



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS
RELATED TO AMENDMENT NOS. 142 AND 141
TO THE COMBINED LICENSE NOS. NPF-91 AND NPF-92, RESPECTIVELY
SOUTHERN NUCLEAR OPERATING COMPANY, INC.
GEORGIA POWER COMPANY
OGLETHORPE POWER CORPORATION
MEAG POWER SPVM, LLC
MEAG POWER SPVJ, LLC
MEAG POWER SPVP, LLC
CITY OF DALTON, GEORGIA
VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4
DOCKET NOS. 52-025 AND 52-026

1.0 INTRODUCTION

By letter dated December 21, 2017 (Reference 1), and supplemented by letters dated April 6, May 11, June 18, August 3, August 10, and September 13, 2018 (References 2, 3, 4, 5, 6, and 7), the Southern Nuclear Operating Company (SNC) requested that the U. S. Nuclear Regulatory Commission (NRC) amend Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Combined License (COL) Numbers NPF-91 and NPF-92, respectively. The License Amendment Request (LAR) 17-037 requested changes to add a license condition that would allow SNC to apply the change process for Tier 2 information in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, Appendix D, paragraph VIII.B.5 to a proposed departure from Tier 2* information in the Updated Final Safety Analysis Report (UFSAR, which includes the plant-specific design certification document (DCD)), provided that specified criteria are not met. If one of the criteria is met for a proposed departure, the proposed departure would continue to require prior NRC approval under the change processes in 10 CFR Part 52, Appendix D, Section VIII.

As stated in the August 3, 2018, supplement to the application, pursuant to 10 CFR 52.7 and 50.12, SNC also requested an exemption from the provisions of 10 CFR Part 52, Appendix D, "Design Certification Rule for the AP1000 Design," Section VIII, "Processes for Changes and Departures," paragraphs VIII.B.5.a, VIII.B.6.b, and VIII.B.6.c. The requested exemption would exempt SNC from the requirements in the regulations (in 10 CFR Part 52, Appendix D, Section VIII) for prior NRC approval of any departure from Tier 2* information or

any departure from Tier 2 information that involves a change to or departure from Tier 2* information, provided that the criteria in the proposed license condition are not met. However, any departure that involves changes to or departures from Tier 1 information or technical specifications (TSs) would continue to require prior NRC approval, regardless of whether it also involved a change to or departure from Tier 2* information. The NRC staff's review of the exemption request, as well as the LAR, is documented in this safety evaluation (SE).

The supplements dated April 6, May 11, June 18, August 3, August 10, and September 13, 2018, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the (NRC or the Commission) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on February 13, 2018 (83 FR 6234).

The staff processed a nonconcurrency that raises concerns related to LAR 17-037 (Reference 8).

2.0 REGULATORY EVALUATION

In LAR 17-037, SNC proposes License Condition 2.D.(13) to control departures from Tier 2* information in the UFSAR. The proposed condition would specify criteria that, if met for a future proposed departure from Tier 2* information, would require SNC to obtain NRC approval via license amendment under the Tier 2* change process in 10 CFR Part 52, Appendix D, Section VIII for that particular departure. If a future proposed departure from Tier 2* information does not meet any of the criteria in proposed License Condition 2.D.(13), the condition would allow SNC to treat the proposed departure under the (10 CFR) "50.59-like" process in 10 CFR Part 52, Appendix D, paragraph VIII.B.5 that governs departures from Tier 2 information.

The staff considered the following regulatory requirements in reviewing LAR 17-037, including the exemption request, the proposed license condition, and the proposed changes to the UFSAR. The staff considered whether the criteria in the proposed license condition would distinguish Tier 2* information comparable in safety significance to Tier 1 information from Tier 2* information of lesser safety significance. This distinction is important because the Commission previously determined that the departures from the former category of Tier 2* information warranted prior NRC approval and that departures from the latter category do not always warrant prior NRC approval, as described in SECY-17-0075, "Planned Improvements in Design Certification Tiered Information Designation" (Reference 9). Accordingly, in reviewing LAR 17-037, the staff focused on whether the proposed criteria in License Condition 2.D.(13) are adequate to identify Tier 2* information of safety significance comparable to that of Tier 1 information.

- 10 CFR Part 52, Appendix D, Section VIII describes the requirements for making changes to information in the AP1000 Design Control Document (DCD), Revision 19, including changes to plant-specific versions of the DCD resulting from a combined license that references the AP1000 DCD, Revision 19, for Tier 1, Tier 2, and Tier 2* information.
- 10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a COL.
- 10 CFR 52.7, "Specific Exemptions," specifies that the Commission may grant exemptions from the requirements of Part 52. 10 CFR 52.7 states that of 10 CFR 50.12,

“Specific exemptions,” governs the Commission’s consideration of specific exemptions unless Part 52 provides other criteria. (Part 52 does not provide other criteria applicable to the LAR.)

- 10 CFR 50.55a incorporates by reference requirements of the American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel (BPV) Code.

The staff considered the following regulatory guidance and background information in reviewing LAR 17-037.

- SECY-17-0075, dated July 24, 2017, describes the regulatory and policy background regarding Tier 2* information.
- COMSECY-94-024, “Implementation of Design Certification and Light-Water Reactor Design Issues,” dated May 31, 1994 (Reference 10), characterizes Tier 2* information as safety-significant information.
- SRM-SECY-94-024, “SECY-94-084 – Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems and COMSECY-94-024 – Implementation of Design Certification and Light-Water Reactor Design Issues,” dated June 14, 1994 (Reference 11), authorizes the use of the Tier 2* designation.
- “Licenses, Certifications and Approvals for Nuclear Power Plants,” Federal Register, Volume 72, No. 166, page 49365, August 28, 2007, describes Tier 2* Information.
- “Standard Design Certification for the U.S. Advanced Boiling Water Reactor Design,” Final Rule, 62 FR 25800, May 12, 1997, discusses why Tier 2* information should not be changed without prior NRC approval.
- Regulatory Guide (RG) 1.84, “Design, Fabrication, and Materials Code Case Acceptability, ASME Section III,” Revision 37 (Reference 12), ASME BPV Code, Section III, Code Cases acceptable for use and those acceptable with certain conditions.
- ASME BPV Code contains requirements applicable to VEGP Units 3 and 4.
- ASME B31.1, “Power Piping,” prescribes minimum requirements for the design, materials, fabrication, erection, testing, inspection, operation, and maintenance of subject piping systems.
- RG 1.187, “Guidance for Implementation of 10 CFR 50.59, “Changes, Tests, and Experiments” (Reference 13), dated November 2000, provides endorsement for Nuclear Energy Institute (NEI) 96-07, “Guidelines for 10 CFR 50.59 Evaluations,” Revision 0, dated November 2000.
- ASME Standard QME-1-2007 Edition, “Qualification of Active Mechanical Equipment Used in Nuclear Power Plants” (Reference 14), identifies qualification standards for active mechanical equipment used in nuclear power plants.
- NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition — Design of Structures, Components, Equipment,

and Systems,” Revision 7 (Reference 15), 2007, as updated. Also, commonly known as the “Standard Review Plan” (SRP).

- NUREG-0711, “Human Factors Engineering Program Review Model,” Revision 2 (Reference 16), 2004.

3.0 TECHNICAL EVALUATION

3.1 TECHNICAL EVALUATION OF THE REQUESTED CHANGES

In LAR 17-037, SNC proposed a site-specific permanent exemption and license amendment that would use new criteria to determine whether a proposed Tier 2* departure can be treated as a departure from Tier 2 information under 10 CFR Part 52, Appendix D, paragraph VIII.B.5, or whether the departure requires prior NRC approval under Appendix D, paragraph VIII.B.6.¹ In addition, the LAR would apply the same license condition criteria to proposed departures from Tier 2 information that involve changes to or departures from Tier 2* information.

LAR 17-037 proposes the following changes to the VEGP Units 3 and 4 licensing basis:

- Adds a new License Condition 2.D.(13) to specify the requirements for the Tier 2* departure evaluation process and state the exemptions associated with the LAR;
- Exempts SNC from certain provisions of 10 CFR Part 52, Appendix D, paragraphs VIII.B.5(a) and VIII.B.6 related to departures involving Tier 2* information;
- Modifies a page footer regarding Tier 2* information appearing repeatedly in the UFSAR on pages containing Tier 2* information.²

The license condition proposed by this LAR, as updated in the supplement dated September 13, 2018, is replicated below:

(13) Departures from Plant-specific DCD Tier 2* Information

(a) SNC is exempt from the requirements of 10 CFR Part 52, Appendix D, Paragraphs VIII.B.6 and VIII.B.5.a for prior NRC approval of departures from Tier 2* information and departures from Tier 2 information involving a change to or departure from Tier 2* information, except for departures that:

1. Involve a deviation from a code or standard credited in the plant-specific DCD for establishing the criteria for the design or construction of a structure, system, or component (SSC) important to safety,

¹ While SNC refers to these criteria as “screening criteria” in its LAR, the staff uses the term “license condition criteria” in this SE to avoid confusion with the term “screening criteria” used in NEI 96-07, as endorsed in RG 1.187.

² Section 3.1.4 of this SE summarizes the staff review of the change to the Tier 2* page footer in the UFSAR.

2. Result in a change to a design process described in the plant-specific DCD that is material to implementation of an industry standard or endorsed regulatory guidance,
3.
 - (i) Result in a change to the fuel criteria evaluation process, the fuel principal design requirements, or the nuclear design of the fuel or the reactivity control system that is material to a fuel or reactivity control system design function, or the evaluation process in WCAP-12488, "Westinghouse Fuel Criteria Evaluation Process," or
 - (ii) Result in any change to the maximum fuel rod average burn-up limits; or the small break LOCA analysis information in UFSAR Subsections 15.6.5.4B.2.2 or 15.6.5.4B.2.3,
4. Adversely affect the containment debris limits or debris screen design criteria,
5. Change the Reactor Coolant Pump (RCP) type from a canned motor to a different type of RCP,
6. Result in a change to the Passive Residual Heat Removal Heat Exchanger natural circulation test (first plant test), the Core Makeup Tank Heated Recirculation Tests (first three plants test), or the Automatic Depressurization System Blowdown Test (first three plants test) that is material to the test objectives or test performance criteria,
7. Involve structural materials or analytical or design methods, including design codes and analytical assumptions, that deviate from those credited in the plant-specific DCD for critical sections,
8. Result in a change to the design of the steel faceplates, internal trusses, tie bars, or headed studs of the steel-concrete (SC) module walls in the Nuclear Island or the Shield Building, including SC-to-reinforced concrete (RC) connections,
9. Result in an increase in the demand to capacity (D/C) ratio of a critical section of the structure. SNC shall determine the D/C ratio under this condition for each critical section structural member including, but not limited to, wall segments, wall sections, concrete panels, slabs, or basemat sections, affected by a departure by:
 - (i) Using the Tier 2* information in the UFSAR Section 3.8 or Appendix 3H table that directly states the D/C ratio or states the area of steel provided and the area of steel required for the affected structural member, or
 - (ii) Providing the same total area of steel across the entire critical section using any combination of rebar sizes and spacing allowed by the design basis codes used in the UFSAR as the total area of

steel specified in UFSAR Section 3.8 and Appendix 3H tables marked Tier 2*;

(b) For a departure from Tier 2* information that does not require prior NRC approval under the exemption in License Condition 2.D.(13)(a), SNC may take the departure provided that SNC complies with the requirements for Tier 2 departures in 10 CFR Part 52, Appendix D, paragraph VIII.B.5, as modified by the exemption in License Condition 2.D.(13)(a). For each departure authorized by this License Condition:

1. The departure or change to Tier 2* information shall remain Tier 2* information in the plant-specific DCD.
2. SNC shall prepare and maintain a written evaluation that provides the bases for its determinations regarding the criteria in License Condition 2.D.(13)(a). In the report that 10 CFR Part 52, Appendix D, Section X.B.1 requires SNC to submit, SNC shall include a brief description of each departure and a summary of the evaluation of the departure.

The provisions of 10 CFR Part 52, Appendix D, Section VIII outline the processes for changes and departures to Tier 2* information, as well as Tier 1 and Tier 2 information. Under the current departure evaluation process applicable to Tier 2* information described in 10 CFR Part 52, Appendix D, paragraph VIII.B, SNC is required to obtain prior NRC approval through an LAR for any proposed departure from Tier 2* information. The current requirement for prior NRC approval for departures from Tier 2* information is unconditional; it does not involve evaluation of any prospective departure against any criterion and does not consider the safety significance of the departure that is being considered. This process differs from the departure process for Tier 2 information, under which a licensee evaluates the departure against certain criteria to determine whether prior NRC approval is required, and was based on the staff view of the safety significance of Tier 2* information when the NRC certified the standard AP1000 design. Under this licensing action, the Tier 2* departure process would not always require prior NRC approval of departures from Tier 2* information. Instead, SNC would evaluate each proposed departure from Tier 2* information to determine whether it requires prior NRC approval under the proposed license condition or whether SNC can treat the departure under the Tier 2 departure process.

The staff reviewed the SNC initial submittal for LAR 17-037 dated December 21, 2017, and its supplements. As described in Enclosure 1U of the LAR, SNC performed an analysis of the Tier 2* topics in the UFSAR. The analysis examined each category of Tier 2* information identified in 10 CFR Part 52, Appendix D, paragraphs VIII.B.6.b and VIII.B.6.c in terms of the following criteria:

- Is the Tier 2* information adequately addressed in the VEGP 3 and 4 Plant-specific Tier 1 DCD or VEGP 3 and 4 COL? This step included a review to determine the degree to which codes, standards, and design and qualification processes are relied upon for inspection, test, analysis, and acceptance criteria (ITAAC) acceptance criteria, but not specified in the VEGP 3 and 4 Plant-specific Tier 1 DCD.

- Would changes in the Tier 2* information be adequately addressed by other applicable regulations (e.g., 10 CFR 50.46)?
- Would a change to the Tier 2* information have safety-significance commensurate with a change to Tier 1 information?
- Would the evaluation process defined in 10 CFR Part 52, Appendix D, paragraph VIII.B.5 consistently and reliably require prior NRC approval of a change to the Tier 2* information?

Under this LAR, SNC did not identify any additional license condition criteria for 9 of 24 Tier 2* topics, and the LAR indicates that, for any departure under 8 of these topics, the determination of whether the departure involves a safety-significant matter could be adequately addressed by applying the Tier 2 criteria in 10 CFR Part 52, Appendix D, paragraph VIII.B.5. For 1 of the 9 Tier 2* topics, i.e., the topic related to fire areas, no criteria are necessary because the staff previously approved a license amendment to re-designate this Tier 2* topic as Tier 2 information (see Section 3.1.2 of this SE). For the remaining 15 of the 24 Tier 2* topics, the SNC analysis, as updated in its August 3 and September 13, 2018, supplements, identified additional criteria to be included in the proposed evaluation process to determine whether the change would require prior NRC approval (i.e., a license amendment).

The staff review, summarized in the following sections, confirmed the results of the SNC analysis. The staff focused on whether the proposed exemption and new license condition would assure that departures from Tier 2* information would be governed by regulatory controls commensurate with the safety significance of the information. For the 8 of the 24 Tier 2* topics without specific license condition criteria proposed in this LAR, the staff focused on assuring that: (1) Tier 1 information completely addresses all the Tier 2* information that is of safety significance comparable to that of Tier 1 information, departures from which would require submission of an exemption request under Part 52, Appendix D, paragraph VIII.A.4; (2) Tier 2* information is already subject to 10 CFR 50.55a, which requires submission of proposed alternatives to the ASME BPV Code for NRC review; (3) Tier 2* information is not of safety significance comparable to that of Tier 1 information, or (4) Tier 2* information (in particular the qualification method for motor-operated valves (MOVs) and power-operated valves (POVs)) contains equivalent Tier 1 information requiring prior NRC approval under 10 CFR Part 52, Appendix D, paragraph VIII.B.5 for any safety-significant departure. Tier 2 information and departures for which any one of the four conditions above is met can be evaluated against the Tier 2 criteria in paragraph VIII.B.5 to determine the need for prior NRC review. For 15 of the 24 Tier 2* topics with specific criteria proposed in this LAR, the staff focused on assuring that the proposed new criteria are adequate to determine whether the safety significance of the Tier 2* information under these topics is comparable to the safety significance of Tier 1 information, such that departures from that information always warrant prior NRC approval.

The staff review and conclusions are limited to the VEGP Units 3 and 4 COLs. In its review, the staff did not consider the AP1000 design in general or other certified designs, and the staff conclusions do not apply to the AP1000 design or other certified designs. Similarly, the staff review and conclusions do not apply to other COLs issued under 10 CFR Part 52, including other AP1000 COLs because the staff evaluation was related to the safety significance of the specific Tier 2* topics for VEGP Units 3 and 4.

In the AP1000 DCD, the content is divided into three categories, Tier 1, Tier 2, and Tier 2*, using an approach that is consistent with other designs certified in the appendices of 10 CFR Part 52:

- Tier 1 information is the portion of design related information in the generic DCD that is approved and certified by the Part 52 appendices and requires prior NRC approval to change.
- Tier 2 information is approved by the Part 52 Appendix D but not certified, and can be changed via the change process outlined in paragraph VIII.B.5 of Appendix D; this process is similar to that given in 10 CFR 50.59, and is referred to as the “50.59-like” process. If the criteria in paragraph VIII.B.5.b are not met and the exceptions in paragraph VIII.B.5.a do not apply, Tier 2 information can be changed without prior NRC approval.
- Like Tier 2 information, Tier 2* information is not certified by the Part 52 appendices, but unlike Tier 2 information, Tier 2* information requires prior NRC approval to change under paragraph VIII.B.6 of the Part 52 appendices.

