

Non-concurrence by Joseph Williams, et al.
Safety Evaluation Associated with License Amendment Request 17-037
Vogtle Electric Generating Plant Units 3 and 4
Docket Nos. 52-025 and 52-026
Combined License Numbers NPF-91 and NPF-92

1.0 INTRODUCTION

This attachment describes the basis for non-concurrence in the NRC staff's safety evaluation (ADAMS accession number ML18207A262) which seeks to approve a license amendment and exemption associated with a proposed process revising the change process associated with Tier 2* AP1000 certified design information, as requested by Southern Nuclear Company (SNC) for Units 3 and 4 at the Vogtle Electric Generating Plant. This licensing action was designated by the licensee as License Amendment Request (LAR) 17-037, and was originally submitted on December 21, 2017, with several supplements including August 10, 2018.¹ It is our understanding that an additional supplement is pending.

The principal issues which need to be resolved are:

- The licensee's request is an unprecedented licensing action that is inconsistent with Commission policy.
- The licensee's request has significant generic implications, and circumvents the rulemaking process, inappropriately reducing opportunities for public involvement.
- The staff's safety evaluation is not based on a well-described and thoroughly vetted regulatory framework. The staff's conclusions do not align with the framework described in the safety evaluation.
- Resistance to addressing these issues has created a chilling effect that has inhibited addressing issues in a timely fashion and adversely affected the free and open discussion of possible issues and challenges associated with this first-of-a-kind LAR.

In raising these issues, an opinion is not expressed about whether or not the Vogtle combined licenses can ultimately be amended as proposed by the licensee. Rather, the issues are raised to ensure that the process NRC uses to take its actions is consistent with NRC regulations, policy, and values.

2.0 POLICY AND GENERIC ISSUES NEED TO BE PRESENTED FOR COMMISSION DECISIONS

The proposed LAR is a first-of-a-kind licensing action that has no approved precedent, introducing policy issues that have not been adequately evaluated and presented for consideration by the Commission. The proposal substantially deviates from the fundamental structure of a design certification rule approved by the Commission, and is a substantial deviation from the Commission-approved change process for safety significant information. Examination of the regulatory history demonstrates that these controls and their implementation in a design certification rule were the result of extensive efforts by the NRC staff with

¹ Supplement to Request for License Amendment and Exemption: Changes to Tier 2* Departure Evaluation Process, August 3, 2018 (LAR-17-037S4), Agencywide Documents Access and Management System (ADAMS) accession number ML18215A461. This document was the proposed final supplement to the LAR, consolidating information from previous submittals.

consideration of detailed input from external stakeholders. Results of the staff's efforts were documented in a number of Commission papers throughout the early to mid-1990s, leading up to issuance of the first design certification rules. Staff Requirements Memoranda document Commission decisions on a wide variety of topics, including organizing information in a Design Control Document (DCD) by tiers, designated as Tier 1, Tier 2, and Tier 2*, with explicit Commission decisions regarding the change process to be applied to each tier. These decisions were reaffirmed in the update of 10 CFR Part 52 in 2007, with their continued relevance confirmed by staff correspondence with the Commission in 2017 and 2018, as described below.

2.1 Similar License Amendment Withdrawn In 2014

These policy considerations informed staff feedback on a previous SNC license amendment request in 2014.² That LAR, designated as LAR 14-008 by the licensee, sought to apply the "50.59-like" process described in the 10 CFR 52 design certification rules to all changes to Tier 2* information. The "50.59-like" process is applied to Tier 2 information to determine if NRC approval is required prior to implementing changes, so the effect of LAR-008 would be equivalent to reclassifying Tier 2* information as Tier 2.

NRC staff provided feedback in an October 23, 2014 public meeting that "Because of implications on other AP1000 COL holders and applicants as well as other certified designs, the rulemaking process may be a more appropriate regulatory tool. In addition[,] the request touches on significant policy and safety questions."³

Subsequent to that meeting, the NRC staff drafted a letter stating "...that the application failed to adequately address the significant policy issues raised and did not provide sufficient technical information addressing the safety issues raised. Accordingly, the NRC staff finds the application incomplete and unacceptable for docketing for NRC review pursuant to 10 CFR Section 2.101, "Filing of Application."⁴ The letter also stated that "...a more appropriate regulatory venue may be one that more fully engages all stakeholders, especially other AP1000 COL holders and applicants referencing the AP1000 certified design, other reactor vendors, and the public." The staff's rationale for this decision was further explained as follows:

Regarding the proposal in your exemption request, the staff notes that it would be a significant change to established Commission policy and would have clear implications for both current and future design certification rules and combines [sic, "combined"] licenses. The proposal is a site-specific permanent exemption from Commission requirements for all Tier 2* information, including that information which remains Tier 2* after the finding under Title 10 of the *Code of Federal Regulations* (10 CFR) Section 52.103(g). The nature of any review of such a request warrants a deliberate and detailed look at myriad technical topics and engagement with the public and internal and external stakeholders including the Commission. There are also implications for the content and form of existing regulations (Appendices A through E of 10 CFR Part 52). These kinds of issues are more appropriate for consideration through the rulemaking process, where all stakeholders have the

² Request for Exemption and License Amendment Regarding Changes to Tier 2* Information (LAR 14-008), August 7, 2014, ADAMS accession number ML14219A579.

³ Summary of Public Meeting with Southern Nuclear Company and South Carolina Electric & Gas on October 23, 2014, December 8, 2014, ADAMS accession number ML14324A046.

⁴ Acceptance Review of Southern Nuclear Operating Company's Request for Exemption and License Amendment (LAR 14-008) for the Vogtle Electric Generating Plant Units 3 And 4: Changes to Tier 2* Information (TAC NO. RP9497), undated draft letter, ADAMS accession number ML14314A941.

opportunity to participate in a generic change in NRC's regulatory policy with respect to the control of Tier 2* information.

The staff's feedback had been vetted with senior management, including briefings for Commission staff, and the letter was being processed through concurrence, and had received "no legal objection" from the Office of General Counsel (OGC). The licensee was informed of the staff's intent to not accept the LAR for review, and elected to withdraw the request instead. The licensee's withdrawal letter acknowledged the staff's feedback, and indicated an intent to address the issue via a petition for rulemaking.⁵

There are significant similarities between LAR-008 and LAR 17-037. Both LARs propose to revise the Commission-approved change process associated with Tier 2* information. For several Tier 2* topics, the LARs are equivalent, proposing to apply only the "50.59-like" change process to some Tier 2* items, which essentially converts a set of Tier 2* information into Tier 2. The screening criteria proposed for other topics do not obviate policy issues, as they still introduce a new change process beyond that approved by Commission, delegating review of Tier 2* information to the licensee instead of the NRC staff. Concerns expressed regarding the generic and rulemaking implications of LAR-008 still apply to LAR 17-037. There is nothing about the somewhat different approach in LAR 17-037 that clearly limits its application to the Vogtle COLs, so it still has significant generic implications. Broad generic changes to the fundamental structure of a major aspect of the AP1000 design certification have obvious rulemaking implications.

It should be noted that DLSE working level staff has acknowledged the policy and generic implications in a draft document being prepared for a Deputy Executive Director for Reactor and Preparedness Programs (DEDR) briefing. A July 23, 2018 DLSE staff email⁶ forwarding this document included these statements:

- "Under current regulation, such changes would require a LAR, including an opportunity for a public hearing. This sort of change is arguably a policy issue, as the proposal modifies a Commission-approved process."
- "Other COL licensees may find it advantageous to adopt a similar approach. For example, the AP1000 licensees (e.g., Turkey Point, Lee) may propose a similar LAR with similar criteria."
- "COL licensees using other designs (e.g., Fermi, South Texas) may also consider similar LARs, but with possibly different criteria (those COLs have different Tier 2* information)"

These DLSE statements are contrary to claims made in the draft safety evaluation that LAR 17-037 applies only to the Vogtle COLs. It cannot be plausibly claimed that LAR 17-037 does not involve policy questions, or does not have generic impacts, including rulemaking.

⁵ Withdrawal of Request for Exemption and License Amendment Regarding Changes to Tier 2* Information (LAR 14-008), December 15, 2014, ADAMS accession number ML14349A624.

⁶ ADAMS accession number ML18247A034.

