemat.
3. For walls that are part of structural modules, the concrete thickness also includes the steel face plates.
4. For floors with steel surface plates, the concrete thickness also includes the plate thickness. Where faceplates with a nominal thickness of 0.5 inches are used in the construction of the wall modules, the wall thicknesses in this column apply. Where faceplates thicker than the nominal 0.5 inches are used in the construction of the structural wall modules, the wall thicknesses in the area of the thicker faceplates are greater than indicated in this column by the amount of faceplate thickness increase over the nominal 0.5 inches. Overlay plates are not considered part of the faceplates, and thus are not considered in the wall thicknesses identified in this column.
5. Where a wall (or a floor) has openings, the concrete thickness does not apply at the opening.
6. The elevation ranges for the shield building items are rounded to the nearest inch.
7. The Wall or Section Description, Column Line information, and Floor Elevation or Elevation Ranges are provided as reference points to define the general location. The concrete thickness of an item intersecting other walls, roofs or floors at a designated location (e.g., column line) is not intended to be measured to the stated column line, but only to the point where the intersection occurs.
8. Where applicable, the upper wall portions extend to their associated roofs, which may vary in elevation, e.g., sloped roofs.
9. From one wall/floor section to another, the concrete thickness transitions from one thickness to another, consistent with the configurations in Figures 3.3-1 through 3.3-14

Tier 1 Material

Question 7:

On Page 5 of 23, in paragraph "Structural Module Faceplate Thickness", the overlay plate embedded inside the wall module has effect on reduction of concrete is not described or evaluated in Technical Evaluation section. Licensee needs to provide clarification the meaning of the words 'embedded inside the wall module'.

Response to Question 7:

Overlay plates, where used on in-containment wall structural modules, consist of plate steel with deformed bar welded or mechanically attached perpendicular to the plate on one side. Where overlay plates are to be used, holes are drilled into the in-containment structural wall module faceplates to accept the deformed bar overlay plate anchors. The overlay plate, with attached deformed bar are aligned with the holes and tack-welded to the outside of the structural wall module faceplate to hold it in place for concrete placement. Following placement and curing of the structural wall module concrete, the overlay plate tack welds are removed. Thus, the overlay plate anchors are embedded within the structural wall module concrete, fully developed in accordance with ACI 349, but not attached to the faceplates. The result is that the overlay plates are allowed to move independently of the faceplates, do not result in a stiffening of the structural wall module faceplates, and do not result in a reduction of concrete thickness at the location where they are used.

Question 8:

The proposed change (On page 3 of 18 of Enclosure 3) is provided as, 'In some locations within the CA01 and CA05 structural wall modules, the faceplate thickness is greater than the nominal thickness to support local demand.' Staff review finds that the term 'some' does not provide an indication of the extent of the plate thickness increases (e.g., entire face of a module or relatively small portion of a module face). Staff requests the licensee to quantify amount of coverage.

Response to Question 8:

In LAR-14-001, Enclosure 3, page 3 of 18, the following addition to UFSAR Subsection 3.8.3.1.3 is proposed:

> [*In some locations within the CA01 and CA05 structural wall modules, the faceplate thickness is greater than the nominal thickness to support local demand. For areas subject to these high out-of-plane loads, the faceplate thickness may be increased up to a thickness of 1.5 inches. To support loading associated with the steam generator lateral supports, the faceplate thickness is increased to 3.0 inches.*]*

This change is proposed to qualify the preceding statement which indicates that the nominal thickness of the in-containment structural wall module steel faceplates is 0.5 inch, and correspond with similarly qualifying notes proposed to be added to UFSAR Figure 3.8.3-8. The proposed change characterizes the range of thickness increase (up to 1.5 inches, and for the steam generator lateral supports, to 3.0 inches), and the reason for the thickness increase (to support loading associated with local demand).

In LAR-14-001, Enclosure 1, page 13, "Structural Module Faceplate Thickness," additional information was provided identifying where thicker faceplates are used (in the wall thickness transition region of CA05), and characterizing the extent of the use of thicker faceplates in CA01:

> For the CA01 structural module, approximately 10 percent of the faceplate area has a faceplate thickness of 1.0 inch, approximately 5 percent of the faceplate area has a faceplate thickness of 1.5 inches, and less than 0.5 percent of the faceplate area has a thickness of 3.0 inches.

Including the above information in the proposed UFSAR changes was considered, but a decision was made not to for the following reasons:

1. It was concluded that placing the above "extent of use" of thicker faceplate verbiage in licensing basis would result in requirements that are not sufficiently defined to enable objective verification of compliance,
2. The alternative of incorporating figures or text to identify specifically where thicker faceplates are used is significantly below the level of detail currently in the licensing basis, and
3. The additional detail is not necessary to sufficiently describe the facility, or present the design bases and limits on its operation as required in 10 CFR 52.79. The design basis is established via the commitment to meet ACI 349 and AISC N690, considering the site-specific and plant-specific loads.

However, it was determined that two changes to the information concerning faceplate thickness added to UFSAR Subsection 3.8.3.1.3 should be made to 1) remove ambiguity associated with the use of the language "some locations," and 2) to clarify that for the steam generator lateral supports, the faceplate thickness may be increased "up to" 3.0 inches, as only the upper steam generator lateral supports are supported by faceplates with a thickness of 3.0 inches. Other steam generator lateral supports are supported by faceplates with a thickness of 1.5 inches. Therefore, it is proposed to change UFSAR Subsection 3.8.3.1.3 included in LAR-14-001 as follows:

> [*In ~~some locations within~~ the CA01 and CA05 structural wall modules, the faceplate thickness is greater than the nominal thickness where required to support local demand. For areas subject to these high out-of-plane loads, the faceplate thickness may be increased up to a thickness of 1.5 inches. To*

*support loading associated with the steam generator lateral supports, the faceplate thickness ~~is~~ may be increased up to a thickness of 3.0 inches.]**