SECY-17-0075 discusses how Tier 2* information is intended to have substantial safety significance, commensurate with information designated as Tier 1. It also states that one specific lesson learned since certification of the AP1000 standard design is that some information has been designated as Tier 2* when other regulatory tools could have been used instead to ensure a facility is safely designed, constructed, and operated. This results in licensees submitting LARs on topics that do not involve safety-significant facility changes. SECY-17-0075 also recognized that, while existing certified designs are adequate in their current state and satisfy relevant regulatory requirements that assure safety if that design is referenced in a future plant license application, COL applicants and licensees might also propose license amendments to change the designation of certain Tier 2* information in their plant-specific final safety analysis reports, which would be reviewed on a case-by-case basis.

In LAR 17-037, Enclosure 2, SNC stated that its experience with the Tier 2* departure process is consistent with the staff’s observation in SECY-17-0075 that LARs have been necessary to make specific changes to Tier 2* information that do not raise significant safety issues. SNC asserted that it was submitting this LAR and exemption request in order to mitigate regulatory inefficiency associated with this issue. SNC also identified, in Enclosure 1, four examples of past Tier 2* departures that it asserted did not make safety-significant changes, but nonetheless required prior NRC approval through an LAR for the sole reason that the information was designated in the UFSAR as Tier 2* information. SNC also asserted that application of the Tier 2 departure evaluation process to these departures would have concluded with a determination that the changes did not meet any of the criteria in the proposed license amendment and could therefore have been processed as a departure consistent with 10 CFR Part 52, Appendix D, paragraph VIII.B.5 (i.e., without prior NRC approval).

The staff agrees that LARs that do not address safety-significant changes to the licensing basis can result in regulatory inefficiency in that they impose a burden on a licensee without a corresponding safety benefit. The approach in the 10 CFR Part 52 appendices that includes the tiered hierarchy of information (Tier 1, Tier 2, Tier 2*) is intended to reduce this inefficiency. As acknowledged in SECY-17-0075, in the case of the AP1000 DCD, some information was

designated as Tier 2* when other regulatory tools could have been used that would have resulted in fewer LARs addressing changes that are not safety significant.

In performing the technical review of the proposed changes in LAR 17-037 to the Tier 2* departure process, the staff considered sections of the VEGP Units 3 and 4 UFSAR (Reference 17), as well as NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," and its supplements (References 18, 19, and 20); and NUREG-2142, "Final Safety Evaluation Report Related to the Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4" (Reference 21), documenting the staff's SE of the AP1000 reactor design certification (DC) application and VEGP Units 3 and 4 COL application, respectively.

Tier 2* Departure Process

The regulations applicable to departures from Tier 2* information in the VEGP Units 3 and 4 UFSAR appear in Appendix D of 10 CFR Part 52.

- The definition of Tier 2* appearing in paragraph II.F states, "Tier 2* means the portion of the Tier 2 information designated as such in the generic DCD, which is subject to the change process in paragraph VIII.B.6 of this appendix. This designation expires for some Tier 2* information under paragraph VIII.B.6."
- Paragraphs VIII.B.6.b and c require a licensee referencing the AP1000 certified design to receive NRC approval prior to departing from Tier 2* information in its UFSAR, and states that certain Tier 2* information, specifically that information identified under paragraph VIII.B.6.c, reverts to Tier 2 status after the plant first achieves full power.

The NRC approach related to Tier 2* information, summarized most recently in SECY-17-0075, includes the following:

- The August 28, 2007, final rule updating 10 CFR Part 52 (72 FR 49352, page 49365) states that, ". . . Tier 2* information has the same safety significance as Tier 1 information and would have received the Tier 1 designation, except that NRC decided to provide more flexibility for this type of information."
- The May 12, 1997, final rule certifying the U.S. Advanced Boiling-Water Reactor (ABWR) Design (62 FR 25800, page 25807) states that, ". . . many codes, standards, and design processes, which were not specified in Tier 1, that are acceptable for meeting ITAAC were specified in Tier 2. The result of these actions is that certain significant information only exists in Tier 2 and the Commission does not want this significant information to be changed without prior NRC approval. This Tier 2* information is identified in the generic DCD with italicized text and brackets."
- COMSECY-94-024 informed the Commission of key issues and areas of interest identified in two then ongoing DC reviews regarding the ABWR and the ABB-Combustion Engineering System 80+ standard designs. In COMSECY-94-024, the staff stated that, "The staff believes that Tier 2* information is more appropriate for inclusion in Tier 1 than Tier 2 if the Tier 2* category is eliminated."

While these statements provide the rationale for why prior NRC approval has been required for departures from Tier 2* information, SNC asserted that more recent licensing experience indicates that imposing a requirement for an LAR for any departure from Tier 2* information has resulted in some LARs for minor changes without safety significance.

- For example, in Enclosure 1U of its August 3, 2018, supplement, SNC identifies four previously approved departures from Tier 2* information for the VEGP Units 3 and 4 COLs that SNC asserts were not safety significant, but nonetheless required prior NRC approval through an LAR. SNC asserted that these examples demonstrate that, although Tier 2* information was intended to have substantial safety significance, commensurate with information designated as Tier 1, some Tier 2* departures are not, in fact, safety significant. The staff's evaluations of these departures appear in the SEs for License Amendment Nos. 3, 2, 15, and 45 (References 22, 23, 24, and 25, respectively). In its review of LAR 17-037, the staff did not evaluate the four previously-approved LARs to which SNC referred to as examples. The staff did not rely on SNC's representations regarding these previously-approved LARs to make any staff determination or conclusion with respect to LAR 17-037.
- In SECY-17-0075, the staff noted that, with respect to experience from “. . . the licensing and construction of the first AP1000 reactors at the Vogtle Electric Generating Plant (Vogtle), and Virgil C. Summer (Summer) Nuclear Station . . . [o]ne specific lesson is that some information has been designated as Tier 2* when other regulatory tools could have been used instead to ensure a facility is safely designed, constructed, and operated. This results in licensees *submitting license amendment requests (LARs) on topics that may not involve safety significant facility changes* [emphasis added]. However, some Tier 2* information serves its intended purpose. Thus, the designation remains a useful regulatory tool, though improvements can be made to its future use.”

As stated in Enclosure 1 of the LAR, SNC asserted that the proposed process would still require that any safety-significant Tier 2* departure would require prior NRC approval. The staff evaluation of the LAR covered the full range of Tier 2* information in the VEGP UFSAR and considered the application of both the newly proposed criteria as well as the existing criteria for Tier 2 information in Appendix D of 10 CFR Part 52, paragraphs VIII.B.5.b and c. For the reasons described below, the staff concludes that application of the proposed criteria would require prior NRC approval for departures from Tier 2* information of safety significance comparable to that of Tier 1 information.

The license condition for controlling Tier 2* information proposed in LAR 17-037 can be compared to the requirements applicable to departures from Tier 2 information set forth in 10 CFR Part 52, Appendix D, paragraph VIII.B.5. Both sets of requirements use criteria to determine whether prior NRC approval is required for a particular UFSAR change. However, even if the criteria in the newly proposed license condition do not require prior NRC approval for a particular departure, the requirements applicable to departures from Tier 2 information in Part 52, Appendix D, paragraph VIII.B.5 may require prior NRC approval. Further, the criteria in the proposed license condition also identify Tier 2* departures of safety significance comparable to that of Tier 1 information. The proposed Tier 2* process requires an evaluation using the new criteria followed by application of the existing requirements applicable to Tier 2 departures. Under either process, if the departure meets any one of the applicable criteria, the departure would require prior NRC approval.

Issuance and Implementation of the License Amendment

The proposed license condition states that all of the new criteria would apply to any particular departure to Tier 2* information. To develop the criteria, SNC analyzed each of the 24 specific Tier 2* topics listed in Appendix D of 10 CFR Part 52, paragraphs VIII.B.6.b and c. Using information in the LAR, the staff developed a crosswalk of the criteria and the associated topics that appears below in Table 1. It is important to note that Table 1 was developed as a summary of the staff's review and should not be used by the licensee or the staff to evaluate future Tier 2* changes.

As summarized in Table 1, for 15 of the 24 Tier 2* topics, one or more license condition criteria were proposed. In these cases, the staff evaluated whether the proposed new license condition criteria are adequate for SNC to determine whether the safety significance of the Tier 2* information under these topics is comparable safety significance of Tier 1 information such that departures from that information always warrant prior NRC approval (see Section 3.1.1 of this SE). SNC did not propose any license condition criteria corresponding to the remaining 9 of the 24 Tier 2* topics. For 8 of these 9 topics, the staff evaluated whether (1) Tier 1 information completely addresses all the Tier 2* information that is of safety significance comparable to that of Tier 1 information, departures from which would require submission of an exemption request under Part 52, Appendix D, paragraph VIII.A.4; (2) Tier 2* information is already subject to 10 CFR 50.55a, which requires submission of proposed alternatives to the ASME BPV Code for NRC review, (3) Tier 2* information is not of safety significance comparable to that of Tier 1 information, or (4) Tier 2* information (in particular the qualification method for MOVs and POVs) contains equivalent Tier 1 information requiring prior NRC approval under 10 CFR Part 52, Appendix D, paragraph VIII.B.5 for any safety-significant departure (see Section 3.1.2 of this SE). For the final topic, paragraph VIII.B.6.b, Topic 4, "Fire Areas," SNC did not propose any criteria because the Tier 2* information previously designated in that topic has been re-designated as Tier 2 information in a previous license amendment (see Section 3.1.3 of this SE).

Table 1
Crosswalk of Tier 2* Topics in 10 CFR Part 52, Appendix D,
Paragraphs VIII.B.6.b and c and LAR 17-037 Criteria

Tier 2* Topics from 10 CFR Part 52, Appendix D, Paragraphs VIII.B.6.b and VIII.B.6.c	Associated Criteria from Proposed License Condition 2.D.(13)(a)									
	1	2	3	4	5	6	7	8	9	None*
<u>VIII.B.6.b (Tier 2* Topics Requiring Prior NRC Approval)</u>										
Topic 1, Maximum Fuel Rod Average Burn-Up			X							
Topic 2, Fuel Principal Design Requirements			X							
Topic 3, Fuel Criteria Evaluation Process			X							
Topic 4, Fire Areas										N/A**
Topic 5, Reactor Coolant Pump Type					X					
Topic 6, Small-break loss-of-coolant accident (LOCA) analysis methodology			X							
Topic 7, Screen Design Criteria				X						

Table 1
Crosswalk of Tier 2* Topics in 10 CFR Part 52, Appendix D,
Paragraphs VIII.B.6.b and c and LAR 17-037 Criteria

Tier 2* Topics from 10 CFR Part 52, Appendix D, Paragraphs VIII.B.6.b and VIII.B.6.c	Associated Criteria from Proposed License Condition 2.D.(13)(a)									
	1	2	3	4	5	6	7	8	9	None*
Topic 8, Heat Sink Data for Containment Pressure Analysis										X
<u>VIII.B.6.c (Tier 2* Topics Requiring Prior NRC Approval that Revert to Tier 2 after Facility Achieves Full Power)</u>										
Topic 1, Nuclear Island structural dimensions										X
Topic 2, American Society of Mechanical Engineers Boiler & Pressure Vessel Code (ASME Code) Piping Design and Welding Restrictions, and ASME Code Cases										X
Topic 3, Design Summary of Critical Sections	X***						X	X	X	
Topic 4, American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)–N690, and American Iron and Steel Institute (AISI), "Specification for the Design of Cold Formed Steel Structural Members, Part 1 and 2," 1996 Edition and 2000 Supplement ³	X									
Topic 5, Definition of Critical Locations and Thicknesses										X
Topic 6, Seismic Qualification Methods and Standards										X
Topic 7, Nuclear Design of Fuel and Reactivity Control System, Except Burn-Up Limit			X							
Topic 8, Motor-Operated and Power-Operated Valves										X
Topic 9, Instrumentation and Control (I&C) System Design Processes, Methods, and Standards		X								
Topic 10, Passive Residual Heat Removal (PRHR) Natural Circulation Test (First Plant Only)						X				

³ The AP1000 design certificate rule in 10 CFR Part 52, Appendix D, paragraph VIII.B.6.c identifies American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)-690 but omits the letter "N." This appears to be a typographical error, and the standard is correctly identified as ANSI/AISC-N690. The staff will use the correct title throughout the remainder of this SE.

Table 1
Crosswalk of Tier 2* Topics in 10 CFR Part 52, Appendix D,
Paragraphs VIII.B.6.b and c and LAR 17-037 Criteria

Tier 2* Topics from 10 CFR Part 52, Appendix D, Paragraphs VIII.B.6.b and VIII.B.6.c	Associated Criteria from Proposed License Condition 2.D.(13)(a)									
	1	2	3	4	5	6	7	8	9	None*
Topic 11, Automatic Depressurization System (ADS) and Core Make-Up Tank (CMT) Verification Tests (First Three Plants Only)						X				
Topic 12, Polar Crane Parked Orientation										X
Topic 13, Piping Design Acceptance Criteria	X	X								
Topic 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE										X
Topic 15, Human Factors Engineering		X								
Topic 16, Steel Composite Structural Module Details	X									

* As used in this table, "None" refers to no additional specific criteria identified in this LAR. Other regulatory requirements apply.

** For the Tier 2* topic paragraph VIII.B.6.b, Topic 4, "Fire Areas," SNC did not propose any criteria. The Tier 2* information previously designated in this topic was re-designated as Tier 2 information in a previous license amendment (see Section 3.1.3 of this SE).

*** For the Tier 2* topic paragraph VIII.B.6.c, Topic 3, "Design Summary of Critical Sections," SNC identified Criterion No.1 as an associated criteria in Enclosure 1U, but did not identify it in Enclosure 5U.

Paragraph 2.D.(13)(b)(2) of the proposed license condition requires SNC to prepare and maintain a written evaluation that provides the bases for its determinations regarding the criteria in License Condition 2.D.(13)(a). In the report that SNC is required to submit under 10 CFR Part 52, Appendix D, paragraph X.B.1, paragraph 2.D.(13)(b)(2) requires SNC to include a brief description of each departure and a summary of the evaluation of the departure. The staff finds this aspect of the license condition acceptable because it would require Tier 2* departure evaluations to be documented with no less rigor than those for Tier 2 departures, which provide the staff assurance that the departure process is being appropriately implemented.

The staff notes that departures involving changes to Tier 2* information that also involve changes to Tier 1 information or TSs are not subject to the proposed license condition and exemptions, and would still require prior NRC approval.

In Enclosures 1U and 8U of the August 3, 2018, supplement to the LAR, SNC described a commitment to:

Develop, implement, and maintain procedural guidance that contains a description of the qualifying criteria contained in License Condition 2.D(13) and the supporting detailed guidance and bases contained in the Technical Evaluation section of the approved LAR-17-037, including additional guidance provided by SNC in the supplements to the LAR. This procedural guidance will be maintained in accordance with SNC's Commitments Management Program for as long as the license condition remains in effect.

SNC further specified that this commitment would be “[i]mplemented prior to the implementation of the license amendment approving this LAR.” The staff agrees that the commitment is appropriate to implement the proposed change process.

As described in the following evaluation of the individual Tier 2* topics and the applicable criteria, the staff used information and guidance provided by SNC in its Enclosure 1U to determine the acceptability of this LAR. Therefore, the staff is including a limitation that SNC shall fully implement the procedural guidance described in Enclosures 1U and 8U to the LAR dated December 21, 2017, as supplemented by letters dated April 6, May 11, June 18, August 3, August 10, and September 13, 2018, before completing implementation of this license amendment.

Each of the 24 Tier 2* topics listed under 10 CFR Part 52, Appendix D, paragraphs VIII.B.6.b and VIII.B.6.c was evaluated by the subject matter experts in the staff. The evaluation is organized according to whether or not SNC developed license condition criteria for the above-listed 24 categories of Tier 2* topics identified in paragraphs VIII.B.6.b and VIII.B.6.c.

3.1.1 Evaluation of the 15 of the 24 Tier 2* Topics for which SNC Proposed License Condition Criteria

The following sections describe the staff’s evaluation of whether the criteria in proposed License Condition 2.D.(13) are adequate to determine whether the safety significance of the Tier 2* information under these topics is comparable to the safety significance of Tier 1 information, such that departures from that information always warrant prior NRC approval.