2.2 Regulatory Policy History

The structure of design certification rules, including Tier 2*, was the subject of Commission decisions as the Part 52 process was developed in the early 1990s, as documented in several Commission papers and associated SRMs. The “Regulatory History Package on Design Certification”⁷ consolidates documentation of this work. Key documents from this history are summarized below.

The Tier 2* designation and the associated change process were developed during the initial design certification reviews in the early to mid-1990s. The NRC staff, with stakeholder support, previously proposed the Tier 1 and Tier 2 designations as part of an effort to define the form of a certified design rule.⁸ As staff and vendor efforts proceeded with the first design certification reviews for the Advanced Boiling Water Reactor (ABWR) and System 80+ reactors, the NRC staff requested Commission approval for the staff’s implementation of the two-tiered design certification rule structure, including identification of Tier 2* information.⁹ The paper characterized Tier 2* as safety significant information, stating that “In general, 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.” The staff determined that changing Tier 2* information would require NRC review and approval of a license amendment. The Commission approved the staff’s proposal, including authorizing the use of Tier 2* in a June 30, 1994, staff requirements memorandum (SRM).¹⁰

The origins of Tier 2* were discussed further in SECY-96-077, as follows:¹¹

During the development of the Tier 1 information, the applicant for design certification requested that the amount of information in Tier 1 be minimized to provide additional flexibility for an applicant or licensee who references this design certification. Also, many codes, standards, and design processes, which were not specified in Tier 1, that are acceptable for meeting inspection, test, analysis, and acceptance criteria [ITAAC] were specified in Tier 2. The result of these actions is that certain significant information only exists in Tier 2 and the NRC 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 and the change restriction has compensated for industry’s desire to minimize the amount of information in Tier 1.

The Commission approved the proposed ABWR and System 80+ rules in a December 6, 1996, SRM.¹² Similar text regarding Tier 2* appears in the final design certification rules for the ABWR and System 80+.¹³

⁷ Regulatory History Package on Design Certification, April 26, 2000, ADAMS accession number ML003761550.

⁸ SECY-90-377, Requirements for Design Certification under 10 CFR Part 52, November 8, 1990, ADAMS Accession Number ML003707889).

⁹ COMSECY-94-024, Implementation of Design Certification and Light-Water Reactor Design Issues, May 31, 1994 ADAMS Accession No. ML003708079.

¹⁰ SRM-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, June 30, 1994, ADAMS Accession No. ML003708098.

¹¹ SECY-96-077, Certification of Two Evolutionary Designs, April 15, 1996 (ADAMS Accession No. ML003708129).

¹² SRM-SECY-96-077 – Certification of Two Evolutionary Designs, December 6, 1996, ADAMS Accession No. ML003708181.

¹³ 62 FR 25800, Standard Design Certification for the U.S. Advanced Boiling Water Reactor Design - Final

More recently, the staff described Tier 2* information in the 2007 update of 10 CFR Part 52:

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.¹⁴

The 2007 update reaffirmed the Commission's decisions regarding the expected importance of Tier 2* information, along with the associated change process.

The staff recently confirmed that modifying Tier 2* change process is a policy issue in the so-called "Transformation Paper," SECY-18-0060.¹⁵ Enclosure 5 of that Commission paper states that "One of the driving factors behind the decision to implement distinct change processes in Parts 50 and 52 was the Commission's goal of maintaining standardization. Revising the Part 52 change process would be a policy shift away from standardization." The Tier 2* change process requested by LAR 17-037 is clearly within the scope of this text.

2.3 Generic Implications Should Be Considered by the Commission

LAR 17-037 also has generic implications which should be considered by the Commission. While the staff's safety evaluation claims that the amendment and exemption are only applicable to Vogtle Units 3 and 4, this licensing action obviously represents a significant precedent for any AP1000 COL. NRC routinely relies on previous precedents when reviewing licensing actions, so if LAR 17-037 is approved, NRC would not have any obvious basis to deny an equivalent request from another AP1000 licensee. Therefore, if this LAR is approved, the precedent it sets would circumvent the rulemaking process, as any other AP1000 COL could adopt the same amendment without rulemaking, effectively reducing the scope of public participation. This negative effect is the same concern described by the staff and acknowledged by the licensee for LAR-008.

In its safety evaluation, the staff argues that the Statements of Consideration for the Advanced Boiling Water Reactor design certification addresses circumstances such as LAR 17-037. However, there is an obvious and significant distinction between a facility change affecting a narrow scope of Tier 2* information such as might arise over the course of construction and operations (e.g., an individual licensee installs equipment with slightly different capability), and a wholesale change to the entire set of Tier 2* information and the associated change process. The SECY-18-0060 text quoted above supports the view that the licensee's LAR represents a precedent-setting proposal with significant generic standardization implications, as opposed to an action with narrower scope with much lower generic impact.

2.4 Management Actions

The NRO Director has indicated that he has discussed LAR 17-037 with the Commissioners, and that no objection has been expressed. It is not clear if these conversations were fully informed by or addressed the regulatory policy history, the staff's feedback on LAR-008, or the

Rule, May 12, 1997 (ADAMS Accession No. ML003711745). 62 FR 27840, Standard Design Certification for the System 80+ Design – Final Rule, May 21, 1997, ADAMS Accession No. ML003711752.

¹⁴ 72 FR 49352, Licenses, Certifications and Approvals for Nuclear Power Plants, p.49365, August 28, 2007.

¹⁵ SECY-18-0060, "Achieving Modern Risk-Informed Regulation," May 23, 2018, ADAMS accession number ML18110A186.

generic issues. These conversations took place before the staff's safety evaluation was completed, so they were not informed by knowledge of the SE content, and could create the impression of a pre-determined outcome. These informal communications also do not provide a well-documented basis that current and future staff can refer to so that they can understand the rationale for the approach being taken, particularly given the similar implications of LAR-008 and LAR 17-037.

2.5 Conclusion – Policy and Generic Issues

The licensee's proposal in LAR 17-037 deviates from the policy decisions described above. Therefore, Joseph Williams, Denise McGovern, and Christopher Van Wert believe the policy issues introduced by LAR 17-037 must be thoroughly evaluated by the staff and presented to the Commission, seeking a decision confirming deviation from establish policies is authorized. Furthermore, Joseph Williams, Denise McGovern, and Christopher Van Wert believe the generic and rulemaking issues must be thoroughly evaluated by the staff and presented to the Commission.

3.0 SAFETY EVALUATION DEFICIENCIES NEED TO BE ADDRESSED

This discussion is based upon the version of the safety evaluation circulated for concurrence on August 21, 2018. The proposed final version of the SE was not made available in a timely fashion to support milestones established for this non-concurrence. A discussion of these circumstances is provided in Section 4.6 below.

Two marked up versions of the August 21, 2018 SE are incorporated into this non-concurrence. Attachment 3 provides Joseph Williams comments on that version of the SE, providing a redline/strikeout comparison to an earlier draft that was provided for his review. The comments in this document are consistent with feedback provided to LB4 staff, et al., on July 27, 2018. Attachment 4 provides comments by John Segala that Joseph Williams finds to be generally consistent with his views, and so provides a reasonable starting point for an evaluation that could be found acceptable, assuming the policy and generic issues discussed in Section 2 are appropriately dispositioned. Inclusion of the markup in Attachment 4 should not be construed as Segala joining this non-concurrence. As Williams' branch chief, Segala will have an opportunity to present his position when he completes Section B of NRC Form 757 for this non-concurrence.

3.1 General Comments

These comments are consistent with Joseph Williams' feedback on an earlier draft safety evaluation.

- The SE does not adequately address policy issues.
- The SE does not clearly describe the regulatory basis or framework being applied to determine if the proposed amendment is acceptable.
 - The appropriate standard should be based on the principle that Tier 2* information is intended to be equivalent to Tier 1. Therefore, the proposed process should guarantee that changes to Tier 1-equivalent information are clearly identified as such always receive prior NRC review and approval.
 - The overall conclusion is murky and is not clearly related to the pertinent framework.

- Conclusions regarding individual topics are not consistent amongst themselves or with an overall framework.
- It is irrelevant if the staff finds the licensee's proposed process acceptable if the framework for making that decision is inappropriate.
- Many staff evaluations inappropriately rely on the 50.59-like process to ensure potentially safety significant changes are reviewed and approved by NRC prior to implementation.
- Staff should review completed Tier 2* amendments to determine what insights can be gleaned regarding the adequacy of the proposed criteria.