- 3.1.1.1 VIII.B.6.b, Topic 1, Maximum Fuel Rod Average Burn-Up
- VIII.B.6.b, Topic 2, Fuel Principal Design Requirements
- VIII.B.6.b, Topic 3, Fuel Criteria Evaluation Process
- VIII.B.6.b, Topic 6, Small-Break Loss-of-Coolant Accident (LOCA) Analysis Methodology
- VIII.B.6.c, Topic 7, Nuclear Design of Fuel and Reactivity Control System, Except Burn-Up Limit

The staff reviewed the proposed changes presented in LAR 17-037 in relation to Tier 2* information regarding the fuel system, reactor systems, and design basis accidents, as well as the Tier 1 and Tier 2 information related to these topics. These five Tier 2* topics, consisting of paragraph VIII.B.6.b Topics 1, 2, 3, and 6, and paragraph VIII.B.6.c, Topic 7, are addressed by the guidance and bases information presented in Enclosure 1 of LAR 17-037 for license condition Criterion No. 3 appearing in the proposed license condition. The majority of these Tier 2* topics are not addressed in Tier 1. Since nuclear fuel design is expected to change over time and the fuel is routinely replaced, the AP1000 DCD identified these topics as Tier 2* in order to allow improvements to the fuel design to be implemented via the license amendment process instead of requiring an exemption, as would be required for topics identified as Tier 1. Given the safety significance of the fuel assemblies, which include the first fission product barrier, the staff considers much of the fuel-related Tier 2* information to have safety significance commensurate with Tier 1. The staff therefore considered the guidance provided on Criterion No. 3 of Enclosure 1 and the new license condition provided in Enclosure 3, as it relates to fuel, to evaluate whether the proposed evaluation process would result in the appropriate change process being selected for hypothetical changes. The license condition

proposed by SNC in its supplement dated September 13, 2018, would require prior staff approval for any departures that:

3. (i) Result in a change to the fuel criteria evaluation process, the fuel principal design requirements, or the nuclear design of the fuel or the reactivity control system that is material to a fuel or reactivity control system design function, or the evaluation process in WCAP-12488, “Westinghouse Fuel Criteria Evaluation Process,” or
- (ii) Result in any change to the maximum fuel rod average burn-up limits; or the small break LOCA analysis information in UFSAR Subsections 15.6.5.4B.2.2 or 15.6.5.4B.2.3,

In Request for Additional Information (RAI) LAR 17-037-9 (Reference 26) Question 1, the staff requested additional clarification regarding how the proposed evaluation process would address potential changes to Topical Report WCAP-12488, “Fuel Criteria Evaluation Process” (WCAP-12488-P-A, see Reference 27), which is the fuel criteria and evaluation process.⁴ Specifically, the staff requested information about whether WCAP-12488 was referenced by TS 5.6.3 “Core Operating Limits Report (COLR)” and, if so, how the evaluation process would address the potential discrepancy with the change process required for TSs. In its response dated June 18, 2018 (Reference 4), SNC stated that “[t]he proposed changes to the Tier 2* evaluation process does not affect the TSs change control process requirements specified in 10 CFR Part 52, Appendix D, VIII.B.5.a or the specific TSs requirements in Section 5.6.3 for changes to the analytical methods used to determine the core operating limits in the Core Operating Limits Report (COLR).” The response further states that SNC could not find any references to Topical Report WCAP-12488-P-A in TSs. The staff finds this acceptable since the response clarified how the change processes associated with TSs would not be affected by the proposed change process. In addition, Criterion 3, as stated above, requires that the Tier 2* departure requirements in 10 CFR Part 52, Appendix D, paragraph VIII.B.6 continue to apply to Tier 2* information relating to fuel that is material to the evaluation process in WCAP-12488, so the change control process for that information remains unchanged.

In RAI LAR 17-037-9 Question 2, the staff identified a potential discrepancy regarding the proposed change process and change requirements as noted in referenced Topical Report WCAP-12488-P-A regarding maximum fuel average burnup limits. In its response dated June 18, 2018, SNC revised Enclosure 3 of LAR 17-037 to specify that any changes to the maximum fuel rod average burnup would require staff review and approval. The staff finds this acceptable since it would result in the appropriate change process (i.e., prior NRC approval) for information regarding burnup limits, which the staff considers safety significant on par with that of Tier 1 information.

In the discussion about Criterion No. 3 in Enclosure 1 to LAR 17-037, SNC provided guidance which stated that minor modifications to figures and drawings would not be considered material changes. The staff noted that there are no figures or drawings identified as Tier 2* related to fuel, which is the focus of Criterion No. 3. In RAI LAR 17-037-9, Question 3, the staff requested the applicant to identify which figures and drawings Criterion No. 3 was intended to cover. SNC responded in its letter dated June 18, 2018, by stating that the original example of figures and drawings as provided in Criterion No. 3 was incorrect. SNC additionally revised the discussion

⁴ WCAP-12488 is the nonpublic version of WCAP-14204-A (Reference 27).

in Enclosure 1 about Criterion No. 3 to remove the reference to figures and drawings. The staff finds that the corrections provided address the staff's concerns regarding scope and accuracy.

In the discussion about Criterion No. 3 in Enclosure 1 to LAR 17-037, SNC provides examples of potential changes that would not be considered material changes. SNC included, “[c]hanges that do not change the meaning or substance of information presented...” among the listed examples. The staff determined that this statement was unclear and the staff requested in RAI LAR 17-037-9, Question 4 that SNC provide additional guidance to help determine when a potential change would or would not change the meaning or substance of the information presented. In its response dated June 18, 2018, SNC stated that the guidance of NEI 98-03, “Guidelines for Updating Final Safety Analysis Reports,” would be used and further revised the discussion about Criterion No. 3 in LAR 17-037 Enclosure 1 to include a reference to NEI 98-03. The staff finds that the addition of this information helps provide assurance that the proposed license condition would require prior NRC approval for changes to Tier 2* information having safety significance commensurate with that of Tier 1 information.

In the discussion about Criterion No. 3 in Enclosure 1 to LAR 17-037, SNC stated, “[a] material change to a design would be any change that has an adverse effect on a design function.” The staff was concerned that this guidance does not clarify the definition of “adverse” or “design function” in relation to nuclear fuel. The staff requested clarification for these terms in RAI LAR 17-037-9, Question 5. In its response dated June 18, 2018, SNC stated that the terms “adverse” and “design function” are used in accordance with NRC-endorsed guidance in NEI 96-07, “Guidelines for 10 CFR 50.59 Evaluations,” Revision 1. The response also includes a revision to Enclosure 1 of LAR 17-037 that provides this clarification. The staff finds that this response is acceptable since it clarifies the guidance provided in the discussion about Criterion No. 3 in Enclosure 1 of LAR 17-037.

During its review of the Reviewer's Aids in Enclosure 4 and Enclosure 5, the staff noted that there were no proposed license condition criteria for changes to Tier 2* information associated with small-break LOCA (SBLOCA) analysis methodology, since Criterion No. 3, as originally proposed, did not address this issue. The staff determined during the DCD review that the use of the NOTRUMP code is acceptable, in part, because of the identified Tier 2* information in UFSAR Chapter 15. Therefore, in RAI LAR 17-037-9, Question 6, the staff requested that additional license condition criteria be included in the Tier 2* departure evaluation process that captures the critical safety aspect of the Tier 2* information for SBLOCA analysis methodology.

SNC stated in letter dated June 18, 2018, that the Tier 2* information associated with the NOTRUMP homogeneous sensitivity model and critical heat flux assessment during accumulator injection is considered to be safety significant and an integral aspect of the methodology as approved for the AP1000, and proposed to revise Criterion No. 3 to also include changes to SBLOCA information described in UFSAR Subsections 15.6.5.4B.2.2 and 15.6.5.4B.2.3. The staff finds SNC's response acceptable because it provides assurance that the proposed license condition would require prior NRC approval for any changes to the Tier 2* information associated with safety-significant SBLOCA analysis. The revised condition, which is stated above, requires that the entirety of the Tier 2* information related to SBLOCA remain governed by the Tier 2* change process in 10 CFR Part 52, Appendix D, paragraph VIII.B.6, which resolves this issue.

The staff evaluated the nuclear fuel system, reactor system, and design basis accident related topics identified as Tier 2* information in the VEGP Units 3 and 4 UFSAR against the criteria, guidance, and bases provided in LAR 17-037, along with the information and revisions provided

in the RAI responses. For the reasons described above, the staff finds that license condition Criterion No. 3 is acceptable since it is adequate to determine whether the safety significance of the Tier 2* information under these topics is comparable to the safety significance of Tier 1 information, such that departures from that information always warrant prior NRC approval. The staff confirmed that the information provided by SNC in prior supplements appeared in the supplements of LAR 17-037 dated August 3 and September 13, 2018.

3.1.1.2 VIII.B.6.b, Topic 5, Reactor Coolant Pump Type

The staff reviewed the proposed changes presented in LAR 17-037 in relation to Tier 2* information in the UFSAR related to the RCP type (10 CFR Part 52, Appendix D, paragraph VIII.B.6.b, Topic 5), as well as the Tier 1 and Tier 2 information related to this topic. Enclosure 5 of the referenced LAR provided a summary of an analysis of this Tier 2* topic using the proposed license condition criteria presented in Enclosure 3 of SNC's letter dated December 21, 2017. Enclosure 5 initially stated that for Topic 5 in "Section VIII.B.6.b (Tier 2* Matters that Do Not Expire at Full Power)," the RCP type is adequately addressed in Tier 1, and therefore no additional license condition criteria are required. Therefore, SNC indicated that, in accordance with Enclosure 5, the change process in paragraph VIII.B.5 is not applicable and no additional license condition criteria are needed since the information is in Tier 1.

The staff noted that Tier 1 does not adequately specify the type of RCP, but only specifies "sealless reactor coolant pumps." "Sealless reactor coolant pumps" is a generic term that only states that the pump does not have seals, which addresses the seal failure safety concern. More specifically, the approved design for VEGP Units 3 and 4 uses a sealless "canned motor design" RCP. The attribute of being a "canned motor design" is important because this specific type of pump addresses other safety-significant issues such as reactor coolant pressure boundary integrity, flywheel integrity, and missile generation. The staff has not reviewed other types of sealless pumps that have different design features and methodologies for use in the AP1000 design to ensure these safety-significant issues are adequately addressed.

However, under the originally proposed license condition, which did not include a criterion addressing RCPs, a different sealless pump type could be used because the pump still meets the "sealless" (shaft seal failure) requirement that is specified as Tier 1. Therefore, the staff determined that Enclosure 5 was incorrect since Tier 1 does not adequately address all the essential attributes of the type of pump (i.e., canned motor). Since all of the essential attributes of the RCP (i.e., that it be of a canned motor design) are not addressed in Tier 1, the staff requested in RAI LAR 17-037-3, dated April 12, 2018, (Reference 28) that SNC revise the proposed License Condition 2.D.(13) in Enclosure 3 to address this essential attribute by adding "Results in a change to the RCP type (canned motor design)," to the list of license condition criteria which would require NRC approval.

In a letter dated May 11, 2018, SNC proposed to include Criterion No. 5, "Results in a change to RCP type (canned motor design)," in the license condition, which would result in the need to obtain NRC approval of a change in the RCP type. In its supplement to LAR 17-037 dated August 3, 2018, SNC revised Criterion No. 5 to "Change the Reactor Coolant Pump (RCP) type from a canned motor to a different type of RCP." As revised, the staff finds that Criterion No. 5 is acceptable since it is adequate to determine whether the safety significance of the Tier 2* information under this topic is comparable to the safety significance of Tier 1 information, such that departures from that information always warrant prior NRC approval. The staff confirmed that the information provided by SNC in prior supplements appeared in its supplement of LAR 17-037 dated August 3, 2018.

3.1.1.3 VIII.B.6.b, Topic 7, Screen Design Criteria

The staff reviewed the proposed changes presented in LAR 17-037 in relation to Tier 2* information in the UFSAR related to screen design criteria (10 CFR Part 52, paragraph VIII.B.6.b, Topic 7), as well as the Tier 1 and Tier 2 information related to this topic. Tier 2* topics associated with screen design criteria are found in UFSAR Subsection 6.3.2.2.7.1, “General Screen Design Criteria,” and include limits on types of insulation that may be used inside containment and containment resident debris.

Tier 2* Topic 7 was incorporated in the 10 CFR Part 52, Appendix D as part of the AP1000 DC Amendment final rule on December 30, 2011 (76 FR 82079). Supplement 2 to NUREG-1793 provides the basis for adding Tier 2* Topic 7. Specifically, in Supplement 2 to NUREG-1793, Chapter 1, “Introduction and General Discussion,” Subsection 17, “Tier 2* Information,” the staff state the following:

The ACRS review highlighted the significance of certain assumptions about debris in containment to the adequacy of long term core cooling, and a concern that the values not be revised with [sic, without] substantial additional testing and analysis. As a means of emphasizing this, the licensee proposed to designate the key information as Tier 2*, to require prior NRC approval, in a letter dated February 23, 2011. This change is included in Revision 19. The NRC agrees that this is a prudent change and will modify the final rule language to reflect this addition, as a Tier 2* item without expiration at fuel load.

LAR 17-037, as supplemented on May 11, 2018, in response to RAI LAR 17-037-4 (Reference 29), contains a revised License Condition 2.D.(13) with a revised Criterion No. 4 to address Tier 2* Topic 7. Under the proposed license condition, prior NRC approval would be required for any proposed departures that, “. . . [a]dversely affect the containment debris limits or debris screen design criteria[.]” As proposed in License Condition 2.D.(13), a Tier 2* departure associated with Topic 7 would qualify to be evaluated under the Tier 2 departure evaluation process unless the proposed departure would adversely affect the containment debris limits or debris screen design criteria.

Tier 2 information can be changed via the change process outlined in Section VIII of 10 CFR Part 52, Appendix D; this process is similar to that given in 10 CFR 50.59, and is referred to as the “50.59-like” process. Regulatory guidance for the evaluation of departures from the UFSAR is contained in NEI 96-07, “Guidelines for 10 CFR 50.59 Evaluations,” dated November 2000 (Reference 30). In RG 1.187 (Reference 13), Position C.1, the staff indicated that NEI 96-07 provides methods that are acceptable to the staff for complying with the provisions of 10 CFR 50.59. In LAR 17-037, SNC indicated that adverse effects are described in NEI 96-07 and Criteria No. 4 is more conservative than the criteria that would be applied to a Tier 2 departure that did not involve Tier 2* information because the proposed criterion does not allow any adverse change versus the “more than minimal” standard used in Section VIII, paragraph B.5.b.

In the supplement dated May 11, 2018, SNC provided examples of when a departure would be considered adverse. For example, any relaxation (i.e., increase in value) of containment debris limits would be considered adverse. The staff finds the example consistent with the guidance provided in NEI 96-07 and an appropriate outcome when applying the proposed License Condition 2.D.(13).

Based on the discussion above, the staff finds the proposed new License Condition 2.D.(13)(a)(4) (Criterion No. 4) acceptable since it is adequate to determine whether the safety significance of the Tier 2* information under this topic is comparable to the safety significance of Tier 1 information, such that departures from that information always warrant prior NRC approval and is consistent with the staff evaluation contained in Supplement 2 to NUREG-1793. The staff confirmed that the information provided by SNC in prior supplements appeared in its supplement of LAR 17-037 dated August 3, 2018.

- 3.1.1.4 VIII.B.6.c, Topic 3, Design Summary of Critical Sections
- VIII.B.6.c, Topic 4, American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)–N690, and American Iron and Steel Institute (AISI), "Specification for the Design of Cold Formed Steel Structural Members, Part 1 and 2," 1996 Edition and 2000 Supplement
- VIII.B.6.c, Topic 16, Steel Composite Structural Module Details

To perform the technical evaluation, the staff considered UFSAR Sections 3.7, "Seismic Design," and 3.8, "Design of Category I Structures," as well as the related Tier 1 information and specific license conditions and ITAAC included in the VEGP COLs (Reference 31) that pertain to the structural engineering related to the three Tier 2* topics listed in 10 CFR Part 52, Appendix D, paragraph VIII.B.c, Topics 3, 4, and 16. The staff also examined portions of the Final Safety Evaluation Report (FSER) for the VEGP Units 3 and 4 COL application, which documents the staff's technical evaluation of those aspects of the AP1000 DCD and the VEGP COL application, respectively. The staff focused its review on the adequacy of SNC's proposed Tier 2* evaluation process to assure that any change to Tier 2* information which would affect the safety-significant aspects of the information comparable to that of Tier 1 information continues to require prior NRC approval.

Topics Designated as Tier 2* Other than VIII.B.6.c, Topic 3, Design Summary of Critical Sections

For Tier 2* Topic 4 (American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)–N690, and American Iron and Steel Institute (AISI), "Specification for the Design of Cold Formed Steel Structural Members, Part 1 and 2," 1996 Edition and 2000 Supplement) and Tier 2* Topic 16 (Steel Composite Structural Module Details), SNC proposed Criterion No. 1. As proposed, Criterion No. 1 stated that Tier 2* departures that "Involve a deviation from a code or standard credited in the plant-specific DCD for establishing the criteria for the design or construction of a structure, system, or component (SSC) important to safety" would not be exempt from 10 CFR Part 52, Appendix D, paragraphs VIII.B.5.a or VIII.B.6. Under LAR 17-037, SNC proposes that Criterion No. 1, combined with the Tier 2 evaluation criteria in paragraph VIII.B.5, is adequate to assure that safety-significant changes to Tier 2* information under Topics 4 and 16 would be identified to require prior NRC approval. The staff accepts SNC's justification because SNC is not departing from the method described in the plant-specific DCD which is consistent with the 10 CFR Part 52, Appendix D, paragraph II.G definition of a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses. For the reason described above, the staff finds that Criterion No. 1 is acceptable since it is adequate to identify departures from Tier 2* information on these topics of safety significance comparable to that of Tier 1 information, and requires that such information remain controlled by the Tier 2* departure requirements of 10 CFR Part 52, Appendix D, paragraph VIII.B.6.