3.2 Description of the Appropriate Regulatory Standard

As described above, the LAR 17-037 proposes a process to screen changes to Tier 2* information with the intent of avoiding the need for NRC approval before those changes are implemented.

Joseph Williams was the principal author of SECY-17-0075,¹⁶ which provides an extensive discussion of the intended purpose of Tier 2* information, demonstrating 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."¹⁷ SECY-17-0075 acknowledges that some portion of Tier 2* information for AP1000 is not equivalent to Tier 1, which leads to the issues the Vogtle licensee is trying to address in LAR-17-037. However, SECY-17-0075 also states that there is also some portion of Tier 2* information that is properly defined. Therefore, any process that seeks to authorize a licensee to change any Tier 2* information must clearly and reliably identify and discriminate between Tier 1-equivalent and less significant information. Any change to Tier 1-equivalent information must be identified as such and receive NRC approval prior to implementation.

It should be noted that the change process described in 10 CFR 52 Appendix D, Section VIII.5.b (the so-called "50.59-like" process) are not an appropriate means to identify Tier 1-equivalent information. The change process applied to Tier 2 information is essentially equivalent to the process described by 10 CFR 50.59, and intended as a means to identify facility changes which require prior NRC review and approval. Applying the "50.59-like" process to Tier 2* information effectively converts that information to Tier 2. If the staff believes the "50.59-like" process can be applied to a set of Tier 2* information, then the associated safety evaluation must conclude that the information being subjected to that test is Tier 2-equivalent, not Tier 1-equivalent.

It is also important to understand that it was a conscious decision by the staff and Commission to apply an additional change process beyond the "50.59-like" process to Tier 2* information. The documentary record shown in the Regulatory History Package on Design Certification cited above clearly demonstrates that application of the "50.59-like" criteria to Tier 2* changes would likely yield a result calling for NRC approval prior to implementation. It was nonetheless decided that an additional level of control would be applied such that any Tier 2* change would result in prior NRC review and approval. This history also demonstrates that the "50.59-like"

¹⁶ SECY-17-0075, "Planned Improvements in Design Certification Tiered Information Designations," July 24, 2017, ADAMS accession number ML16196A321.

¹⁷ 72 FR 49352, Licenses, Certifications and Approvals for Nuclear Power Plants, p.49365, August 28, 2007, cited in SECY-17-0075.

process should not be relied upon to ensure NRC review and approval of Tier 1-equivalent changes.

The August 21, 2018 version of the staff safety evaluation does not adequately address these points in its description of the regulatory framework for the staff's evaluation. Some staff evaluations of individual topics in SE Section 3.1, such as fuel, include elements that touch upon Tier 1-equivalence. However, the various conclusions on individual topics do not align with an appropriate overall framework as described above or with one another in this version of the safety evaluation.

The safety evaluation also does not adequately address the policy, generic, and rulemaking issues discussed in Section 2 above. These issues must be properly addressed to provide the appropriate framework for a regulatory decision on LAR 17-037.

3.3 Additional Observations

3.3.1 Need to Address Experience from Completed Tier 2* Amendments

The staff's safety evaluation cites statements in the licensee's application regarding examples of completed license amendments involving Tier 2* information. The licensee claims that these amendments did not involve safety significant changes, and so were unnecessary. The staff does not provide any assessment of whether it agrees with the licensee's characterization of these amendments.

Furthermore, the licensee and staff have experience with over 30 completed licensing actions involving Tier 2* information. It would be highly informative to test the licensee's proposed process against the changes made in these amendments. If the licensee can demonstrate the proposed process yields an appropriate outcome and NRC staff agrees, the confidence in the licensee's proposal increases. On the other hand, if an example yields an inappropriate outcome, a gap or deficiency in the proposed process has been identified.

Taking advantage of any lessons learned from this experience is good regulatory practice. Such an approach is similar to what was done when Tier 2* was formulated,¹⁸ as well as during the development of the guidance for implementation of the "50.59-like" process.¹⁹

A request for additional information was drafted to gather information to permit such an evaluation. However, that request was never forwarded to the licensee for a response.

3.3.2 Inadequate Evaluation of Public Comments

A member of the public who served for several years as the NRC lead project manager for the Vogtle combined licenses submitted comments on LAR 17-037. This individual is a highly experienced licensing engineer, with deep knowledge of NRC's licensing processes and the Vogtle COLs, including the withdrawn LAR 14-008.

¹⁸ Workshop on Certification of Evolution Light-Water Reactor Designs, November 23, 1993, ADAMS accession number ML003708102.

¹⁹ NEI 96-07, Appendix C, Guideline for Implementation of Change Processes for New Nuclear Power Plants Licensed under 10 CFR Part 52, March 2014, ADAMS accession number ML1409A739.

The public comments align with aspects of this non-concurrence. In particular, the member of the public noted that the proposal is similar to LAR-008, and expressed a view that LAR 17-037 involves policy issues. The staff's August 21, 2018 draft safety evaluation claims that the policy issues are obviated because LAR 17-037 proposes a different approach. This claim does not withstand scrutiny, as it is apparent from the discussion in Section 2 above that policy issues are a factor because the licensee is proposing to deviate from Commission-approved processes for Tier 2* changes.

The staff also claims that this licensing action does not apply to other licensees or plants. While it is true that the licensing action does not apply to any other licensee until those licenses are also modified, it is also true, as discussed in Section 2.3, that there would be no basis to deny such modifications to any other AP1000 licensee, as well as setting a precedent for all certified designs. Just stating the action "does not apply to other licenses or plants" does not make it so. The staff is merely making a claim without any justification.

The member of the public also raised questions regarding examples from the set of completed Tier 2* amendments. The staff's response only describes the licensee's claims without providing any substantive evaluation.

The member of the public also cited text from SECY-17-0075 which he believes supports his views. The staff's response states that SECY-17-0075 "has only limited applicability to the current decision." This statement is belied by the fact that the body of the staff's safety evaluation refers multiple times to SECY-17-0075.

It should also be noted that DLSE was unaware that public comments had been submitted until they were informed by Joseph Williams on July 16, 2018. It appears that DLSE would have issued the licensing action without addressing these comments if they had not been informed.

4.0 CHILLING EFFECT CONCERNS

NRC's non-concurrence process described in Management Directive 10.158²⁰ defines a chilling effect as

A condition that occurs when an event, interaction, inaction, decision, or policy change results in a reasonable perception that the raising of a mission-related concern or differing view to management is being suppressed, is discouraged, or will result in reprisal (harassment, intimidation, retaliation, or discrimination).

Joseph Williams' experience in the course of this review meets this definition, as he has a reasonable perception that the issues he has raised in the course of this review have been suppressed and discouraged. The basis for this view is given below.

Mr. Williams initially identified potential policy and regulatory framework concerns with LAR 17-037 before the amendment was submitted, as demonstrated by a December 5, 2017 email.²¹ This email stated that "We need to carefully consider the generic implications of this proposal, both for AP1000 licensees, and other current and future Part 52 licensees." It also pointed out that, given the generic implications, the issue should be addressed via rulemaking.

²⁰ Management Directive 10.158, NRC Non-concurrence Process, March 14, 2014, ADAMS accession number ML13176A371.

²¹ ADAMS accession number ML18241A218.

The message also noted that the proposal could involve policy issues that need to be considered by the Commission. Mr. Williams expressed a view that the proposal did not clearly differentiate between Tier 2* information that is Tier 1-equivalent and other less significant information. He also noted that it would be helpful if the licensee described how it envisioned the proposed process would apply to existing Tier 2* amendments. In short, this message identified many of the predominant issues which have led to this non-concurrence.

Williams also identified the need for a clear regulatory framework several months ago. For example, in a January 15, 2018 email,²² he stated that “Branch chiefs and staff have not yet been [given] clear guidance on standards to be applied to the review.” The project management organization, Licensing Branch 4 (LB4), did not provide any information regarding the regulatory framework for several months. A framework was not even outlined until after reviewers had been required to identify their requests for additional information, and was still poorly defined and incomplete when the safety evaluation was circulated for concurrence. This approach contrasts strongly with typical licensing reviews, where tools like the Standard Review Plan provide a framework for the staff’s activities. In this case, the regulatory framework is being established at the end of the review, rather than at the beginning.