VIII.B.6.c, Topic 3, Design Summary of Critical Sections

The staff evaluated SNC's proposal to depart from the Tier 2* change process by reviewing all proposed changes related to the Tier 2* structural design, as reflected in SNC's supplements to LAR 17-037 dated August 3 and September 13, 2018. The license condition criteria separate those changes that would continue to require prior NRC approval via LARs from those that would be evaluated under the Tier 2 departure process required by 10 CFR Part 52, Appendix D, paragraph VIII.B.5. Changes that ultimately do not require prior NRC approval would be addressed along with all other design changes during the reconciliation of the as-built site specific plant with the approved design. For changes involving critical sections (paragraph VIII.B.6.c, Topic 3), the reconciliation would occur in the completion of ITAAC 3.3.00.02a and would be required in order to meet License Conditions 2.D.(12)(g)(1) and (2) in the VEGP Units 3 and 4 COL.

The staff reviewed proposed Criterion No. 1, described above, to assure that any Tier 2* changes involving deviations from codes and standards that would affect safety-significant information comparable to that of Tier 1 information would require prior NRC approval. Since Criterion No. 1 is being revised such that any departure from codes and standards credited in the design bases is not exempt from 10 CFR Part 52, Appendix D, paragraph VIII.B.6, departures from these codes and standards will remain subject to prior NRC approval, and this is acceptable. The staff also reviewed Criteria Nos. 7, 8, and 9, which would require application of the requirements in Appendix D, paragraph VIII.B.6 to departures from Tier 2* information that:

7. Involve structural materials or analytical or design methods, including design codes and analytical assumptions, that deviate from those credited in the plant-specific DCD for critical sections,
8. Result in a change to the design of the steel faceplates, internal trusses, tie bars, or headed studs of the steel-concrete (SC) module walls in the Nuclear Island or the Shield Building, including SC-to-reinforced concrete (RC) connections,
9. Result in an increase in the demand-to-capacity D/C ratio of a critical section of the structure. SNC shall determine the D/C ratio under this condition for each critical section structural member including, but not limited to, wall segments, wall sections, concrete panels, slabs, or basemat sections, affected by a departure by:
 - (i) Using the Tier 2* information in the UFSAR Section 3.8 or Appendix 3H table that directly states the D/C ratio or states the area of steel provided and the area of steel required for the affected structural member, or
 - (ii) Providing the same total area of steel across the entire critical section using any combination of rebar sizes and spacing allowed by the design basis codes used in the UFSAR as the total area of steel specified in UFSAR Section 3.8 and Appendix 3H tables marked Tier 2*;

Application of the license condition criteria would segregate departures that are design changes that are not exempt from Appendix D, paragraph VIII.B.6 and require prior NRC approval (the retained fraction of the changes) from those field construction changes that SNC would be authorized to evaluate and take in accordance with the requirements of Appendix D, paragraph VIII.B.5 (the passing fraction). As discussed below, the staff determined the Tier 2* evaluation process proposed by SNC to be acceptable because changes to Tier 2* information related to the design of critical structures of safety significance comparable to that of Tier 1 information would still be subject to the requirements of Appendix D, paragraph VIII.B.6 and require prior NRC approval. The staff's rationale for the acceptance of SNC's proposed evaluation process related to structures is provided below.

Under SNC's Criterion No. 7, if the change involves analytical or design methods, including design codes, analytical assumptions, or structural materials that deviate from those credited in the UFSAR for critical sections, such a change would require prior NRC approval under Appendix D, paragraph VIII.B.6. The staff finds this criterion acceptable because it addresses the appropriate attributes affecting safety significance, including the analytical methods such as those used in the soil-structure-interaction analysis or the modeling of the soil which, if changed, could yield results that would not be compatible with analytical methods that would be used in the reconciliation analysis. Similarly, this criterion addresses departures from design codes, which, if changed from the approved design codes, could lead to departures from the design basis and may result in outcomes that would be incompatible for reconciliation with the approved design.

SNC's proposed Criterion No. 8 requires prior NRC approval under Appendix D, paragraph VIII.B.6 for a change to the steel faceplates, internal trusses, tie-bars, or headed studs of the SC module walls in the Nuclear Island or Shield Building, including SC-to-RC connections. The staff finds this acceptable because the SC module walls are qualified by taking design elements from different codes and testing these configurations to bound their predicted capacities. Any changes to the SC module walls compared to these tested configurations is incompatible for design reconciliation. The SC building has been analyzed along with the RC portion as an integral structure. Changes to the Shield Building RC portion may impact the response of the Shield Building that is subject to beyond design basis loads. The connections between the SC to RC in the Shield Building provide load transition between the SC to RC, and hence changes in this area would not be amenable to reconciliation after construction. Criterion No. 8 is acceptable because it assures that a departure from any of the identified items remains subject to the departure process in Appendix D, Criterion VIII.B.6, i.e., such a departure requires prior NRC approval.

SNC's proposed Criterion No. 9 addresses changes to the demand-to-capacity (D/C) ratio of a critical section of the structure. The D/C ratio is safety significant on par with Tier 1 information because it is the parameter that controls adherence to the approved design. If a change to a critical section of the structure results in an increase in the D/C ratio, prior NRC approval would be required.

Using Criterion No. 9, the licensee would determine the D/C ratio for each critical section structural member affected by a departure by using the information in the UFSAR Section 3.8 and Appendix 3H tables that directly states the D/C ratio or states the area of steel provided (the capacity) and that required (the demand) for the affected structural member. If UFSAR Section 3.8 and Appendix 3H tables do not contain such information, the licensee could use the average ratio across the entire affected critical section, provided that the design of the critical section, including the area of steel, was based on the most severe demand in an element of the

finite element analysis of the critical section as described in the UFSAR. The staff considers the proposed criterion acceptable because it would require prior NRC approval under Appendix D, paragraph VIII.B.6 for any Tier 2* change that impacts the D/C ratio of any affected critical section, which is a safety-significant measure comparable to that of Tier 1 information.

SNC is subject to additional requirements that, combined with this LAR, are adequate to control departures from Tier 2* information regarding critical sections, as described below. In particular, structural ITAAC 3.3.00.02a and site-specific License Conditions 2.D.(12)(g)(1) and (2) in the VEGP Units 3 and 4 COL require SNC, among other things, to reconcile the as-built plant and approved design. The reconciliation would account for all changes to the plant before operation, including for Tier 2* changes, including both changes that are not safety significant implemented without prior NRC approval as well as safety-significant changes implemented with prior NRC approval. Additionally, paragraph 2.D.(13)(b)(2) of the proposed license condition requires SNC to prepare and maintain a written evaluation that provides the bases for its determinations under the proposed license condition and to include information about each departure in the periodic reports submitted to NRC under 10 CFR Part 52, Appendix D, paragraph X.B.1. These reports will afford the staff an opportunity to inspect changes made in accordance with the proposed license condition to assure that SNC is in compliance with NRC requirements.

For the reason described above, the staff finds that Criteria Nos. 1, 7, 8, and 9 are acceptable since they are adequate to determine whether the safety significance of the Tier 2* information under these topics is comparable to the safety significance of Tier 1 information, such that departures from that information always warrant prior NRC approval. The staff confirmed that the information provided by SNC in prior supplements appeared in the supplements of LAR 17-037 dated August 3 and September 13, 2018.

3.1.1.5 VIII.B.6.c, Topic 9, I&C System Design Processes, Methods, and Standards

In LAR 17-037, SNC proposed a set of criteria that would be used to analyze the critical safety aspects of Tier 2* topics to determine whether a proposed departure from Tier 2* could qualify to be evaluated under the departure evaluation process for Tier 2 departures outlined in paragraph VIII.B.5 of Appendix D to 10 CFR Part 52. Criterion No. 2 of the proposed set of criteria for design processes represents a criterion that was developed as a result of the analysis that was related to, among other matters, the I&C system design processes, methods, and standards.

For Criterion No. 2 on changes to design processes for I&C systems in LAR 17-037 as originally written, SNC defined a material change as a change that would affect a design process output, a method of performing a design process, or method of controlling the design process. SNC listed a few examples of material changes in the LAR. The staff determined that the material change proposed under Criterion No. 2 for the I&C design processes would also impact corresponding Tier 1 information. The staff also determined that the proposed evaluation process under Criterion No. 2 would continue to assure that any safety-significant change to I&C related Tier 2* information would not be exempt from the requirements for departures from Tier 2* information in 10 CFR Part 52, Appendix D, paragraph VIII.B.6, and would still require prior NRC approval. In addition, in LAR 17-037, SNC listed several examples as non-material changes for Criterion No. 2, including editorial changes, clarifications, correction of inconsistencies, and other changes that do not change the meaning or substance of information presented in the Tier 2* topics. Under SNC's proposed process, those changes would be evaluated under the departure evaluation process for Tier 2 information using the criteria in

Appendix D of 10 CFR Part 52, paragraph VIII.B.5. The staff finds that the detailed guidance under Criterion No. 2 is acceptable because safety-significant changes to Tier 2* information under the paragraph VIII.B.6.c, Topic 9 would still require prior NRC approval under SNC's proposed process. Specifically, such departures would involve changes to Tier 1, would be screened in by proposed Criterion No. 2, or would be screened in by the Tier 2 criteria in paragraph VIII.B.5.

In SNC's initial December 21, 2017, LAR 17-037 submittal, SNC also stated that, for Criterion No. 2, the design processes addressed in the VEGP Units 3 and 4 plant-specific Tier 1 DCD and for which some Tier 2* information is contained in the VEGP Units 3 and 4 plant-specific Tier 2 DCD address, among other systems, the following I&C related systems:

- Diverse Actuation System (plant-specific Tier 1 DCD Section 2.5.1; plant-specific Tier 2 DCD Chapter 7);
- Protection and Safety Monitoring System (PMS) (plant-specific Tier 1 DCD Section 2.5.2; plant-specific Tier 2 DCD Chapter 7).

However, the staff determined that certified DCD Table 1-1 also includes Topical Report WCAP-17179, "AP1000 Component Interface Module Technical Report" (Reference 32), which addresses the design process for the safety-related component interface module (CIM). In the initial submittal of LAR 17-037, the CIM was not identified under SNC's technical evaluation of Criterion No. 2. The CIM is a system having safety significance commensurate with that of Tier 1 information, and is used to interface the safety-related PMS with other systems. Although the CIM design process is briefly discussed in Tier 1 under the PMS description, WCAP-17179 identifies the CIM as a separate system from the PMS. In addition, the staff understands that the design process for the CIM is different from that for the PMS. Therefore, the staff issued RAI LAR 17-037-8 requesting SNC to provide supplemental information on how the changes to the design process for the CIM would be evaluated and screened as a Tier 2* matter (Reference 33).

In the RAI response dated June 18, 2018, SNC addressed the staff's concern and identified the design process for the CIM as one of the design processes subject to Criterion No. 2. SNC also stated in the RAI response that the application of proposed Criterion No. 2 assures that any material change related to the CIM design processes receives prior NRC approval. The staff confirmed that these changes were incorporated in SNC's August 3, 2018, supplement to LAR 17-037.

After conducting the above review of LAR 17-037 and RAI responses, the staff finds that Criterion No. 2 is acceptable since it is adequate to determine whether the safety significance of the Tier 2* information under this topic is comparable to the safety significance of Tier 1 information, such that departures from that information always warrant prior NRC approval. The staff confirmed that the information provided by SNC in prior supplements appeared in the supplement of LAR 17-037 dated August 3, 2018.

- 3.1.1.6 VIII.B.6.c, Topic 10, Passive Residual Heat Removal (PRHR) Natural Circulation Test (First Plant Only)
VIII.B.6.c, Topic 11, Automatic Depressurization System (ADS) and Core Make-Up Tank (CMT) Verification Tests (First Three Plants Only)

In LAR 17-037, SNC proposed methodology to depart from plant-specific DCD Tier 2* information. Specifically, SNC would be exempt from the requirements of 10 CFR Part 52, Appendix D, paragraphs VIII.B.6.b and c for prior NRC approval via a license amendment for departures from Tier 2* information; and the requirements of paragraph VIII.B.5.a for prior approval of departures from Tier 2 information that involve a change to, or departure from, Tier 2* information. SNC proposed the following as Criterion No. 6 such that, if a proposed departure from Tier 2* met Criterion No. 6, SNC would not be exempt from the requirements of 10 CFR Part 52, Appendix D, paragraph VIII.B.6 and prior NRC approval would be required if the departure would:

6. Result in a change to the Passive Residual Heat Removal Heat Exchanger natural circulation test (first plant test), the Core Makeup Tank Heated Recirculation Tests (first three plants test), or the Automatic Depressurization System Blowdown Test (first three plants test) that is material to the test objectives or test performance criteria,

For Tier 2* information in the categories of paragraph VIII.B.6.c, Topics 10 and 11, SNC's proposed Criterion No. 6 address departures from Tier 2* information material to the test objection or test performance criteria for the Passive Residual Heat Removal Heat Exchanger (first plant test), the Core Makeup Tank Heated Recirculation Tests (first three plants test), or the Automatic Depressurization System Blowdown Test (first three plants test). The staff reviewed LAR 17-037 to ensure that SNC provided detailed guidance to implement the Tier 2* departure evaluation process related to first plant test and first three plants test. In the supplement dated August 3, 2018, SNC stated that a departure that influences the outcome of the test such that it would affect whether the test objectives or performance criteria would be met would be subject to prior NRC approval.

- The following are examples of material changes:
 - The addition, deletion, or alteration of a test step
 - Alteration of a detail that serves as the basis for acceptance in an NRC FSER related to the affected test
- The following examples are not material changes:
 - Editorial changes
 - Clarifications to improve reader understanding
 - Correction of inconsistencies within the document which are clearly discernible (e.g., between sections)
 - Changes that do not change the meaning or substance of information presented (e.g., reformatting or removing detail as described in NEI 98-03, Revision 1, *Guidelines for Updating Final Safety Analysis Reports*, Section A4 [Reference 34])

The staff reviewed LAR 17-037 to ensure that SNC provided detailed guidance to implement the Tier 2* departure evaluation process related to first plant test and first three plants test. For the reasons described above, the staff finds that Criterion No. 3 is acceptable since it is adequate to determine whether the safety significance of the Tier 2* information under these topics is comparable to the safety significance of Tier 1 information, such that departures from that

information always warrant prior NRC approval. The staff confirmed that the information provided by SNC in prior supplements appeared in the supplement of LAR 17-037 dated August 3, 2018.

3.1.1.7 VIII.B.6.c, Topic 15, Human Factors Engineering

The staff uses the guidance in the SRP Chapter 18, "Human Factors Engineering," Revision 2, to ensure that 10 CFR 50.34(f)(2)(iii) is met. The provisions of 10 CFR 52.79(a)(41) require applicants to provide an evaluation of the facility against the SRP or discuss how any departures from the SRP provide an acceptable method of complying with regulations that underlie the corresponding SRP acceptance criteria.

The VEGP Units 3 and 4 UFSAR, Section 18.1.2, "Regulatory Requirements," states, "The human factors engineering process is designed to meet the human factors engineering design process requirements specified in NUREG-0711." The VEGP UFSAR was prepared in accordance with Revision 2 of NUREG-0711, "Human Factors Engineering Program Review Model" (Reference 16). NUREG-0711 contains the SRP acceptance criteria for an acceptable human factors design program. Any human factors engineering (HFE) program that is consistent with NUREG-0711 is considered by the staff to be consistent with 10 CFR 50.34(f)(2)(iii). A main control room design created via a NUREG-0711 conforming program is considered to possess "state-of-the-art human factors principles" and therefore complies with 10 CFR 50.34(f)(2)(iii).

The discussion of Criterion No. 2 in Enclosure 1U of LAR 17-037 applies to the human factors design process. This guidance is intended to determine which planned changes constitute a change to a design process that is material to implementation of an industry standard or endorsed regulatory guidance. SNC's initial December 21, 2017, submittal of LAR 17-037, Enclosure 1, Section 3, "Technical Evaluation," page 10 of 19, provides examples of changes considered material changes, as well as examples of changes considered immaterial changes.

Because the lists of changes were not all-inclusive, the staff identified a concern that it could be difficult to determine whether or not future changes not closely resembling the items on either list were "material changes." The staff considered that misinterpretation of a "material change" as an immaterial change could potentially lead to safety consequences. The staff also identified a concern that applying the proposed evaluation process to prospective departures from Tier 2* information relating to paragraph VIII.B.6.c, Topic 15, "Human Factors Engineering," could result in the licensee making changes to Tier 2* information without prior NRC approval using the Tier 2 change process that could circumvent the positions taken by the staff in the relevant SE reports. In addition, human factors design work is on-going for SNC. The NRC plans to conduct inspections against the Tier 2* implementation plans that were approved during the DC process. Changing these implementation plans without NRC knowledge may cause new challenges in the inspection of the final HFE design.

The staff issued RAI LAR 17-037-5 to address the issues described above. The RAI response dated June 18, 2018, includes Enclosure 13, which updates the list of "material changes" to include altering a detail that serves as the basis for staff acceptance as documented in an NRC SE.

The staff reviewed LAR 17-037 and the RAI response in Enclosure 13. Using NRC SEs for VEGP Units 3 and 4 (including SEs for the AP1000 DCD, VEGP COLs, topical reports, and LARs) as an additional basis for identifying "material changes" provides a reasonable means of

supplementing the guidance in Enclosure 1 because the NRC SEs document the most important reasons for staff's approval of an HFE implementation plan. For purposes of this LAR, if a consideration is included in an NRC SE, the staff assumes that the NRC finds this to be material information.

There is some possibility that material information is not described in an NRC SE (for instance if the staff considered information, but did not find it was necessary to include in the staff's SE). Changes to this type of information would still be identified as requiring prior NRC approval through the application of the remainder of the guidance in Enclosure 1.