Despite his well-founded views on the various issues associated with this licensing action, it has been very difficult to persist in pushing for their resolution. Pertinent to the definition quoted above, the behavior and actions of staff and management responsible for administering the review effort have suppressed or discouraged addressing Williams’ concerns.

There is also objective evidence that Williams’ views have been suppressed and discounted over the course of the review. This evidence of a chilling effect calls into question the objectivity of staff and management responsible for administering the review, and reduces confidence that a well-founded and defensible evaluation has been developed.

An extensive record exists in emails and other documentation describing Williams’ continuing efforts to have policy and generic issues acknowledged and addressed, as well as his efforts to describe a defensible regulatory framework for the review. Attachment 2 provides a chronology outlining his efforts beginning in September 2017. A collection of email correspondence providing further documentation can be found in ADAMS at accession number ML18248A099. Some specific messages identified here are referenced by a specific accession number.

4.1 Resistance to Addressing Policy Issues in Acceptance Review

As noted above, Mr. Williams raised the need to address policy issues, including rulemaking and generic implications, during pre-submittal discussions in fall 2017. The Director of the Division of New Reactor Licensing (DNRL, later the Division of Licensing, Siting, and Environmental Analysis or DLSE), made it clear at that time that he did not share Williams’ views.

The need to address policy questions was subject of discussion during the LAR acceptance review. On January 16, 2018, Mr. Williams participated in an NRO program meeting (a routine division-level meeting addressing topics of interest across the office) where he described his concerns. During the discussion that followed, a representative of the Office of General

²² ADAMS accession number ML18241A262.

Counsel made statements supportive of Williams' views, which should have been a clear indication that a more thorough evaluation was appropriate.

DNRL staff put great emphasis on completing the acceptance review expeditiously. Williams encountered considerable resistance in having text added to the acceptance letter regarding potential policy issues and the need to clearly differentiate between Tier 2* information that is equivalent to Tier 1, and other less significant information. Williams was aware that an earlier amendment with similar effect (LAR 14-008) had not been approved by NRC, but he was not familiar with the details of the staff's position as described above. DNRL personnel did not share information that the basis for the withdrawn LAR 14-008 included policy issues which align very closely with the issues Williams was identifying. If Williams had been aware of the basis for LAR-008 withdrawal, it is likely he would not have concurred in the acceptance letter unless clear distinctions could have been identified.

4.2 Failure to Fulfill Agreement for Management Briefing on Policy Issues

On February 14, 2018, Williams participated in a meeting with his branch chief, the branch chief and staff from Licensing Branch 4, the DNRL Director and Deputy Director, and representatives of the Office of General Counsel. An outcome of that meeting was an agreement to brief the NRO Director to seek a decision on whether a Commission paper would be written regarding LAR 17-037 policy issues.

The agreed-upon briefing never took place. Following the February 14 meeting, Williams occasionally contacted LB4 staff to inquire when the briefing would be scheduled. In response, LB4 staff indicated one milestone or another (e.g., requests for additional information) were their focus, and that a briefing would take place at some later date. In mid-May 2018, about 3 months after the February agreement, LB4 scheduled a briefing for mid-June 2018.

Shortly after the briefing was scheduled, Williams was informed that the NRO Director had already reached a decision, concluding that no Commission paper was needed. It is Williams' understanding that this decision was reached after discussion with between the NRO Director and OGC staff. Mr. Williams contacted OGC staff who had participated in the February 14 meeting, inquiring about the basis for the feedback given to the NRO Director. One of the OGC staff replied that he was unaware that any decision had been made. When Williams followed up to this reply to determine the rationale for OGC's feedback, no further reply was forthcoming.

Williams had two "Open Door" meetings with the NRO Director in mid-May 2018. One meeting was focused on process concerns, specifically the failure to fulfill agreements from the February 14 meeting. Williams informed the NRO Director that he had had experienced considerable resistance to thoroughly discussing the issues, and that he perceived that DNRL/DLSE's focus had been on completing the review as rapidly as possible, so that schedule was pre-eminent over a thorough and thoughtful evaluation of a precedent-setting first-of-a-kind licensing action, regardless of technical or policy issues that might be encountered.

Williams described policy questions in the second meeting. The NRO Director made it clear in that meeting that he was comfortable with his decision, and so did not plan to change the course of action. Williams' contemporaneous notes from that discussion state his view that the Open Door meeting was largely for the sake of appearances, rather than any real prospect of changing the NRO Director's mind. If the NRO Director had already communicated his decision at the Commission level, that action would lend additional support to Williams' view.

While Open Door meetings can be useful, employees forced to use those tools are at a disadvantage in cases such as this where managers have already made decisions after discussions with other staff. Episodes such as this represent a lost opportunity for a collaborative and interactive discussion amongst all interested parties.

In summary, Williams' views regarding the policy, rulemaking, and generic implications of LAR 17-037 were consciously suppressed by DNRL/DLSE management and staff. This suppression is most obvious in the failure to fulfill agreements made to fully brief NRO management on the issues in an open and collaborative fashion. DNRL/DLSE staff blocked and delayed efforts to discuss these topics, and obtained an NRO management decision favorable to their pre-determined preferred course of action without fully engaging all cognizant staff or thoroughly vetting issues. These actions are entirely inconsistent with NRC's stated values, including openness, cooperation, and respect, and contrary to the "Speed of Trust" principles the agency is supposedly embracing. The result of these actions has been highly discouraging, and has severely strained Mr. Williams' working relationships.

4.3 Resistance to Establishing Clear Regulatory Framework

Williams has also encountered significant resistance in his efforts to clarify and communicate an appropriate regulatory framework for reviewing LAR 17-037.

LAR 17-037 is an unprecedented first-of-a-kind licensing action. Ordinarily, licensees and staff can take advantage of precedent and regulatory guidance to develop and review licensing actions. Tools such as the Standard Review Plan and Regulatory Guides provide at least a starting point for an objective basis for most licensing decisions. In contrast, for LAR 17-037, there are no examples of previously-approved actions that can be used to inform the current review. Indeed, the only relevant previous example is the withdrawn LAR 14-008, though that example does not clearly support the current review. Given the lack of relevant precedent or guidance, emphasis should have been placed on establishing a clear regulatory framework early in the review so that staff would have a firm basis to review the licensee's proposal, identify gaps where additional information would be required, and complete a well-founded safety evaluation.

The approach followed in this case is contrary to standard practice. For example, LAR 17-037 schedule milestones for completing requests for additional information (RAI) were established without a well-defined regulatory framework for the review. Little or no emphasis was given to developing guidance for the content of the staff's safety evaluation until after RAI milestones had passed. While some guidance was provided to staff regarding the need to protect Tier 1-equivalent information, this standard was not reflected in later guidance regarding expectations for SE content.

Initially, staff were told to base their evaluations on their RAIs. Such an approach is illogical, as it implies no evaluation is necessary if there are no questions. Given that the regulatory framework for the review had still not been established, there was no reason for project management personnel to be confident that deficiencies in the licensee's application had all been identified so a thorough review could be completed.

An example of communications with DLSE regarding the need to establish the review framework is shown by a June 18, 2018 email²³ from the DSRA Deputy Division Director to his

²³ ADAMS accession number ML18248A040.

counterpart in DLSE. This message stated that “We still need alignment on the overall basis for the staff’s regulatory finding on the LAR,” and noted that Williams could contribute to an effort to define the framework. There are many additional examples of messages describing efforts to define an appropriate review framework from the time the submittal was received nearly to the present day. It was only in late June 2018, over 6 months after receipt of the application, that DLSE began to describe its proposal for how the safety evaluation should be constructed. The inconsistencies in the staff’s safety evaluation as discussed in Section 3 and Attachment 3 provide further evidence this effort was not timely.