The staff also considered the ITAAC applicable to HFE included in the VEGP Units 3 and 4 COLs as a factor in the acceptability of the proposed departure process. For example, ITAAC Nos. 3.2.00.01c.ii and 3.2.00.01d provide assurance that the HFE verification and validation program is performed in accordance with the HFE verification and validation implementation plan and includes integrated system validation (ISV) and issue resolution verification. Additionally, ITAAC No. 3.2.00.01e involves verification of the human-system interface, and ITAAC No. 3.2.00.02 provides assurance that the main control room includes reactor operator workstations, supervisor workstation(s), safety-related displays, and safety-related controls.

- On June 27 and June 28, 2018, SNC submitted ITAAC Closure Notifications (ICNs) for ITAAC Nos. 3.2.00.01c.ii and 3.2.00.01d, respectively (References 35 and 36). These ITAAC are related to ISV and the resolution of human error discrepancies. Both of these activities occur late in the HFE design process (see NUREG-0711). ICNs are submitted when the licensee believes the inspections, tests, or analyses supporting an ITAAC are complete and the specified acceptance criteria are met. During the week of June 18, 2018, the staff conducted an inspection of the ISV process and the human error deficiency resolution process (Reference 37). Final NRC verification of these ICNs is complete (Reference 38 and 39).
- ITAAC Nos. 3.2.00.01e and 3.2.00.02 have not been closed by the licensee. These ITAAC are both related to the design implementation activities described in NUREG-0711. The design implementation implementation plan (DI IP) is an NRC approved Tier 2* document that describes precisely how SNC will provide information sufficient to close the associated ITAAC. One purpose of the DI IP is to understand the effect of post-integrated system validation design changes on personnel performance. If the licensee were to revise aspects of the human factors program that are currently considered complete (such as changing the human system interface design, or revalidating a human action), the planned design implementation activities should assess the effects on human performance and determine whether or not the impact on performance is acceptable. Design implementation activities are the only remaining HFE activities to be completed before SNC informs the NRC that the ITAAC are all complete pursuant to 10 CFR 52.99(c)(4). In other words, nearly all of the work associated with NRC approved Tier 2* HFE implementation plans is already complete.

Because of the advanced nature of the HFE design for VEGP Units 3 and 4, the staff had to consider the possibility that some future changes to Tier 2* information related to HFE could involve aspects of the program that had been implemented. There is only one Tier 2* implementation plan that remains not fully implemented, therefore, any HFE changes related to unimplemented portions of the program would be limited to that plan. The ITAAC remain part of the licensing basis of VEGP Units 3 and 4 until a Commission finding pursuant to 10 CFR 52.103(g) that the acceptance criteria of all ITAAC have been met. The ITAAC provide

additional assurance that the acceptability of changes to previously approved aspects of the program would be subject to staff verification. Criterion No. 2 would prevent any material changes to the DI IP that would unacceptably alter the ITAAC.

For the reasons described above, the staff finds that Criterion No. 2 and the accompanying implementation guidance, as revised by SNC in its supplement dated August 3, 2018, combined with the HFE-related ITAAC included in Appendix C of the VEGP Units 3 and 4 COLs are acceptable since they are adequate to determine whether the safety significance of the Tier 2* information under this topic is comparable to the safety significance of Tier 1 information, such that departures from that information always warrant prior NRC approval. The staff confirmed that the information provided by SNC in prior supplements appeared in the supplement of LAR 17-037 dated August 3, 2018.

3.1.1.8 VIII.B.6.c, Topic 13, Piping Design Acceptance Criteria

The staff reviewed the SNC initial submittal for LAR 17-037 dated December 21, 2017, including the underlying analysis supporting the sufficiency of its proposed process (included as enclosures to the submittal), as well as subsequent supplements submitted by SNC. The SNC analysis described in Enclosures 1 and 5 focused on topics listed in 10 CFR Part 52, Appendix D, paragraphs VIII.B.6.b and VIII.B.6.c, but the staff additionally reviewed the Tier 2 text of the DCD to independently verify that the full scope of topics was addressed. Based on this independent verification, the staff prepared a RAI discussed below.

The staff reviewed the topics subject to the proposed process for the evaluation of Tier 2* departures, and assessed the acceptability of that process. In particular, Criteria Nos. 1 and 2 are applicable to the review of the piping design acceptance criteria. These criteria, as proposed in SNC's September 13, 2018, supplement to LAR 17-037, read as follows:

- 1) Involve a deviation from a code or standard credited in the plant-specific DCD for establishing the criteria for the design or construction of a structure, system, or component (SSC) important to safety,
- 2) Result in a change to a design process described in the plant-specific DCD that is material to implementation of an industry standard or endorsed regulatory guidance.

The staff evaluated the rigor of these evaluation criteria, as complemented by the Tier 2 departure evaluation process, for their adequacy in determining which departures require prior NRC approval.

Design Acceptance Criteria (DAC) Discussion

In its initial submittal, SNC referenced its proposed Criterion No. 2, which then differed from the current version, for piping DAC. However, SNC did not discuss in detail the topic of piping DAC in the submittal. Therefore, the staff issued RAI LAR 17-037-1, Question 2, to request clarification regarding the treatment of piping DAC (Reference 40). In its response dated April 6, 2018, SNC proposed revisions to the submittal, but the staff considered those revisions to be unclear. During a public meeting on April 12, 2018, the staff and SNC discussed additional wording to clarify the revision to the acceptance criteria with respect to piping DAC. Subsequently, SNC provided a supplement dated May 11, 2018, to clarify that piping DAC are part of a design process used to implement an industry standard or endorsed regulatory

guidance (such as the ASME BPV Code). In view of this clarification, the staff determined that proposed Criterion No. 2 to the SNC process ensures that changes are adequately controlled. Therefore, the staff finds that Criterion No. 2 is acceptable since it will appropriately determine whether departures to this topic contain the same safety significance as Tier 1 information and that the proposed license condition is acceptable because it provides reasonable assurance that prior NRC approval would be required for safety-significant changes to Tier 2* information associated with this topic.

Completeness of UFSAR Review – Chemical and Volume Control System (CVS) Piping

In its initial submittal, SNC stated that “SNC performed an analysis of the Tier 2* matters listed in 10 CFR Part 52, Appendix D, Section VIII, paragraphs B.6.b and B.6.c.” The DCD contains additional text designated as Tier 2* that might not clearly be within the scope of the matters listed in paragraphs VIII.B.6.b and VIII.B.6.c. Therefore, the staff requested clarification regarding the control of this information. Specifically, the nonsafety-related CVS piping inside containment is ASME B31.1 Code piping subject to additional requirements for design, fabrication, examination, inspection, and testing. These additional requirements are designated Tier 2* and support the basis for satisfying GDC 1. The staff requested in RAI LAR 17-037-1, Question 1, that SNC describe how a potential change to the treatment of this ASME B31.1 Code piping would be addressed by the proposed process and if any additional topics need to be addressed. In its RAI response dated May 11, 2018, SNC indicated that it utilized the AP1000 DCD (Reference 41) “Introduction,” Table 1-1, “Index of AP1000 Tier 2 Information Requiring NRC Approval for Change,” to ensure that all text in the UFSAR that was designated Tier 2* was properly identified and evaluated in the submittal. Regarding the ASME B31.1 Code piping requirements, this table characterizes the text as “ASME Code Piping Design Restrictions.” SNC acknowledged that the ASME BPV and ASME B31.1 Codes are different documents, but interpreted the word “code” in the proposed evaluation criteria to also include the ASME B31.1 Code. Therefore, SNC specifies that the Tier 2* material for ASME B31.1 Code piping is controlled by one of the proposed evaluation criteria (Criterion No. 1).

In addition, the staff notes that some of the Tier 2* material is further controlled by Tier 1, in that there are Design Commitments (specifically for CVS, Section 2.3.2, item 14) that address design requirements for this ASME B31.1 Code piping. This Tier 1 information requires that the non-safety-related piping located inside containment and designated as part of the reactor coolant pressure boundary, as identified in Tier 1, Table 2.3.2-2 (pipe lines with “No” in the ASME Code column), is designed to withstand a seismic design basis event and maintain structural integrity. SNC clarified that deviation from this requirement would require prior NRC approval, as indicated in the response to RAI LAR 17-037-1, Question 1.

Other portions of the Tier 2* text in UFSAR Subsection 5.2.1.1 related to CVS piping inside containment involve requirements that were not included in Tier 1. This text provides requirements for dimensional fabrication, assembly, erection, inspection, examination, and testing as defined in Chapters IV, V, and VI of the ASME B31.1 Code. SNC stated that “any departure that reduces commitments to ASME B31.1 Code in this text would require prior NRC review and approval.” Therefore, the staff finds that Criterion Nos. 1 and 2 are acceptable since they are adequate to determine whether the safety significance of the Tier 2* information under these topics is comparable to the safety significance of Tier 1 information, such that departures from that information always warrant prior NRC approval. The staff confirmed that the information provided by SNC in prior supplements appeared in the supplements of LAR 17-037 dated August 3 and September 13, 2018.

3.1.2 Evaluation of the 8 of the 24 Tier 2* Topics without License Condition Criteria

The following sections describe the staff's evaluation of whether these eight topics (1) do not include additional safety-significant information comparable to the safety significance of the information already in Tier 1, departures from which would require submission of an exemption request under Part 52, Appendix D, paragraph VIII.B.4; (2) are already subject to 10 CFR 50.55a, which requires submission of proposed alternatives to the ASME BPV Code for NRC review, (3) are not of safety significance comparable to that of Tier 1 information, or (4) for the qualification method for MOVs and POVs, contain Tier 1 equivalent information requiring prior NRC approval under 10 CFR Part 52, Appendix D, paragraph VIII.B.5 for any safety-significant departure.

3.1.2.1 VIII.B.6.b, Topic 8, Heat Sink Data for Containment Pressure Analysis

The staff reviewed the proposed changes presented in LAR 17-037 in relation to Tier 2* information in the UFSAR related to heat sink data for containment pressure analysis (10 CFR Part 52, paragraph VIII.B.6.b, Topic 8), as well as the Tier 2 information related to this topic. Tier 2* items associated with heat sinks are found in VEGP Units 3 and 4 UFSAR Subsection 6.2, Table 6.2.1.1-10, "Data for Additional Heat Sinks Credited in the Containment Peak Pressure Evaluation."

Paragraph VIII.B.6.b, Topic 8 was incorporated in the 10 CFR Part 52, Appendix D as part of the AP1000 DC Amendment final rule in December of 2011. Supplement 2 to NUREG-1793 addresses changes made to the containment evaluation model to include crediting additional heat sinks (also referred to as thermal conductors). In a letter dated June 14, 2011 (Reference 42), regarding containment response and safety analysis, Westinghouse Electric Company (Westinghouse) described the newly credited heat sinks as not meeting Tier 1 criteria in part because the newly credited heat sinks provide only a minor contribution to heat removal and pressure reduction for a design basis event. In the June 14, 2011, letter, it is Westinghouse's position that the presentation of the additional heat sinks as Tier 2* information provided sufficient regulatory control.

In Supplement 2 to NUREG-1793, Chapter 23, "Design Changes Proposed in Accordance with ISG-11," Subsection Y, "Changes to WGOthic AP1000 Containment Evaluation Model Inputs," the staff found the changes to the containment evaluation model, including associated DCD markups (e.g., additional heat sink data as Tier 2*) acceptable. The staff evaluation did not provide a discussion regarding the Tier 2* designation for the additional heat sinks as being sufficient or necessary. In addition, no discussion of Tier 2* changes appears in Supplement 2 to NUREG-1793, Chapter 1, Subsection 17, which contained a summary of changes to the material designated as Tier 2*.

The site-specific permanent exemption and license amendment proposed in LAR 17-037 would allow SNC to apply the existing Tier 2 departure evaluation process to some proposed Tier 2* departures and Tier 2 departures that involve a change to or departure from Tier 2* information, provided the proposed Tier 2* departure does not meet any of the newly proposed license condition criteria stated in proposed License Condition 2.D.(13)(a). SNC performed an analysis of heat sink data for containment pressure analysis and determined that the evaluation process applicable to Tier 2 departures in 10 CFR Part 52, Appendix D, paragraph VIII.B.5, was sufficient to determine whether prior NRC approval is required for any proposed change. As proposed in License Condition 2.D.(13), a Tier 2* departure associated with paragraph

VIII.C.6.b, Topic 8, would qualify to be evaluated under the Tier 2 departure evaluation process. In Enclosure 5 of LAR 17-037, SNC's analysis summary indicates that departures from Tier 2* Topic 8 are adequately addressed by 10 CFR Part 52, Appendix D, paragraph VIII.B.5. Therefore, although applicable by process, the additional license condition criteria (i.e., 1 - 9) listed under proposed License Condition 2.D.(13)(a) were not specifically established to evaluate departures related to Tier 2* Topic 8.

In SECY-17-0075, the staff described Tier 2* information as follows:

...Tier 2* information is intended to have substantial safety significance, commensurate with information designated as Tier 1.

In the June 14, 2011, letter discussed above, Westinghouse states that the additional heat sinks, while important, do not rise to the level of Tier 1 information. In Supplement 2 to NUREG-1793, the staff found the evaluation of the heat sink changes acceptable, in the absence of Tier 1 information or a discussion regarding Tier 2* information. Given these documents, as informed by SECY-17-0075, the staff determined that it is reasonable to conclude that the staff in 2011 did not view the additional heat sink information as being of substantial safety significance or commensurate with information designated as Tier 1, although Westinghouse designated the additional heat sinks as Tier 2*. The staff evaluation in NUREG-1793 does describe that a significant mass of heat structures are not credited and that crediting a few is acceptable. Accordingly, in the staff's judgment, the additional heat sink information does not have substantial safety significance and its safety significance is not commensurate with that of Tier 1 information.

In view of the above, the staff also finds the Tier 2 departure requirements in the "50.59-like" criteria found in 10 CFR Part 52, Appendix D, paragraph VIII.B.5 and applied to Tier 2* Topic 8 as part of License Condition 2.D.(13) sufficient to address departures related to heat sinks for containment pressure analysis. The staff reached this finding based on guidance contained in NEI 96-07 (as endorsed by RG 1.187) regarding containment pressure analysis, the staff evaluation contained in Supplement 2 of NUREG-1793, and SECY-17-0075. Accordingly, the staff finds the license condition acceptable for the Tier 2* information for this topic because that Tier 2* information is not of safety significance comparable to that of Tier 1 information.

3.1.2.2 VIII.B.6.c, Topic 1, Nuclear Island Structural Dimensions
VIII.B.6.c, Topic 5, Definition of Critical Locations and Thicknesses
VIII.B.6.c, Topic 6, Seismic Qualification Methods and Standards
VIII.B.6.c, Topic 12, Polar Crane Parked Orientation
VIII.B.6.c, Topic 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE

To perform the technical evaluation, the staff considered UFSAR Sections 3.7, "Seismic Design," and 3.8, "Design of Category I Structures," as well as the related Tier 1 information and specific license conditions and ITAAC included in the VEGP COLs (Reference 31) that pertain to the structural engineering related to five of the Tier 2* topics listed in 10 CFR Part 52, Appendix D, paragraph VIII.B.c, namely, Topics 1, 5, 6, 12, and 14. The staff also examined portions of the FSER for the VEGP Units 3 and 4 COL application, which documents the staff's technical evaluation of those aspects of the AP1000 DCD and the VEGP COL application, respectively. For these structural engineering related Tier 2* topics identified in paragraph VIII.B.6.c, SNC did not propose additional license condition criteria. The staff review regarding these Tier 2* topics appears below.

For Topics 1 and 5, SNC stated that no additional criteria were necessary because Tier 1 information adequately addressed the safety-significant aspects of this information. The staff verified that the safety-significant aspects of Topics 1 and 5 are included in existing Tier 1 information and agrees with SNC. Since a change to Tier 1 information requires submittal of an exemption request for NRC review and approval, the staff finds the proposed license condition acceptable for the Tier 2* information in these topics does not include additional safety-significant information comparable to the safety significance of the information already in Tier 1.

For Topics 6 and 12, SNC stated that no additional criteria were necessary because the Tier 2 evaluation criteria in paragraph VIII.B.5 were adequate to assure that safety-significant changes to Tier 2* information under these topics would be identified to require prior NRC approval. The staff agrees with SNC that the Tier 2* information in Topics 6 and 12 do not rise to the same level of safety significance as Tier 1 information because these topics are related to the methodology used in the plant-specific DCD. With respect to the orientation of the polar crane, the plant-specific DCD used the analysis methods for applying mass in the analysis model. As a result, it is acceptable to control departures from Tier 2* information relating to Topics 6 and 12 using the Tier 2 departure requirements in paragraph VIII.B.5. Additionally, any Tier 2* departures from Topics 6 and 12 would be subject to existing license conditions 2.D.(12)(g)(1) and (2). Therefore, the staff concludes that the proposed new license condition is acceptable with respect to departures from these Tier 2* information topics.

For Topic 14, SNC stated that no additional criteria were necessary because the Tier 1 information combined with the Tier 2 evaluation criteria in paragraph VIII.B.5 were adequate to assure that safety-significant changes to Tier 2* information under this topic would be identified to require prior NRC approval. Since a change to the Tier 1 information would require a submittal of an exemption request for NRC review and Tier 1 information includes all the safety-significant information in Tier 2* for Topic 14 that is commensurate in safety significance to Tier 1 information, departures from safety-significant Tier 2* information relating to Topic 14 will be subject to prior NRC approval. Therefore, the staff concludes that the new license condition evaluation process is adequate with respect to departures from Tier 2* information relating to paragraph VIII.B.6.c, Topic 14.