An additional example of resistance to describing the regulatory framework is illustrated by the failure to issue a request for additional information drafted by Williams and approved by his management. The RAI reads as follows:

LAR Enclosures 6 and 7 discuss how SNC envisions the proposed criteria could have been applied to two completed license amendments affecting Tier 2* information. Pages 4 and 5 of Enclosure 1 describe other completed license amendments which SNC claims involved non-safety significant changes which should not have required prior NRC review. The discussions in Enclosure 1 do not explicitly describe how the proposed criteria would apply to those specific examples, or how the criteria would have successfully identified information appropriately designated as Tier 2*. Discussing specific examples could illustrate the potential advantages and challenges associated with future application of the proposed criteria. Therefore, SNC is requested to provide a discussion similar to Enclosures 6 and 7 of the results of applying the criteria to the specific examples cited in LAR Enclosure 1.

The amendments described in Enclosures 1, 6, and 7 represent a subset of all completed Tier 2* amendments. SNC is requested to describe how these amendments were selected and why other amendments affecting Tier 2* information were excluded. Alternatively, SNC can provide a discussion similar to Enclosures 6 and 7 for all completed amendments affecting Tier 2* information.

This RAI was never forwarded to the licensee for a response. When that failure was brought to the attention of DLSE staff, Williams was informed that the milestone for issuing RAIs had already passed, so the RAI would not be issued.

Problems arising from an ill-defined regulatory framework are unforced errors. Similar to his efforts to have policy issues addressed, Williams identified the need to define an appropriate regulatory framework before LAR 17-037 was submitted. When he was first informed that a licensing action submittal affecting Tier 2* information was pending in late September 2017, he wrote an email to DNRL division management that “any alternative to the LAR process to change Tier 2* information must clearly and objectively demonstrate that the information being changed would not otherwise be considered Tier 1.” Williams also raised the issue during pre-submittal discussions in early December 2017, as noted above. After receipt of LAR 17-037, Williams encountered resistance to describing an appropriate regulatory framework during the acceptance review, as discussed above. Thereafter, he continued interactions with project management staff in an attempt to define a framework, with very limited success.

In summary, Williams’ efforts to define an appropriate regulatory framework for the review were consciously suppressed by DNRL/DLSE management and staff. This suppression is apparent from the failure to define the regulatory framework in a timely manner which would ensure review staff would be able to identify gaps in the licensee’s proposal so that a basis for any

requests for additional information could be described, leading to completion of an objectively sufficient safety evaluation supporting the licensing action. Williams' experience here is similar to the resistance and obstacles encountered in his efforts to address policy issues, contributing to his discouragement and strained working relationships.

Overall, the outcome of Williams' experience in raising mission-related concerns associated with LAR 17-037 clearly meets the MD 10.158 definition of a chilling effect.

4.4 General Working Environment Concern

Feedback has been received from some staff associated with the review that suggests that a broader cultural problem might also be reflected in this review. In the words of one reviewer, "This is a strange process that has been shoved down our throats." Several reviewers have spoken to Mr. Williams about their concerns with the lack of a clear regulatory framework, along with the negative effect of pursuing their individual reviews in isolation, without communication or coordination by LB4 across the organization to ensure any cross-cutting issues were identified or addressed.

4.5 Management Interactions and Response

On July 11, 2018, Williams met with the Deputy Executive Director for Reactor and Preparedness Programs (DEDR) to discuss concerns with the process followed for review of LAR 17-037 up to that time. Williams told the DEDR that the review process had not yet adequately defined the target framework for completing the staff safety evaluation, and that policy issues had not been properly addressed, even though RAIs had been issued and responded to and safety evaluation input solicited. Williams said that he had raised these issues early in the LAR review, but he perceived considerable resistance and reluctance to address them. Williams contrasted the approach followed for this LAR with more routine licensing actions, noting the significant distinctions between a first-of-a-kind action with policy implications where a regulatory framework needs to be established, and more ordinary reviews where a robust framework already exists. Williams also said that he was concerned that the unorthodox approach being followed had created a chilling effect, indicating cultural issues that might need management attention. The DEDR indicated he would follow up with NRO management regarding these concerns.

After Williams' meeting with the DEDR, the NRO Director met with Williams, along with representatives of DLSE, OGC, and DSRA to review Williams' concerns regarding LAR 17-037 on July 19, 2018. In this meeting, Williams relayed his view that the framework for the LAR had not been clearly established, so there could be no reason to expect that there was a consistent understanding or alignment on the findings needed in the safety evaluation. Williams reiterated that the appropriate standard for the review should acknowledge the need to ensure Tier 2* information that is equivalent to Tier 1 is clearly identified, that policy issues need to be presented to the Commission for a decision, and that a chilling effect had affected the review.

The initial draft safety evaluation was circulated for comment shortly after the July 19 meeting. Williams provided extensive comments on this draft in a July 27, 2018 email to DLSE, et al. Williams reiterated yet again the need to address policy issues. The draft SE did not provide a clear regulatory framework for the review, nor was there consistency between staff findings on various technical topics. In Williams' view, it was an unacceptable product.

In this timeframe, Williams was informed that the NRO Director had decided to inform Commission staff of the planned issuance of the licensing action via a note to the Commissioners' assistants (a "CA Note").

On August 10, 2018, Williams met again with the NRO Director, along with the NRO Deputy Director, representatives of NRO division management, and OGC. Denise McGovern also participated in this meeting, providing her perspectives on the policy issues, as well as sharing her experiences regarding LAR-008. Williams outlined his feedback on the draft SE, and indicated at that meeting that he was considering use of the non-concurrence process, noting that MD 10.158 provides means to make non-concurrence documentation public. MD 10.158 also requires non-concurrence documentation follow the source document throughout the approval process, including circulating the information back to any party that previously concurred. For his part, the NRO Director stated his plan to forward the completed SE and non-concurrence to the Commission via the CA Note as soon as possible, with the intent of issuing the amendment and exemption three working days later.

After the August 10 meeting, NRO division managers were tasked with checking in with the reviewers assigned to this LAR to determine if they were satisfied with the outcome of their review. It is Williams' understanding that NRO division managers all indicated they were satisfied with the feedback from their staff. However, it is Williams' view that, while the managers may have gotten the answers they were looking for, that is not the same as saying the right questions were being asked, especially given that the regulatory framework for the SE was still in flux.

After being informed of an aggressive schedule for the CA Note and impractical expectations for completing this non-concurrence documentation, Williams was forced to reach out once again to the DEDR to request assistance in establishing a more realistic schedule. It is Williams' understanding that only due to the DEDR's intervention was an attainable schedule for completing this non-concurrence defined. However, it is also his understanding that the current plan is to complete evaluation of the non-concurrence and circulate information to all parties within the three-day window planned for the CA Note, and issue the amendment. This timing strongly suggests an emphasis on schedule over thorough evaluation of issues.

It is reasonable to conclude from this history that NRO management has been persistently reluctant to address the process problems encountered over the course of this review. These challenges have received office-level management attention only after Williams brought the issues to the attention of higher level management outside NRO, which suggests that issues had not been clearly communicated from DLSE to NRO office management, or that office management was unconcerned by the issues. Regardless, issues have been suppressed over many months. While Williams persisted, he was clearly discouraged from continuing this effort. The challenges Williams faced nearly led to a decision to walk away from the effort altogether. These factors clearly meet the MD 10.158 definition of a chilling effect.

4.6 Impediments Encountered in Non-concurrence Process

On August 21, 2018, DLSE staff circulated a proposed safety evaluation for concurrence. Williams examined this safety evaluation, and concluded that the comments he had previously provided had not been effectively addressed. In accordance with MD 10.158, via an August 22, 2018 email, he informed DLSE management and staff, along with his branch chief and division

management, of his intent to non-concur in the safety evaluation.²⁴ In that message, Williams requested a meeting of all involved parties to ensure understanding of respective responsibilities.

The requested meeting did not take place until August 28, 2018. At that meeting, Williams and McGovern were informed of management's intent to complete the safety evaluation review, including processing the non-concurrence on an expedited basis, so that the CA Note could be forwarded to the Commission staff by September 4, 2018, with the intent of issuing the licensing action three working days later. Williams indicated this schedule was not realistic, indicating that September 7 was an attainable date to complete the non-concurrence. Williams assumed that the non-concurrence would have a near-final version of the SE. Williams was taken to task not having already completing this non-concurrence, however that feedback was provided nearly a week after his meeting request, so that suggestions that he was not being timely was unjustified.