3.1.2.3 VIII.B.6.c, Topic 2, American Society of Mechanical Engineers Boiler & Pressure Vessel Code (ASME Code) Piping Design and Welding Restrictions, and ASME Code Cases
VIII.B.6.c, Topic 8, Motor-Operated and Power-Operated Valves

The staff reviewed the SNC initial submittal for LAR 17-037 dated December 21, 2017, including the underlying analysis supporting the sufficiency of its proposed process (included as enclosures to the submittal), as well as subsequent supplements submitted by SNC. The SNC analysis described in Enclosures 1 and 5 focused on topics listed in 10 CFR Part 52, Appendix D, paragraphs VIII.B.6.b and VIII.B.6.c, but the staff additionally reviewed the Tier 2 text of the DCD to independently verify that the full scope of topics was addressed. Based on this independent verification, the staff prepared a RAI discussed below.

For Topic 2, the staff reviewed the Tier 2* text in the DCD regarding ASME BPV Code piping design and welding restrictions and ASME BPV Code Cases. For this topic, SNC stated that no additional criteria were necessary because the Tier 1 information combined with 10 CFR 50.55a and the Tier 2 evaluation criteria in paragraph VIII.B.5 were adequate to assure that

safety-significant changes to Tier 2* information under this topic would be identified to require prior NRC approval. The staff observed that some of the information designated as Tier 2* is also addressed by other requirements or guidance, such as RG 1.84, Revision 37, which lists ASME BPV Code, Section III, Code Cases acceptable for use and those acceptable with certain conditions. RG 1.84 is incorporated into 10 CFR 50.55a(a)(3)(i). The Tier 2* information regarding these Code Cases is consistent with RG 1.84 and is adequately controlled by this RG, as SNC has committed to satisfying the necessary conditions imposed on the Code Cases upon which SNC relies. Additionally, the Tier 2 departure evaluation process necessitates a license amendment if a proposed change would, among other factors, result in a more than a minimal increase in the likelihood of occurrence of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD or result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses. Tier 2* material regarding ASME BPV Code piping design and welding restrictions could not be changed in a safety-significant manner without exceeding these thresholds.

In addition, the ASME BPV Code is incorporated by reference in 10 CFR 50.55a of the NRC regulations and these are requirements that are applicable to VEGP Units 3 and 4. Where changes are desired to ASME BPV Code requirements, SNC must submit a request to the NRC for authorization to use an alternative to those specific requirements in the edition and addenda of the ASME BPV Code applicable to VEGP Units 3 and 4 in accordance with the 10 CFR 50.55a requirements. In summary, the process outlined in LAR 17-037 does not affect the 10 CFR 50.55a requirements for requesting an alternative to specific ASME BPV Code requirements applicable to VEGP Units 3 and 4.

For the reasons explained above, the staff has determined that Topic 2 is governed by 10 CFR 50.55a, some aspects of Topic 2 are included in existing Tier 1 information, and the remaining aspects of Topic 2 do not rise to the same level of safety significance as Tier 1 information. Specifically, (1) a change to Tier 2* information relating to Topic 2 would require submittal of an alternative for NRC review in accordance with 10 CFR 50.55a(z), (2) a change to the aspects of Tier 2* information relating to Topic 2 that are also included in Tier 1 information relating to Topic 2 would require submission of an exemption request for NRC review, and (3) all other Tier 2* information relating to Topic 2 does not rise to the level of safety significance of Tier 1 information, departures from this other Tier 2* information may be treated under the Tier 2 departure requirements in paragraph VIII.B.5. Accordingly, the staff concludes that additional license condition criteria are not needed for this topic and that the new license condition evaluation process is acceptable with respect to Tier 2* information identified by paragraph VIII.B.6.c, Topic 2.

For Topic 8, SNC provided in its initial submittal proposed license condition criteria for the evaluation of Tier 2* departures with phrases such as “used to implement an industry standard or endorsed regulatory guidance,” or “construction materials that deviate from a code or standard credited” in determining whether it is acceptable to depart from the Tier 2* change process. SNC also stated that the topic of MOVs and POVs is adequately addressed in Tier 1 and by paragraph VIII.B.5 of Appendix D to 10 CFR Part 52, and SNC did not propose any additional license condition criteria intended for this Tier 2* topic.

For background, the following describes the historical timing of the NRC endorsement of ASME QME-1-2007 during the AP1000 design certification process. In multiple sections, AP1000 DCD Tier 1 requires that tests or type tests of valves be performed that demonstrate the capability of the valve to operate under its design conditions. AP1000 DCD Tier 2, Section 5.4.8, “Valves,”

includes extensive Tier 2* information equivalent to Tier 1 information that specifies the qualification methodology to be implemented for MOVs and POVs to demonstrate their ability to operate over a range up to the design conditions. The AP1000 design certification applicant subsequently updated the DCD to include specific references to ASME QME-1-2007 in several sections following the NRC endorsement of ASME QME-1-2007 in RG 1.100 (Revision 3), "Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants," in September 2009. For example, the final version (Revision 19) of AP1000 DCD Tier 2, Section 5.4.8.3, "Design Evaluation," indicates that the requirements for qualification testing of power-operated active valves are based on ASME QME-1-2007. In addition, AP1000 DCD Tier 2, Section 3.9.3.2.2, "Valve Operability," states that prior to installation, qualification of functional capability of active valve assemblies is performed in accordance with the requirements of ASME QME-1-2007. In that the AP1000 DCD includes extensive Tier 2* requirements for MOV and POV qualification that are consistent with the qualification provisions in ASME QME-1-2007, the NRC staff did not consider it necessary at the time of the final AP1000 design certification review for the AP1000 DCD to also specify the reference to ASME QME-1-2007 as Tier 2* information. More recent design certification applications include requirements to implement the provisions of ASME QME-1-2007 for the qualification of valves as either Tier 1 or Tier 2* information.

In reviewing the SNC proposal, the staff requested that SNC provide additional support for its position, as well as clarity regarding the applicability of the phrases regarding codes and standards. In particular, the staff considers the use of appropriate codes and standards for the design and qualification provisions for MOVs and POVs to be of high safety significance. Specifically, the staff sought additional information in RAI LAR 17-037-1, Question 3, regarding how potential changes to the qualification of MOVs and POVs would be evaluated, i.e., whether the proposed license condition criteria would require prior NRC review and approval, or if SNC would make that determination under 10 CFR Part 52, Appendix D, Section VIII.B.5.

In its response dated May 11, 2018, SNC indicated that Tier 1 requirements necessitate that safety-related MOVs and POVs be able to perform their safety-related functions to change position as indicated in the applicable Tier 1 table. These requirements also specify that tests or type tests will be performed to demonstrate the capability of the valve to operate under design conditions. In addition, SNC stated that the design and qualification conditions are described in the Tier 2* text and are tied to ASME Standard QME-1-2007 by text in UFSAR Subsection 5.4.8.3 that states, "Requirements for qualification testing of power-operated active valves are based on QME-1."

SNC further stated that proposed changes to reduce or adversely impact the design and qualification provisions based on QME-1 would require prior NRC review and approval under 10 CFR Part 52, Appendix D, paragraph VIII.B.5.b.(2), because changes in design requirements tied to code requirements are treated as potentially affecting the likelihood of malfunction. Also in its May 11, 2018, response, SNC clarified this statement to mean that changes to reduce or adversely alter the QME-1 design and qualification provisions outlined in the Tier 2* text would trigger the paragraph VIII.B.5.b.(2) criterion.

The staff finds that the May 11, 2018, submittal by SNC clarifies the process for implementing the requirements in the Tier 2* text of the UFSAR for the qualification of MOVs and POVs at VEGP Units 3 and 4. In particular, SNC indicated that departures from the Tier 2* design and qualification information for MOVs and POVs will trip the criterion in Part 52, Appendix D, Section VIII.B.5.b(2). In addition, the staff has conducted inspections of the ongoing qualification process for MOVs and POVs to be used at VEGP Units 3 and 4 in accordance with

ASME QME-1-2007 as accepted by the NRC. [See, for example, VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017002 and 05200026/2017002, dated August 10, 2017 (Reference 43); and VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017004 and 05200026/2017004, dated February 14, 2018 (Reference 44)]. During those inspections, the staff has observed that the requirements to implement ASME QME-1-2007 are clearly understood and applied for the qualification of MOVs and POVs.

In view of the SNC RAI response and the information obtained in the staff inspections, the staff concludes that departures from the Tier 2* design and qualification information for MOVs and POVs will be adequately controlled by the criterion in Part 52, Appendix D, paragraph VIII.B.5.b(2), since safety-significant departures from that information will result in more than a minimal increase in the likelihood of occurrence of a malfunction of the MOVs or POVs. Because safety-significant changes to Tier 2* information related to MOVs and POVs would require prior NRC approval by applying the Part 52, Appendix D, Section VIII.B.5.b criteria, the staff concludes that the SNC proposal for the evaluation criteria for Tier 2* departures with respect to MOV and POV qualification for Vogtle Units 3 and 4 is acceptable. In addition, a change to Tier 1 information would require a submittal of an exemption request for NRC review under Section VIII.A.4. Accordingly, the staff concludes that the new license condition evaluation process is acceptable for MOV and POV qualification at Vogtle Units 3 and 4.

The staff notes that this conclusion involves unique circumstances regarding the provisions for regulatory control over Tier 2* information describing design and qualification conditions for MOVs and POVs and the qualification methodology to be implemented to demonstrate each valve's ability to operate over a range up to the design conditions under which it is relied upon to operate. Specifically, SNC demonstrated that the Part 52, Appendix D, Section VIII.B.5.b Tier 2* departure requirements are adequate to identify all safety-significant departures from the Tier 2* valve qualification information. In addition, SNC has prepared procurement specifications and construction and installation specifications that have been subject to staff inspections, as described above. These circumstances are unique, in part because no such demonstration has been made regarding other AP1000 Tier 2* information of safety significance comparable to that of Tier 1 information, as discussed in this SE, whether in the context of the original design certification (DCD Revision 15), the amendment to the design certification (DCD Revision 19), or LAR-17-037. In essence, the staff has concluded that SNC has implemented the MOV and POV qualification requirements to an extent adequate to demonstrate that any further departure from Tier 2* information will be adequately controlled by the Tier 2 departure requirements in Part 52, Appendix B, Section VIII.B.5. Accordingly, the licensee has demonstrated that the Tier 2 departure requirements for evaluating changes to the MOV and POV qualification requirements are adequate to ensure any safety significant departures will be identified and sent to the NRC for review and approval prior to implementing such departures.

3.1.3 Evaluation of the 1 of the 24 Tier 2* Topics Regarding VIII.B.6.b, Topic 4, Fire Areas

Enclosure 5 of SNC's December 21, 2017, submittal of LAR 17-037 states that SNC did not propose any license condition criteria for Tier 2* information related to fire areas because a "[p]revious exemption re-designated VEGP Units 3 and 4 fire area figures as Tier 2."

On February 1, 2016, NRC issued License Amendment No. 44 for VEGP Units 3 and 4 (Reference 45). License Amendment No. 44 re-designated UFSAR Tier 2* information related to fire areas as Tier 2 information and granted an exemption from 10 CFR Part 52, Appendix D, paragraph VIII.B.6.b, Topic 4. As a result, the requirements in paragraph VIII.B.6.b for prior

NRC approval for changes to Tier 2* information related to fire areas no longer apply to VEGP Units 3 and 4. The UFSAR fire area information is Tier 2 information and is subject to the change control process in paragraph VIII.B.5. Accordingly, LAR 17-037 does not affect the information relating to fire areas, and no further evaluation is necessary.

3.1.4 Evaluation of Change to UFSAR Tier 2* Page Footer Notes

This LAR proposes a change to the UFSAR, as follows. For each instance in the UFSAR where a page contains Tier 2* information, the existing page footer note is proposed to be modified to stipulate that prior NRC approval of departures from Tier 2* information may be required in accordance with the departure evaluation process specified in License Condition 2.D.(13).

The footer note appearing in the current UFSAR reads:

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

The revised footer note proposed in the LAR that would replace the current footer reads:

*In accordance with the departure evaluation process specified in License Condition 2.D.(13), NRC staff approval may be required prior to implementing a change in this information.

A revision to the footer note is necessary because the proposed license condition would allow for departures from Tier 2* information without prior NRC approval. The proposed footer note accurately expresses this scenario where some changes would require prior NRC approval and other changes would not. Therefore, the staff finds acceptable SNC's proposed change to the footer note in the UFSAR.

3.1.5 Summary of Technical Evaluation

For the reasons discussed above, the staff finds as follows:

- First, for the types of Tier 2* information to which the criteria in proposed License Condition 2.D.(13)(a)(1)-(9) are associated, the proposed License Condition is adequate to identify departures from Tier 2* information of safety significance comparable to that of Tier 1 information. For departures from Tier 2* information identified as being of safety significance comparable to that of Tier 1 information, the License Condition requires that such information remain controlled by the Tier 2* departure requirements of 10 CFR Part 52, Appendix D, paragraph VIII.B.6.
- Second, all Tier 2* information of safety significance comparable to that of Tier 1 information but for which specific criteria in proposed License Condition 2.D.(13)(a)(1)-(9) were not identified falls into one of the following three categories: (1) Tier 1 also includes the information and departures are controlled by the Tier 1 departure requirements in 10 CFR Part 52, Appendix D, paragraph VIII.A.4, (2) some other regulatory requirement provides adequate control of the information, or (3) the Tier 2* information equivalent to Tier 1 information requires prior NRC approval under 10 CFR Part 52, Appendix D, paragraph VIII.B.5 for any safety-significant departure.

- Third, all other Tier 2* information does not rise to a level of safety significance comparable to that of Tier 1 information, and departures from that Tier 2* information are adequately controlled by the Tier 2 departure requirements of 10 CFR Part 52, Appendix D, paragraph VIII.B.5.

Accordingly, the staff finds that the amendment proposed in LAR 17-037 will afford adequate regulatory control over departures from Tier 2* information. Therefore, the staff finds the proposed changes to be acceptable. As noted above, the staff review was specific to the VEGP Units 3 and 4. The staff did not consider certified designs other than the AP1000 or combined licenses issued under 10 CFR Part 52 other than those issued for Vogtle Units 3 and 4. DCDs for certified designs other than the AP1000 identify Tier 2* information that differs from the Tier 2* information for the AP1000 certified design. COLs that reference the AP1000 design other than the VEGP COLs may contain different Tier 2 and Tier 2* information. Accordingly, the staff conclusions are specific to the VEGP Units 3 and 4 COLs and do not apply to any other COL.

3.2 EVALUATION OF EXEMPTION

The regulations in paragraph III.B of Appendix D to 10 CFR Part 52 require a holder of a COL referencing Appendix D to 10 CFR Part 52 to incorporate by reference and comply with the requirements of Appendix D, including the processes for changes and departures in Section VIII. Because SNC's requested license condition would require exemptions from specific requirements in Sections II and VIII of 10 CFR Part 52, Appendix D, the staff evaluated the exemptions against the applicable criteria as described below.

SNC requested exemptions from the following requirements of 10 CFR Part 52, Appendix D:

- Paragraph VIII.B.5.a, together with paragraphs VIII.B.5.b and c, provides the basis upon which licensees may depart from Tier 2 information without prior NRC approval. A licensee may take a departure provided the departure does not involve a change to or departure from Tier 1 information, Tier 2* information, or the TS, or requires a license amendment under paragraphs VIII.B.5.b or VIII.B.5.c of 10 CFR Part 52, Appendix D, Section VIII. The exemption requested in LAR 17-037 would allow a departure from Tier 2 information that involve Tier 2* information without prior NRC approval if the departure does not meet any of the new evaluation criteria in proposed License Condition 2.D.(13)(a), provided the departure also does not involve a change to or departure from Tier 1 information, the TS, or require a license amendment under 10 CFR Part 52, Appendix D, paragraphs VIII.B.5.b and c.
- Paragraph VIII.B.6.b requires a licensee who references 10 CFR Part 52, Appendix D to obtain NRC approval prior to departing from eight identified categories of Tier 2* matters. SNC was previously granted an exemption from Topic 4 of paragraph VIII.B.6.b, regarding Fire Areas [see Section 3.1.3 of this SE]. The requested exemption would allow application of the Tier 2 departure requirements in 10 CFR Part 52, Appendix D, paragraph VIII.B.5 for qualifying Tier 2* departures for the remaining seven identified categories of Tier 2* matters, i.e., for departures that do not meet the new evaluation criteria in proposed License Condition 2.D.(13)(a). The requested exemption does not change the list of categories of Tier 2* matters provided in paragraph VIII.B.6.b.

- Paragraph VIII.B.6.c refers to paragraph VIII.B.6.b for the requirements that apply to departures from 16 identified categories of Tier 2* matters that will revert to Tier 2 status after the plant first achieves full power. The requested exemption would allow application of the Tier 2 departure requirements in 10 CFR Part 52, Appendix D, paragraph VIII.B.5 for Tier 2* departures that do not meet the new evaluation criteria in proposed License Condition 2.D.(13)(a). The requested exemption does not change the list of categories of Tier 2* matters provided in paragraph B.6.c.

Pursuant to 10 CFR 52.7, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 52. As 10 CFR 52.7 further states, the Commission's consideration will be governed by 10 CFR 50.12, which states that an exemption may be granted when: (1) the exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security; and (2) special circumstances are present. Specifically, 10 CFR 50.12(a)(2) lists six special circumstances for which an exemption may be granted. It is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. SNC stated that the requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii) and 10 CFR 50.12(a)(2)(iii).

Subparagraph 50.12(a)(2)(ii) defines special circumstances as being present when "[a]pplication of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule." Subparagraph 50.12(a)(2)(iii) defines special circumstances as being present when "[c]ompliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated." The staff's analysis of these findings is presented below. In its evaluation of special circumstances, the staff only considered 10 CFR 50.12(a)(ii). An evaluation of special circumstances involving 10 CFR 50.12(a)(iii) was not necessary because the staff determined that special circumstances as defined in 10 CFR 50.12(a)(ii) were present.

3.2.1 AUTHORIZED BY LAW

The requested exemption would allow SNC to implement the amendment described above. This exemption is a permanent exemption limited in scope to the requirements for prior NRC approval of departures from Tier 2* information in 10 CFR Part 52, Appendix D, paragraph VIII.B.6 and the requirements for prior NRC approval of departures from Tier 2 information that involve a change to or departure from Tier 2* information in 10 CFR Part 52, Appendix D, paragraph VIII.B.5.a. As stated above, 10 CFR 52.7 allows the NRC to grant exemptions from the requirements of regulations in Part 52. The NRC staff has determined that granting of SNC's proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, as required by 10 CFR 50.12(a)(1), the exemption is authorized by law.

3.2.2 NO UNDUE RISK TO PUBLIC HEALTH AND SAFETY

As discussed above in the technical evaluation, the proposed changes comply with the NRC's substantive regulations. Further, as discussed above, departures from the information governed by the requirements to which the requested exemptions would apply will remain

subject to adequate regulatory control. Therefore, there is no undue risk to the public health and safety.

3.2.3 CONSISTENT WITH COMMON DEFENSE AND SECURITY

The proposed exemption would allow changes as described above in the technical evaluation. Tier 2* information in the VEGP Units 3 and 4 UFSAR does not address physical security or cyber security and, therefore, the proposed exemptions do not affect physical or cyber security. The existing regulatory requirements for changing licensing basis information pertaining to physical security and cyber security are not affected by the proposed exemptions. The exemptions would not alter or impede the design, function, or operation of any plant structures, systems, or components 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. In addition, the proposed exemptions have no impact on plant security or safeguards. Therefore, as required by 10 CFR 50.12(a)(1), the staff finds that the common defense and security is not impacted by the exemptions.

3.2.4 SPECIAL CIRCUMSTANCES

Special circumstances, in accordance with 10 CFR 50.12(a)(2), are present, in part, whenever 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 is 10 CFR Part 52, Appendix D, specifically the provisions of Sections VIII that describe the requirements for prior NRC approval for departures from Tier 2* information. As stated in SECY-17-0075 (Reference 9), the purpose of the Tier 2* designation is to control certain information that the staff has determined to have safety significance commensurate with that of Tier 1 information. Accordingly, the underlying purpose of requiring prior NRC approval for departures from Tier 2* information is to preclude potentially safety-significant changes to plant-specific DCD Tier 2* information without prior NRC review and approval if that information would otherwise have been designated as Tier 1, for which the departure requirements call for both an exemption and an amendment. However, compliance with 10 CFR Part 52, Appendix D, Section VIII, paragraph B.6.a., currently requires the licensee to obtain NRC approval for any change to Tier 2* information, including changes to information that does not rise to a level of safety significance comparable to that of Tier 1 information.

Special circumstances are present in the particular circumstances discussed in LAR 17-037 because the application of the change control process provided in paragraphs VIII.B.6.b and VIII.B.6.c—under which NRC approval is required for any change to Tier 2* information, even if the change has no impact to safety—is not required to achieve the underlying purpose of the rule. If the licensee implements a change having a minimal impact to safety without prior NRC approval, as provided for in LAR 17-037, the underlying purpose of the rule—that is, NRC prior approval of a safety-significant change—would still be achieved. Proposed License Condition 2.D.(13) in LAR 17-037 precludes the proposed exemption from affecting any function or feature used for the prevention and mitigation of accidents or their safety analyses, and no safety-related SSC or function is involved. This exemption request and the provisions of the license condition demonstrate that the adequate regulatory control over departures from Tier 2* information will be maintained. Since such control is the underlying purpose of the regulations from which SNC seeks exemption, the regulations are not necessary in these circumstances to achieve their underlying purpose. Therefore, for the above reasons, the staff finds that the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption are present.

3.2.5 EXEMPTION SUMMARY

For the reasons set forth above, staff concludes that the exemptions requested in LAR 17-037 are authorized by law, will not present an undue risk to public health and safety, are consistent with the common defense and security, and that special circumstances are present in that application of the regulations in the particular circumstances is not necessary to achieve the underlying purpose of the rule. Therefore, the staff has determined to grant the requested exemptions.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendment on February 16, 2018. The State official had no comments.

5.0 PUBLIC COMMENTS

On February 13, 2018, the staff published a "Notice of Consideration of Issuance of Amendments to Facility Operating Licenses, Proposed No Significant Hazards Consideration Determination, and Opportunity for a Hearing," in the *Federal Register* associated with the proposed amendment request (83 FR 6234). In accordance with the requirements in 10 CFR 50.91, the notice provided a 30-day period for public comment on the proposed no significant hazards consideration (NSHC) determination. Public comments were received regarding the proposed amendment (Reference 46). Some of the issues discussed in the public comments do not specifically pertain to the proposed NSHC determination. However, the staff has addressed both the issues within the scope of the proposed NSHC and those that are not within the scope. The comments are summarized below followed by the staff response to the comments.

NSHC Comment (In Scope)

(1) *Public Comment*

The criteria listed above do not evaluate safety of the proposed change or the modification. These criteria are screening criteria to determine whether the licensee can implement the change prior to NRC approval or not. (See either 10 CFR 50.59 or 10 CFR Part 52, Appendix D)

It is the commenter's opinion that the overall determination that the proposed amendment request does not involve 'a significant hazards condition' is flawed because with a specific condition is not defined or described so that the three criteria/standards of 10 CFR 50.92(c) can be verified such that the proposed condition/changes do not involve a significant hazards condition.

In addition, in the statement of consideration for 'Final Procedures and Standards on No Significant Hazards Consideration', 10 CFR Parts 2 and 50 (see 44 FR 7744-7767, March 6, 1986), examples of 'Amendments that are Considered Not Likely to Involve Significant Hazards Consideration' are included (see 44 FR 7751). The proposed amendment request is not enveloped by any of the examples or comparable to the examples included in the final rule

(See 44 FR 7751). Therefore, without a specific example of the condition, the NRC will not be able to make a final determination that the proposed amendment request does not involve a significant hazards consideration.

(1) *NRC Response*

SNC's analysis of the issue of NSHC for LAR 17-037, as presented in Enclosure 1, Section 4.3, of its December 21, 2017, submittal, focuses on the direct consequences that would result from implementation of this LAR. SNC indicated in LAR 17-037 that it only affects SNC administrative processes for evaluations and decision-making about prospective Tier 2* departures. In accordance with 10 CFR 50.91(a)(3), the staff is not publishing a final NSHC determination in connection with LAR 17-037, since no person requested a hearing on the requested amendment. Further, the staff has completed its substantive review of LAR 17-037, which makes the NSHC questions posed in 10 CFR 50.92 moot in regard to the application. Nonetheless, the staff agrees with the SNC statements regarding the lack of direct safety impacts. However, the staff also considered the indirect safety impacts from LAR 17-037. Specifically, implementation of the LAR authorizes SNC to implement certain departures from Tier 2* information without prior NRC approval, and it is appropriate for the staff to consider the impacts that might result from these changes. In considering these indirect impacts, the staff confirmed that the conclusions of SNC's analysis of the NSHC issue are valid because the impacts from any Tier 2* departure made without prior NRC approval would be bounded by the Tier 2 departure requirements in Appendix D of 10 CFR Part 52, paragraph VIII.B.5. Since these Tier 2 departure requirements are equivalent to or more stringent than the NSHC standards in 10 CFR 50.92, these requirements will assure that any authorized change made without prior NRC approval meets the standards for NSHC determinations in 10 CFR 50.92.

The staff agrees with the comment that LAR 17-037 is not enveloped by the examples identified in the NSHC Final Rule (see 51 FR 7751) as amendments not likely to involve significant hazards considerations. However, the examples listed in the final rule are not identified as all-encompassing. The rule also includes examples of amendments considered likely to involve significant hazards considerations. The staff considers the two lists to be only examples and not exclusive, and has reasonably concluded that the two lists combined do not represent a complete listing of all possible amendments.

Other Comments (Not In Scope)

(2) *Public Comment*

A. General Comments and Observations

This proposal appears to be a similar amendment request submitted by SNC in the year 2014 and was subsequently withdrawn by the SNC.

This proposal goes beyond current regulation (Current change process for Tier 2*) and represents a new policy and if approved will circumvent the current/existing regulations (Part 52 change process). This is similar to the licensee's previous attempt related to an LAR (16-015) that requested to add to License Condition 2.D.(1) of the VEGP Units 3 and 4 combined license an Interim Amendment Request (IAR) process for changes during construction when emergent conditions are present. Recently, the licensee withdrew that request.

(2) *NRC Response*

LAR 14-008, "Request for Exemption and License Amendment regarding Changes to Tier 2* Information," dated August 7, 2014 (Reference 47) requested that departures from Tier 2* in the VEGP Units 3 and 4 be subject to the requirement for prior NRC approval by using the Tier 2 departure requirements in paragraph VIII.B.5 of 10 CFR Part 52, Appendix D. LAR 14-008 was subsequently withdrawn by SNC following public meetings with the staff (References 48 and 49).

LAR 17-037 proposes a different approach than LAR-14-008 to evaluating departures from Tier 2* information in the Vogtle UFSAR. Unlike the proposal in LAR-14-008, LAR 17-037 proposes additional criteria used to determine whether a Tier 2* departure would require prior NRC approval, while the process proposed in LAR-14-008 was limited to the Tier 2 criteria in 10 CFR Part 52, Appendix D, paragraph VIII.B.5. In other words, LAR 17-037 proposes more stringent controls on the change process than were proposed in LAR 14-008. Further, the mere fact that a licensee withdrew a previous similar amendment is no reason to deny a later amendment request that includes adequate technical justification.

LAR 17-037 also provides a different approach than LAR-16-015, "Request for License Amendment: Addition of Interim Amendment Request Process to License Condition 2.D.(1)," dated July 29, 2016 (Reference 50). LAR-16-015 proposed a license condition for an interim amendment request process that would have allowed SNC to continue construction, at its own risk, in emergent situations, where a non-conforming condition is discovered that has little or no safety significance and the work activity cannot be adjusted, to allow construction to proceed until the non-conforming condition is resolved. Unlike the proposal in LAR-16-015, departures that would be processed under the LAR 17-037 departure process would not be limited to emergent situations, but would be limited to Tier 2* departures. Given these differences, the staff does not agree that LAR 17-037 is a similar proposal to LAR 16-015.

The staff understands the concern in the comment that approval of a new Tier 2* change process through a license amendment and exemption represents a new Tier 2* policy. The staff has addressed this concern by keeping the Commission informed of the staff review and decisions regarding this LAR and exemption, including potential policy questions. Nonetheless, the staff has also addressed that concern in its SER and the license condition that would be added to the COLs to implement this new change process, and does not agree that policy considerations prevent approval of the LAR. The original basis for the establishment of the Tier 2* category of information was to create departure requirements less burdensome than those applicable to Tier 1 information while still maintaining strict control over departures from information the safety significance of which was comparable to that Tier 1 information. (See SECY-17-0075 and 71 FR 4477.) Except for MOVs and POVs evaluated in Section 3.1.2.3 of this SE (Topic 8), the staff evaluation in this SE is consistent with this overall approach by focusing on whether the safety significance of Tier 2* information is comparable to that of Tier 1 information, and therefore whether the Tier 2* departure requirements should be maintained for that information. (The unique circumstances associated with the valves evaluated in Section 3.1.2.3 of this SE are explained in that section.) If the Tier 2* information does not rise to a level of safety significance comparable to that of Tier 1 information, the original policy behind the Tier 2* designation would not necessarily have called for a categorical requirement for prior NRC approval of departures for that information. Rather, control of departures under the "§ 50.59-like" departure requirements applicable to Tier 2 information, which require prior NRC approval of some departures, would have been sufficient. The staff acknowledges that its

evaluation relies on regulatory control in NRC regulations other than Part 52, Appendix D to govern departures from or changes to some Tier 2* information, but this too is consistent with the original policy behind the Tier 2* designation because those regulations also require prior NRC approval of changes. Further, issuing a site-specific license amendment and exemption is within the authority of the Director of the Office of New Reactors (NRO). In a memorandum dated March 22, 2011, the director of the Office of Nuclear Reactor Regulation (NRR) delegated to the NRO authority to issue license amendments and grant exemptions (Reference 51).

To the extent the comment asserts that the proposal in LAR 17-037 “goes beyond” or “circumvents” the Part 52 rules, the licensee requested exemptions from Part 52, Appendix D. NRC regulations in 10 CFR 52.7 and 50.12 provide for exemptions requests, and the staff considers such requests under established legal standard and agency procedures. Such exemption requests are not unusual, and the NRC will grant such a request if, and only if, it satisfies the applicable legal standards.

(3) *Public Comment*

B.1 Cover Letter:

The licensee did not provide any specific examples where so called NRC’s administrative burden will be reduced.

(3) *NRC Response*

Enclosure 1 of LAR 17-037 described four examples of previous LAR departures for VEGP Units 3 and 4 that SNC identified as being not safety significant. The staff understands that, in general, an administrative burden exists to implement each departure requiring prior NRC approval. Similarly, a generally smaller administrative burden also exists for a licensee to implement any departure that is not safety significant and does not require prior NRC approval. Departures not requiring prior NRC approval involve a comparatively smaller burden in general, because less analysis and documentation is required for implementation. Nonetheless, the staff did not rely on reduction in burden to establish the special circumstances required to grant the requested exemption. Accordingly, whether administrative burden is reduced or not is immaterial to the staff decision on LAR 17-037.

(4) *Public Comment*

B.2 Enclosure 1, Summary of description:

SNC uses selective portions of the SECY to justify its request. The staff in its SECY (Page 2) states that,

“In light of the lessons-learned and based on feedback from stakeholders, the staff considered two alternatives for future design certifications: 1) continue the use of Tier 2* for future design certifications (with improved guidance) and 2) discontinue the use of Tier 2* for future design certifications. The staff concluded that Alternative 1 will be pursued in light of the benefit the Tier 2* designation can provide if properly used. Improved guidance will enhance predictability and consistency of this continued use, limiting its application to only those topics that meet the intent of the designation.

Upon completing, and obtaining adequate experience with, the new guidance, the staff will re-evaluate the use of the Tier 2* designation and inform the Commission if additional changes are necessary.”

In addition, Conclusion section of the SECY states as follows:

“Based on consideration of the advantages and disadvantages of the potential alternatives, the NRC staff intends to continue use of the Tier 2* designation in the APR 1400, NuScale, and other future design certifications. The NRC staff will apply improved guidance and processes reflecting experience gained in the first COL licensing and construction efforts to more effectively use the Tier 2* designation in those reviews, retaining the additional flexibility offered by the Tier 2* designation, while enhancing predictability and consistency in its application. The staff will continue to inform the Commission as necessary as experience is gained in this effort.”

Since then, it is our understanding that the staff has not requested the Commission to take action on this issue or the Commission has not directed to take in any action on this issue.

Therefore, this approach included in this LAR goes beyond the change process per 10 CFR Part 52, Appendix D (or 10 CFR 52.98) change process and will circumvent the existing regulation and the Commission Policy. Ultimately, the Commission has final authority in this case and in addition, the NRC staff has not received or the Commission has delegated its responsibility to the Staff in this regard.

(4) NRC Response

The scope of SECY-17-0075 is limited to current Commission policy regarding Tier 2* implementation for future DCs. The scope of the paper and policy options considered in SECY-17-0075 did not consider or address options for existing Tier 2* information generically, for a specific DCD, or for a specific COL. While SECY-17-0075 provides a comprehensive summary of past and current NRC policy and regulation relevant to Tier 2* information, it did not propose policy approaches for treatment of an amendment request such as LAR 17-037. The matter of exemptions that would allow different approaches for Tier 2* implementation for a specific existing COL is not within the scope of topics considered by SECY-17-0075.

As noted above, in a memorandum dated March 22, 2011, the director of NRR delegated to the NRO authority to issue license amendments and grant exemptions (Reference 51). Moreover, in reviewing the LAR, the staff has kept the Commission informed of the staff review and decisions regarding this LAR and exemption.

(5) Public Comment

B.3 Detailed Description Page 1 and 5 of 19 of Enclosure 1 and the license Condition (Proposed)

The license condition provides the screen criteria but does not provide a list of qualifying departures from Tier 2* information.

In the technical evaluation, the licensee states that “SNC performed an analysis of the Tier 2* matters listed in 10 CFR Part 52, Appendix D, Section VIII, paragraphs B.6.b. The UFSAR or DCD contains additional text designated as Tier 2* that may not clearly fall under the matters listed in Section VIII.B.6.b and VIII.B.6.c, but is still subject to the requirements of Section VIII.B.6.a. It is not clear how those will be treated.

Additionally, the licensee should consider if there are any other topics designated as Tier 2* information in the UFSAR or DCD that may not be adequately covered by the specified criteria.