DLSE management indicated that they do not intend to respond to every point made in this non-concurrence. It should be noted that MD 10.158 requires that "The level of detail must be sufficient so that an independent reader can understand the basis for the decision and outcome." Rather than giving an affirmative statement of intent to complete a non-concurrence evaluation consistent with MD 10.158, what was described was what the NCP Approver will not do, setting bounds of minimum performance that does not clearly ensure thorough and objective assessment of the issues. The DLSE management statements could be construed as setting a standard below that required by MD 10.158.

It was also apparent to Williams and McGovern that DLSE intends to take advantage of any latitude provided in MD 10.158 for managing its own schedule and activities, but was going to take a hard line on setting expectations for the non-concurring staff. It was also apparent from the schedule discussion that DLSE management had already determined the outcome of the review, intending to issue the licensing action as soon as possible. At no point was there any acknowledgement that the non-concurrence review could result in a different conclusion.

In the immediate aftermath of this meeting, Williams met once more with the DEDR to request his intervention to obtain a more realistic schedule. The next day, Williams was informed that this non-concurrence input would be expected by noon, Friday, September 7, with the intent to process the CA Note that afternoon to forward the non-concurrence without a supervisory or management response along with the safety evaluation.

Williams was informed on September 4, 2018 that extensive comments had been received on the SE from OGC and other staff, and that the schedule for completing the SE had slipped several days. This slippage affected the assumptions made when Williams identified September 7 as a practical completion date. Therefore, he requested this schedule be revised, with a new schedule being established. NRO management denied that request on September 5, 2018, and directed Williams write the non-concurrence against the obsolescent August 21, 2018 SE, rather than an updated SE reflecting incorporated comments and any other adjustments. Williams acknowledged that September 7, 2018 remained the due date, and asked for confirmation that he will receive the revised SE when it is circulated for final concurrence.²⁵ This and other questions were intended to obtain written responses documenting management's intent to comply with procedural requirements. The fact that

²⁴ ADAMS accession number ML18248A199.

²⁵ ADAMS accession number ML18248A198.

Williams felt compelled to ask for such confirmation is an indication of the severely eroded trust between him and those responsible for processing this licensing action.

To expedite staff review and concurrence in the extensively revised safety evaluation, at the time of this writing (September 7, 2018), DLSE has scheduled several “chapter day” meetings with the various technical branches. A chapter day is a meeting tool used on key products associated with large projects, such as a safety evaluation chapter for a design certification or combined license. Staff involved in the review meet to discuss the proposed final version of a product to address comments with the goal of reaching agreement on the final content. These discussions are often cross-disciplinary for topics affecting multiple engineering and regulatory areas. In contrast to this typical model, DLSE has planned multiple meetings with individual branches to discuss their specific contributions. A separate meeting is planned for a discussion with a stated purpose as follows:

The purpose of this meeting is for OGC and LB4 to resolve any comments to all sections of the SE except for Sections 3.1.1 through 3.1.9, that is, everything except the branch-specific sections, for those comments where LB4 needs assistance in closing the comment.

Tech Staff should plan to attend this meeting only if [emphasis in the original] they have a question or concern about SE content outside of the branch-specific write-ups.²⁶

MD 10.158 states that “The NCP Coordinator [a role defined in the procedure] must ensure the non-concurring employee is included in further discussions of an issue, when warranted, to maximize the understanding of the issues and improve the decisionmaking process.” Consistent with the stated intent to “maximize the understanding of the issues,” Williams requested that time be provided for him to present the non-concurrence issues to the review team. Contrary to MD 10.158 requirements, DLSE declined to provide this opportunity in the chapter day meetings. Williams was informed that he would only be able to discuss his non-concurrence issues if some aspect of those issues arises in the course of the chapter day discussion.

There are numerous flaws in the planned chapter day approach. Sections being discussed in the meeting cited above involve the overall regulatory framework, and so are of interest to the entire review team. Several reviewers have expressed dismay at the piecemeal approach followed throughout the LAR review, where individual disciplines have proceeded with their reviews in isolation, as opposed to a holistic team-oriented approach where staff could identify synergies in their respective subject areas and generate an internally-consistent product. However, the chapter day approach continues the isolationist model. In specific reference to the chapter day meetings, a staff member described the approach as “divide and conquer.” Such an approach discourages and suppresses sharing of concepts, ideas, and experience amongst the reviewers, and so meets the definition of a chilling effect.

Furthermore, the approach violates the requirements of MD 10.158 quoted above. By not providing for an open discussion of the non-concurrence issues, DLSE is suppressing discussion of those perspectives in the chapter day meetings. While there may be opportunity to discuss aspects of the non-concurrence if they arise in the course of the discussion, such an approach ensures that those discussions will lack any context to the complete non-concurrence.

²⁶ ADAMS accession number ML18250A070.

Contrary to MD 10.158, this approach does not “maximize understanding of the issues and improve the decisionmaking process,” and so is an additional example of a chilling effect.

It has been suggested several times in this period that management is not bound to follow MD 10.158 in this timeframe because a non-concurrence form has not yet been provided before September 7, 2018. It has also been implied that Williams could choose to not follow through with his stated intent to non-concur. Williams informed management of his intent to non-concur in a timely fashion on August 22, 2018, per the expectations in MD 10.158, though management claims the non-concurrence process was not yet active. It is also unrealistic to think that Williams would fail to follow through. While considerable obstacles remain, he has persisted in the face of the impediments and resistance he has faced up to this time, so claims he will fail to follow through do not hold water, as reflected by the information presented herein. Williams views these suggestions as additional evidence of inappropriate management pressure on staff, along with evidence that management has misrepresented Williams’ intent, suppressing his views.

These circumstances clearly demonstrate that NRO management is more concerned about schedule than due consideration of issues, as the process being followed does not ensure good alignment between the non-concurrence and the proposed final product so that there can be clear understanding of the relationship of the concerns to specific text. The approach is inconsistent with NRC’s stated values of cooperation, openness, and respect. The net effect adds to the overall chilling effect, in that it is additional evidence of discouraging employee participation in thorough evaluation and interactive discussion of issues. It also suppresses information, due to the expected misalignment between in that the August 21, 2018 SE and the version to be forwarded with the planned CA Note.

4.7 Other Interactions

Several times over the course of this review, DLSE has scheduled meetings to discuss aspects of the LAR 17-037 review where it had advance knowledge that Williams had conflicts or would be unable to participate. It is not surprising that such conflicts occasionally arise in the ordinary course of doing business. However, this case does not appear to be ordinary, as such circumstances have arisen several times. Examples include an internal meeting in late June 2018 where the regulatory framework for the review was discussed. This meeting took place as a direct result of Williams’ efforts in the weeks before to have that framework described so that reviewers could complete their safety evaluations. The meeting was scheduled when Williams was out of the office on annual leave. There are other examples where Williams was unable to participate in other activities, such as advanced reactor stakeholder meetings, because DLSE scheduled meetings despite being informed of these conflicts. These interactions demonstrate a lack of respect and regard for staff’s other obligations and activities, both professional and personal, and indicate an excessive focus on schedule. Arguably, providing for full participation of all interested parties in key discussions could have resulted in alignment on a regulatory framework and other issues that could have avoided the need for this non-concurrence.

4.8 Management and Supervisory Support

Mr. Williams wishes to be clear that his branch chief and Division of Safety Systems, Risk Assessment, and Advanced Reactors (DSRA) division managers have provided strong support and helpful feedback. The chilling effect concerns he is raising here do not lie within DSRA. Rather, the chilling effect is the result of actions within the Division of Licensing, Siting, and Environmental Analysis, and the NRO office level.

4.9 Conclusion – Chilling Effect

A chilling effect has adversely affected the review of LAR 17-037. The LAR 17-037 review has been conducted in an ad hoc manner without an adequately defined regulatory framework ensuring alignment within existing Commission policy. The persistent resistance to addressing these clearly identified and communicated issues demonstrates these concerns have been discouraged and suppressed. This resistance calls into question the objectivity of staff and management responsible for administering the review, and reduces confidence that a well-founded and defensible evaluation has been developed. Though the resulting safety evaluation seeks to approve the licensee's proposal, it does not provide a clear basis for this decision. This outcome is a clear result of the chilling effect described above.

Denise McGovern endorses the chilling effect description given in Section 4.6.