In addition, it is our opinion that criteria listed above do not evaluate safety of the proposed change or the modification. These criteria are screening criteria to determine whether the licensee can implement the change prior to NRC approval or not. (See either 10 CFR 50.59 or 10 CFR [Part] 52, Appendix D).

After determining that a proposed activity is safe and effective through appropriate engineering and technical evaluations, the 10 CFR Part 52 change processes are applied to determine if a license amendment and/or exemption is required prior to implementation (see Section 1.3, (page C-4, 10 CFR PART 52 CHANGE PROCESS OVERVIEW, Nuclear Energy Institute, NEI 96-07, Appendix C, Revision 0 - Corrected “Implementation of Change Processes for New Nuclear Power Plants Licensed Under 10 CFR Part 52,” March 2014 ADAMS Accession No. ML14091A739).

(5) *NRC Response*

As part of the staff review, the staff requested additional information (see RAI 17-037-1) for some Tier 2* information related to CVS piping inside containment that is subject to ASME Code B31.1 requirements and additional requirements not included in the B31.1 Code for design, fabrication, examination, inspection, and testing. The CVS piping did not clearly align into one of the 24 Tier 2* topics identified under 10 CFR Part 52, paragraph VIII.B.6. SNC’s response dated April 6, 2018 (Reference 2), clarified that this information was included under the Tier 2* related to ASME Code, paragraph VIII.B.6.(c)(2), and that the itemized listing of all Tier 2* information in AP1000 DCD Introduction Table 1-1 (Reference 41) was used to ensure that all Tier 2* information was considered in the review.

The staff agrees that the new criteria proposed in LAR 17-037 are intended for screening only and are not adequate, by themselves, to determine whether a prospective change is a safety matter necessitating prior NRC approval. To address this, the LAR also includes application of the Tier 2 departure requirements in paragraph VIII.B.5, to be applied to any prospective Tier 2* change that is not determined to require prior NRC approval under License Condition 2.D.(13). The two sets of criteria—combined as described in LAR 17-037—provide a “lower bound” for the Tier 2* departures that are safety significant on a par with that of Tier 1 information and still require prior NRC approval.

(6) *Public Comment*

B.5 Proposed License Condition, Item (D) (13):

The approach in this license condition goes beyond the change process per 10 CFR Part 52, Appendix D (or 10 CFR 52.98) change process and will circumvent the existing regulation and the Commission Policy.

The NRC Staff guidance document, LIC 101, (Section 4.4, License Condition, page 20) states in part,

“In addition,

License conditions should:

- **address issues of high safety or regulatory significance;**
- be worded such that **the meaning is clear and not open to different interpretations;** and
- Explicitly define the conditions for satisfaction of the condition.

License conditions should not:

- address issues already addressed by **an existing rule, requirement, order or regulation;**
- require NRC action to complete;
- **be open-ended;**
- address a facility not controlled by the license; nor,
- address voluntary requests.”

The proposed license condition does not meet any of these items specifically the highlighted once. Therefore, the NRC Staff should not approve the proposed license condition.

(6) *NRC Response*

The comment asserts that the proposal in LAR 17-037 “goes beyond” or “circumvents” the Part 52 rules, as if this is improper under NRC regulations. While the licensee indeed requested exemptions from certain requirements in Part 52, Appendix D, the NRC regulations in 10 CFR 52.7 and 50.12 provide for such exemption requests. The staff considers such requests under the established legal standard in these NRC regulations and in accordance with agency procedures. Such exemption requests are not unusual, and the NRC will grant such a request if, and only if, it satisfies the applicable legal standards. The Commission is not changing its current overall policies or regulations regarding the Tier 2* change process. Nonetheless, experience resulting from implementation of the proposed evaluation process at VEGP Units 3 and 4 may be considered in any future change to NRC regulations and policy regarding the Tier 2* change process.

The staff disagrees with the comment indicating that the proposed license condition does not meet certain aspects of the staff guidance in Section 4.4 of LIC-101, “License Amendment Review Procedures” (Reference 52). Specifically:

- The staff considers the evaluation process for departures addressed by the proposed license condition to be an issue of high regulatory significance.

- In the staff review, the staff did not identify any aspect of the proposed license condition language that is not clear or is open to different interpretations.
- The evaluation process described in the proposed license condition is not already addressed by (i.e., duplicative of) an existing rule, requirement, order, or regulation. In this regard, the comment may appear to assume that a matter specified in a regulation cannot be changed by amendment. Such an assumption would be incorrect since NRC regulations provide for exemptions from regulations, and an amendment may be warranted in connection with a specific exemption request, as was true for LAR 17-037.
- The proposed license condition is not open ended. Under the proposed license condition, implementation of proposed License Condition 2.D.(13) would be required prior to the implementation of any departure from Tier 2* information without prior NRC approval.

(7) *Public Comment*

B.6 Enclosure 2, Exemption Request: Section 4.2 Compliance would result in undue hardship (Page 8 of 9).

SNC has not quantified the cost savings associated with the proposed request (If approved).

With respect to delays, the NRC has always completed its review of a PAR to support the continuing construction and issued a no-objection letter to the licensee so that it does not impact construction activities (Look at history of No-objection letters issued since issuance of the COL). In addition, the LARs related Preliminary Amendment Request (PAR) review were approved by the NRC to support the construction activities. In some case, even though the LARs were approved, the licensee was not able to continue the construction because of its own problems related to design or licensing basis issues.

With respect to delays in receiving approval from the NRC on its amendment request, the past records clearly indicates that the NRC has always approved the SNC's requests in a timely manner to support the VEGP 3 and 4 construction activities. In some cases, the NRC has approved the amendment requests in less than 60 days or less.

(7) *NRC Response*

The staff agrees that SNC's request did not contain information quantifying the cost savings associated with the LAR. As part of this LAR, SNC is not required to quantify its cost savings. However, Enclosures 1 and 2 of the initial request dated December 21, 2017, provide a discussion of how SNC has expended resources for LARs that involved changes to Tier 2* information that SNC deemed not safety significant, and it is reasonable to expect that LAR 17-037 may help SNC to avoid future LARs involving Tier 2* departures that are not safety significant, which would result in cost savings to SNC.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration (*Federal Register*, 83 FR 6234, dated February 13, 2018). Public comments submitted regarding this LAR included a comment on the no significant hazards consideration. Those comments, including the comment regarding the no significant hazards consideration, are discussed in Section 5.0 of this SE. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

Because the exemption allows the changes proposed in the license amendment, and because the exemption does not authorize any activities other than those proposed in the license amendment, the environmental consideration for the exemption is identical to that of the license amendment described above. Accordingly, the exemption meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). The activities authorized by this license amendment and exemption include future changes to the design and operation of the plant that have not yet been identified, but any such change requiring prior NRC approval would receive its own environmental consideration under 10 CFR Part 51. A change a licensee makes without NRC approval in accordance with the Tier 2 departure requirements of 10 CFR Part 52, Appendix D, paragraph VIII.B.5 does not involve a Federal action and is not evaluated in accordance with 10 CFR Part 51. The licensee may already make such changes without prior NRC approval. Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the exemption.

7.0 CONCLUSION

The staff has determined that pursuant to paragraph VIII.A.4 of Appendix D to 10 CFR Part 52, the exemption (1) is authorized by law, (2) presents no undue risk to the public health and safety, (3) is consistent with the common defense and security, and (4) presents special circumstances. Therefore, the staff grants the licensee exemptions from specific regulations as cited in Section 3.2 of the SE.

The staff concludes, based on the considerations discussed in Section 3.1 that there is reasonable assurance that: (1) the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. Therefore, the staff finds the changes proposed in this license amendment acceptable.

8.0 REFERENCES

1. Request for License Amendment and Exemption: Changes to Tier 2* Departure Evaluation Process (LAR-17-037), Southern Nuclear Operating Company, dated December 21, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17355A416).
2. Supplement to Request for License Amendment and Exemption: Changes to Tier 2* Departure Evaluation Process (LAR-17-037S1), Southern Nuclear Operating Company, dated April 6, 2018 (ADAMS Accession No. ML18096B328).
3. Supplement to Request for License Amendment and Exemption: Changes to Tier 2* Departure Evaluation Process (LAR-17-037S2), Southern Nuclear Operating Company, dated May 11, 2018 (ADAMS Accession No. ML18131A263).
4. Supplement to Request for License Amendment and Exemption: Changes to Tier 2* Departure Evaluation Process (LAR-17-037S3), Southern Nuclear Operating Company, dated June 18, 2018 (ADAMS Accession No. ML18169A431).
5. Supplement to Request for License Amendment and Exemption: Changes to Tier 2* Departure Evaluation Process (LAR-17-037S4), Southern Nuclear Operating Company, dated August 3, 2018 (ADAMS Accession No. ML18215A461).
6. Supplement to Request for License Amendment and Exemption: Changes to Tier 2* Departure Evaluation Process (LAR-17-037S5), Southern Nuclear Operating Company, dated August 10, 2018 (ADAMS Accession No. ML18222A553).
7. Supplement to Request for License Amendment and Exemption: Changes to Tier 2* Departure Evaluation Process (LAR-17-037S6), Southern Nuclear Operating Company, dated September 13, 2018 (ADAMS Accession No. ML18256A314).
8. NCP-2018-008, Nonconcurrency Process for Safety Evaluation Related to License Amendment Request 17-037, September 2018 (ADAMS Accession No. ML18256A400).
9. SECY-17-0075, "Planned Improvements in Design Certification Tiered Information Designations," dated July 24, 2017 (ADAMS Accession No. ML16196A321).
10. COMSECY-94-024, "Implementation of Design Certification and Light-Water Reactor Design Issues," dated May 31, 1994 (ADAMS Accession No. ML003708079).
11. SRM-SECY-94-024, "SECY-94-084 – Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems and COMSECY-94-024 – Implementation of

Design Certification and Light-Water Reactor Design Issues,” dated June 30, 1994 (ADAMS Accession No. ML003708098).

12. RG 1.84, “Design, Fabrication, and Materials Code Case Acceptability, ASME Section III,” Revision 37, March 2017.
13. RG 1.187, “Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments,” (ADAMS Accession No. ML003759710).
14. ASME Standard QME-1-2007 Edition, “Qualification of Active Mechanical Equipment Used in Nuclear Power Plants.”
15. NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition — Design of Structures, Components, Equipment, and Systems,” Revision 7, 2007, as updated.
16. NUREG-0711, “Human Factors Engineering Program Review Model,” Revision 2, 2004.
17. Vogtle Electric Generating Plant Units 3 and 4 Updated Final Safety Analysis Report, Tier 1, Technical Requirements Manual, and Technical Specifications Bases Annual Submittal, June 15, 2017 (ADAMS Accession No. ML17172A218).
18. NUREG-1793, “Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design,” September 13, 2004 (ADAMS Accession No. ML042540268).
19. NUREG-1793, Supplement 1, “Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design, Supplement 1,” December 2005, ADAMS Accession No. ML060330557).
20. NUREG-1793, Supplement 2, “Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design, Supplement 2,” September 2011 (ADAMS Accession No. ML112061231).
21. NUREG-2142, “Final Safety Evaluation Report Related to the Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4,” August 2011 (ADAMS Accession No. ML110450302).
22. Vogtle Electric Generating Plant Units 3 and 4—Issuance of Amendment Re: Structural Modules Shear Stud Size and Spacing (LAR 12-001) (TAC No. RP9401), November 6, 2012 (ADAMS Accession No. ML12297A210).
23. Vogtle Electric Generating Plant Units 3 and 4—Issuance of Amendment Re: Nuclear Island Basemat Thickness Tolerance (LAR 12-003) (TAC No. RP9403), October 25, 2012 (ADAMS Accession No. ML12278A381).
24. Vogtle Electric Generating Plant Units 3 and 4—Issuance of Amendment Re: the Changes to Human Factors Engineering Reports that are Incorporated by Reference in the Updated Final Safety Analysis Report (LAR 13-001, 010, 011, 012, AND 013) (TAC Nos. RP9468, 9469, 9453, 9454, and 9455), December 6, 2013 (ADAMS Accession No. ML13326A871).

25. Vogtle Electric Generating Plant Units 3 and 4—Issuance of Amendment No. 45 Re: Tier 2* Editorial Changes (LAR 13-033) (TAC No. RP9481) (ADAMS Accession No. ML15335A060).
26. Request for Additional Information (RAI) Transmittal for Vogtle Units 3 and 4 LAR 17-037 (RAI LAR 17-037-9), dated May 8, 2018 (ADAMS Accession No. ML18128A369).
27. WCAP-12488-A, “Westinghouse Fuel Criteria Evaluation Process,” Westinghouse Electric Corporation, October 1994. (Public version: WCAP-14204-A, ADAMS Legacy Library Accession No. 9412280182).
28. Request for Additional Information (RAI) Transmittal for Vogtle Units 3 and 4 LAR 17-037 (RAI LAR 17-037-3), dated April 12, 2018 (ADAMS Accession No. ML18102B683).
29. Request for Additional Information (RAI) Transmittal for Vogtle Units 3 and 4 LAR 17-037 (RAI LAR 17-037-4), dated April 23, 2018 (ADAMS Accession No. ML18113A780).
30. NEI 96-07, “Guidelines for 10 CFR 50.59 Implementation,” Revision 1, Nuclear Energy Institute, November 2000 (ADAMS Accession No. ML003771157).
31. Vogtle Electric Generating Plant Units 3 and 4 Current Facility Combined Licenses, NPF-91 and NPF-92, revised August 8, 2018 (ADAMS Accession No. ML14100A106 and ML14100A135, respectively)
32. WCAP-17179-P and WCAP-17179-NP, “AP1000 Component Interface Module Technical Report,” Revision 2, July 2010 (ADAMS Accession No. ML102170259).
33. Request for Additional Information (RAI) Transmittal for Vogtle Units 3 and 4 LAR 17-037 (RAI LAR 17-037-5, -6, -7, and -8), dated May 1, 2018 (ADAMS Accession No. ML18121A437).
34. NEI 98-03, “Guidelines for Updating Final Safety Analysis Reports,” Revision 1, June 1999 (ADAMS Accession No. ML003779028).
35. Vogtle Electric Generating Plant Unit 3 and Unit 4, ITAAC Closure Notification on Completion of ITAAC 3.2.00.01c.ii [Index Number 742], Southern Nuclear Operating Company, dated June 27, 2018 (ADAMS Accession No. ML18179A072).
36. Vogtle Electric Generating Plant Unit 3 and Unit 4, ITAAC Closure Notification on Completion of ITAAC 3.2.00.01d [Index Number 743], Southern Nuclear Operating Company, dated June 28, 2018 (ADAMS Accession No. ML18180A103).
37. NRC Inspection of Westinghouse Electric Company Report Number 99900404/2017-202, dated July 30, 2018 (ADAMS Accession No. ML18207A243).
38. ITAAC Closure Verification Evaluation Form 5149 for ITAAC 3.2.00.01c.ii (ADAMS Accession No. ML18200A167).

39. ITAAC Closure Verification Evaluation Form 4369 for ITAAC 3.2.00.01d (ADAMS Accession No. ML18200A168).
40. Request for Additional Information (RAI) Transmittal for Vogtle Units 3 and 4 LAR 17-037 (RAI LAR 17-037-1), dated March 7, 2018 (ADAMS Accession No. ML18066A717).
41. AP1000 Design Control Document Introduction, Table 1-1, Index of AP1000 Tier 2 Information Requiring NRC Approval for Change, AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A303).
42. Transmittal of Technical Report APP-GW-GLR-096, Revision 3 (Proprietary) and APP-GW-GLR-097, Revision 3 (Non-Proprietary) "Evaluation of the Effect of the AP1000 Enhanced Shield Building Design on the Containment Response and Safety Analyses," Westinghouse Electric Company, dated June 14, 2011 (ADAMS Accession No. ML11168A040).
43. VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017002 and 05200026/2017002, August 10, 2017 (ADAMS Accession No. ML17226A034).
44. VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017004 and 05200026/2017004, February 14, 2018 (ADAMS Accession No. ML18045A476).
45. VEGP Units 3 AND 4 – Issuance of Amendment 44 and Granting of Exemption Re: Reclassification of Tier 2* Information on Fire Area Figures, dated February 1, 2016 (ADAMS Accession No. ML15191A128).
46. Public Comments on Federal Register Notice 835 FR 6234, submitted electronically on March 15, 2018, posted April 6, 2018, available online at <https://www.regulations.gov/document?D=NRC-2018-0021-0003> (ADAMS Accession No. ML18228A838).
47. "Request for Exemption and License Amendment regarding Changes to Tier 2* Information (LAR-14-008)," Southern Nuclear Operating Company, dated August 7, 2014 (ADAMS Accession No. ML14219A579).
48. "Summary of Public Meeting with Southern Nuclear Company and South Carolina Electric & Gas on October 23, 2016," U.S. Nuclear Regulatory Commission, dated December 8, 2014 (ADAMS Accession No. ML14324A077).
49. Withdrawal of Request for Exemption and License Amendment Regarding Changes to Tier 2* Information (LAR 14-008), Southern Nuclear Operating Company, dated December 15, 2014 (ADAMS Accession No. ML14349A624).
50. Request for License Amendment: Addition of Interim Amendment Request Process to License Condition 2.D.(1) (LAR-16-015)," dated July 29, 2016 (ADAMS Accession No. ML16211A436).
51. "Delegation of Authority to the Director of the Office of New Reactors," R.W. Borchardt, dated March 22, 2011 (ADAMS Accession No. ML103140191).

52. LIC-101, "License Amendment Review Procedures," Revision 5, dated January 9, 2017
(ADAMS Accession No. ML16061A451