Joseph Williams endorses the entire description of a chilling effect in this section. He notes that as a GG-15 Senior Project Manager near the end of his career and at the top of the pay scale, he is relatively immune from concerns that this non-concurrence will have any significant adverse effect on him. His circumstances provide a degree of freedom that is not available to staff at a different point in their careers. It is easy to see that others holding similar views could be discouraged from raising them as persistently, if at all.

Attachment 2

Chronology of Joseph Williams' Interactions on LAR 17-037

This chronology demonstrates that process and policy issues were raised early, but have not been addressed in a timely or open manner.

- Pre-submittal
 - September 28, 2017: Williams email to DNRL Division Director, et al.: “any alternative to the LAR process to change Tier 2* information must clearly and objectively demonstrate that the information being changed would not otherwise be considered Tier 1.”
 - early December 2017 – initial identification of potential policy issues
- December 5, 2017 Williams email regarding policy issues, need to discriminate between Tier 1-equivalent and less significant Tier 2* information
- December 21, 2017 – LAR submitted
- January 16, 2018 – LAR discussed at program meeting, including policy issues
- January 25, 2018 – LAR accepted
 - “...the criteria and process described in the application do not clearly differentiate between Tier 2* information with safety significance commensurate with Tier 1, and any Tier 2* information which has lesser significance.”
 - Acknowledged possible policy issues
- February 14, 2018 – internal alignment discussion with DNRL and OGC staff and management
 - Agreement to brief NRO Director regarding policy issues
 - Need for review guidance discussed
- February 16, 2018 – state consultation request email (ML18047A122) arguably misleads the state official, as it claims that “The NRC is in process of finalizing its review of this LAR.”
 - Regulatory framework had not been established
 - RAIs had not been issued
- Requests comments by March 5, 2018, demonstrating DLSE schedule emphasis.
- March-April: no NRO Director briefing scheduled
- April 11 – proposed RAIs provided to DNRL
- May 1, 2018 – one ARPB RAI issued
- ~May 11, 2018 – informed that NRO Director had reached a decision regarding policy issues without briefing
- May 16, 2018 – discussed process concerns with NRO Director
- May 18, 2018 – discussed views regarding policy issues with NRO Director

- Early June 2018 – discovered that one RAI had not been issued (ARPB RAI 4 regarding examples). June 13, 2018 Williams email provides documentation after problem was identified.
- June 11, 2018 – DLSE issued proposed milestone schedule. Guidance for SE content not yet provided.
- June 19, 2018 – DLSE email: “...please proceed to prepare an SE input based on the major concerns of your RAI.”
 - Logical result of direction: if there were no RAIs, there’s no SE
 - Regulatory framework of review still undefined.
- June 21, 2018 – DLSE (Habib) informed Williams that guidance for the review will be developed and provided to staff the following week
- June 27, 2018 – DLSE provided proposed guidance for staff SE input
- July 11, 2018 – Williams meeting with DEDR to discuss review process concerns, including chilling effect.
- July 13, 2018 – SE inputs requested
- July 16, 2018 – Discovery of public comments from the former Vogtle COL lead project manager that DLSE was previously unaware of. Comments largely align with Williams’ views on policy implications.
- July 19, 2018 – Williams briefing for NRO Director, et al.
- July 27, 2018 – Williams provided extensive comments on draft SE
- August 10, 2018 – Williams and McGovern briefing for NRO Director, et al.
- August 28, 2018
 - Williams and McGovern meeting with DLSE Deputy Director, et al., to discuss non-concurrence schedule.
 - Williams and McGovern informed the OEDO Assistant for Operations of CA Note plans.
 - Williams meeting with DEDR to request action to ensure adequate time to develop non-concurrence.
- September 5, 2018 – Williams request for extension to complete non-concurrence due to delays in completing safety evaluation is denied.
- September 6, 2018 – Williams request for time to address non-concurrence issues in “chapter day” meetings is denied.

Attachment 3

Markup of August 21, 2018 Draft Safety Evaluation

Joseph Williams

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS
RELATED TO AMENDMENT NOS. [XXX AND XXX]
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](#) Agencywide Documents Access and Management System (ADAMS) Accession No. ML17355A416), and supplemented by letters dated April 6, May 11, June 18, [August 3](#), and August ~~3~~10, 2018 ([References 2, 3, 4, 5, and 6](#) ADAMS Accession Nos. ML18096B328, ML18131A263, ML18169A431, ~~and~~ ML18215A461, [and ML18222A553](#), respectively), the Southern Nuclear Operating Company (SNC) requested that the 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 implement a criteria-based evaluation process to determine whether a proposed departure from Tier 2* information in the UFSAR would require prior NRC approval.

Pursuant to Section 52.63(b)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR), SNC also requested an exemption from the provisions of 10 CFR Part 52, Appendix D, "Design Certification Rule for the AP1000 Design," Section II, "[Definitions,](#)" [paragraph II.F;](#) and Section VIII, "Processes for Changes and Departures," paragraphs VIII.B.5.a, VIII.B.6.b, and VIII.B.6.c ([Reference 6](#)). The requested exemption would allow SNC to implement the criteria-based departure process described in the license condition in place of the process provided in the

Commented [WJ1]: General comments, in line with July 27 JFW email.

- The SE does not address policy issues.
- The SE does not clearly describe the regulatory basis or framework being applied to determine if the proposed amendment is acceptable.
 - The appropriate standard should be based on the principle that Tier 2* information is intended to be equivalent to Tier 1.
 - The proposed process should guarantee that changes to Tier 1-equivalent information are clearly identified as such always receive prior NRC review and approval.
 - The overall conclusion is murky and is not clearly related to the pertinent framework.
 - Conclusions regarding individual topics are not consistent amongst themselves or with an overall framework.
 - It doesn't matter if staff finds the change acceptable if the framework for making that decision is inappropriate.
 - It's ironic that reviewers were strongly challenged by DLSE to provide a regulatory basis for RAIs, but DLSE is still struggling to describe the overall regulatory framework for the SE.
- Staff should review completed Tier 2* amendments to determine what insights can be gleaned regarding the adequacy of the proposed criteria.
- Many staff evaluations inappropriately rely on the 50.59-like process to ensure potentially safety significant changes are reviewed and approved by NRC prior to implementation. Current change controls were put in place by the Commission with full knowledge that if Tier 2* changes were evaluated by the 50.59-like process, that effort would often lead to those changes being sent to NRC for review and approval. The Commission nonetheless imposed an additional degree of control. Therefore, the staff's evaluation should be consistent with those additional controls for Tier 1-equivalent information.

regulations that requires prior NRC approval prior to any departure from Tier 2* information. The criteria-based process in the license condition would apply to departures that involve only Tier 2* information or a combination of Tier 2* and Tier 2 information. However, under this license amendment, any departure that involved changes to Tier 1 information or technical specifications would still require prior NRC approval, regardless of whether it also involved a change to Tier 2* information. The staff's review of the exemption request, as well as the LAR, is included in this safety evaluation.

The supplements dated April 6, May 11, June 18, August 3, and August ~~3~~10, 2018, (References 2, 3, 4, and 5) provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (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, Reference 7).

2.0 REGULATORY EVALUATION

LAR-17-037 proposes License Condition 2.D.(13) to implement a criteria-based evaluation process to determine whether a proposed departure from Tier 2* information in the UFSAR would require prior NRC approval. To find this LAR acceptable, the staff would need to conclude with reasonable assurance that the proposed process is adequate to require prior NRC approval for safety significant changes to Tier 2* information.

The NRC 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.

10 CFR Part 52, Appendix D, Section VIII, "Processes for Changes and Departures," describes the requirements for making changes to information in the AP1000 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 combined license (COL). The proposed change involves the addition of a new COL License Condition 2.D.(13) to specify the process for evaluating departures from plant-specific Tier 2* information and departures from Tier 2 information that involve a change to Tier 2* information. The regulatory processes affected are specified in 10 CFR Part 52, Appendix D, Section VIII, Paragraphs VIII.B.5 and VIII.B.6 and would be subject to the conditions and limitations set forth in new License Condition 2.D.(13). Therefore, NRC approval, including the granting of exemptions, is required prior to making the plant-specific proposed change in this LAR.

10 CFR 52.7 specifies that the Commission may grant exemptions from the requirements of Part 52. 10 CFR 52.7 points to the requirements listed in 10 CFR 50.12 for specific exemptions. Therefore, any exemption from requirements in Appendix D to 10 CFR Part 52 must meet the requirements of 10 CFR 50.7 and 50.12.

10 CFR Part 50, Appendix A, General Design Criterion (GDC) 1, "Quality Standards standards and Records," in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities records," requires that structures, systems, and components (SSCs) important to safety shall be designed, fabricated,

Commented [WJ2]: This section does not clearly articulate the overall standard to be applied to determine if the proposal is acceptable.

Per the June 27 meeting, the proposed process should clearly demonstrate that changes to Tier 2* information that is equivalent to Tier 1 will still be subject to prior review and approval by NRC.

erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. The proposed exemption involves the change process for Tier 2* material involving the codes and standards used for design, fabrication, erection, and testing for SSCs. Therefore, this criterion is considered in the evaluation.

10 CFR Part 50, Appendix A, GDC 2, "Design bases for protection against natural phenomena," requires SSCs to be designed to withstand the effects of natural phenomena, and requires the SSC designs to reflect appropriate consideration of the most severe of the natural phenomena historically reported for the site and surrounding area.

10 CFR Part 50, Appendix A, GDC 4, "Environmental and dynamic effects design bases," requires SSCs to be designed to accommodate the effects of and to be compatible with environmental conditions associated with normal operation, maintenance, testing, and accidents.

10 CFR Part 50, Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants," describes earthquake engineering requirements related to nuclear power plants.

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

10 CFR 50.34(f)(2)(iii) requires that a licensee provide, for Commission review, a control room design that reflects state-of-the-art human factor principles prior to committing to fabrication or revision of fabricated control room panels and layouts.

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

- SECY-17-0075, "Planned Improvements in Design Certification Tiered Information Designation," dated July 24, 2017 (Reference xx, ML16196A321) describes the regulatory and policy background regarding Tier 2* information ~~and the staff's plan to continue the use of the Tier 2* designation expected future use of Tier 2* information in future design certification applications.~~
- SECY-95-023, "Proposed Design Certification Rules for the Advanced Boiling Water Reactor (ABWR) and System 80+ Standard Designs," dated February 1, 1995 (Reference xx, ML003708055), as approved by SRM-SECY-95-023, "Proposed Design Certification Rules for the Advanced Boiling Water Reactor (ABWR) and System 80+ Standard Designs," (ML003708194) acknowledges that an opportunity for public comment is provided for nonsafety departures of Tier 2*.
- COMSECY-94-024, "Implementation of Design Certification and Light-Water Reactor Design Issues," dated May 31, 1994 (Reference xx, ML003708079), 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 xx), authorizes the use of the Tier 2* designation.

Commented [WJ3]: The documents cited here are not guidance documents.

Commented [WJ4]: Future design certifications are not pertinent to this proposal.

The relevant information from SECY-17-0075 is that Tier 2* is intended to be equivalent to Tier 1.

- ~~SECY 95-023, "Proposed Design Certification Rules for the Advanced Boiling Water Reactor (ABWR) and System 80+ Standard Designs," dated February 1, 1995 (Reference xx, ML003708055), acknowledges that an opportunity for public comment is provided for nonsafety departures of Tier 2*.~~
- "Licenses, Certifications and Approvals for Nuclear Power Plants," Federal Register, Volume 72, No. 166, page 49365, August 28, 2007 (Reference xx), 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 xx" (Reference xx), lists American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (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 xx), 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 xx), 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 xx), 2007, as updated. Also commonly known as the "Standard Review Plan" (SRP).
- NUREG-0711, "Human Factors Engineering Program Review Model," Revision 2 (Reference xx), 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 screening criteria to determine whether a proposed Tier 2* departure would qualify to utilize the Tier 2 departure evaluation process. Qualifying Tier 2* departures would be further evaluated under the existing Tier 2 departure evaluation process. Non-qualifying Tier 2*

departures would continue to require prior NRC approval. Under the process described in this LAR, any safety-significant Tier 2* departure would require prior NRC approval.

Commented [WJ5]: The appropriate standard should be changes to Tier 1-equivalent information are identified as such for prior NRC review and approval.

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 identify the exemptions associated with the LAR; ~~and~~
- Exempts SNC from certain provisions of 10 CFR Part 52, Appendix D, Sections 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.

The License Condition imposed by this amendmentThe license condition proposed by this LAR, as updated in the supplement dated August 3, 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 involving a change to or departure from Tier 2* information; except for departures that:

1. Involve design methodology or construction materials that deviate 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,
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 methods 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 methodology described 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, 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 under and in compliance with the Tier 2 change processes 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, "Processes for Changes and Departures," 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 a LAR for any proposed change to Tier 2* information. ~~The~~This requirement for prior NRC approval for changes to Tier 2* information is unconditional

~~and; it does not involve evaluation of any prospective change against any criteria- and does not consider the safety importance of the change that is being considered.~~ This contrasts with the departure process for Tier 2 information, under which a licensee ~~evaluated~~evaluates the departure against certain criteria to determine whether prior NRC approval is required. Under this LAR, the Tier 2* process would no longer require ~~unconditional~~ prior NRC approval ~~in all cases~~ and instead would resemble the Tier 2 departure process under which SNC would evaluate each departure to determine whether prior NRC approval is required.]

The staff reviewed the SNC initial submittal for LAR-17-037 dated December 21, 2017, and its supplements. As described in Enclosure 1, 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 Combined License (COL)? This step included a review to determine the degree to which codes, standards, and design and qualification processes, are relied upon for 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?

The results of SNC's analysis, as updated in its August 3, 2018, supplement, are summarized in Enclosure 5 of the LAR. The SNC analysis determined that 8 of the 24 Tier 2* topics were adequately covered by existing Tier 1 information, covered by another regulation or the combined license, or did not rise to the level of Tier 1 safety significance. Under this LAR, SNC did not identify any additional screening criteria for these Tier 2* topics, and the LAR intends that, for any departure under these topics, the determination of whether the departure involves a safety-significant matter could be adequately addressed by applying the Tier 2 screening criteria in 10 CFR Part 52, Appendix D, Section VIII.B.5.

For the remaining 16 of the 24 Tier 2* topics, the SNC analysis ~~initially, as updated in its August 3, 2018, supplement, identified 9 additional criteria that, when any safety significant change was evaluated against to be included in the criteria, proposed screening process, to determine whether the change would require prior NRC approval (i.e., a license amendment). SNC clarified in a public meeting that its analysis was not formal or auditable, but rather a high level assessment (Reference ADAMS public meeting summary).~~

The staff review, summarized in the following sections, confirmed the results of the SNC analysis.

In conducting the review, ~~the staff focused on assuring that the new license condition evaluation process and screening criteria would continue to require prior NRC approval for any safety-~~

Commented [WJ6]: It is important to understand that it was a conscious decision to apply additional controls to Tier 2*. The staff and Commission were aware that applying the 50.59-like criteria could yield a need for prior review (Tier 2* was sometimes characterized as pre-identified unreviewed safety questions). It was nonetheless judged that additional control was appropriate. Therefore, this SE should not rely upon the 50.59-like process to ensure prior review of changes to Tier 1-equivalent information.

Commented [WJ7]: The requirement for unconditional prior approval was a Commission decision, so deviating from that approach is a policy matter requiring a new Commission decision.

Commented [WJ8]: This is incorrect. The initial submittal only provided 4 criteria.

Commented [HD9]:
Find reference or delete

Commented [WJ10R9]: This was explicitly discussed in a public meeting, and I believe it was documented in the meeting summary. Regardless, it should not be deleted, as it is an accurate description of the information provided in that meeting.

significant changes to Tier 2* information and would protect that Tier 2* information having safety significance commensurate with Tier 1.

The staff review and conclusions are site-specific to the VEGP Units 3 and 4 COLs. The staff did not consider, and the conclusions of the review do not apply to, the AP1000 design in general or other certified designs, or other combined licenses issued under 10 CFR Part 52, including other AP1000 combined licenses.

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 Section 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 Section VIII.B.5 are met, 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 per Section VIII.B.6 of the Part 52 appendices.

SECY-17-0075, “Planned Improvements in Design Certification Tiered Information Designations” (Reference 8), discusses how Tier 2* information is intended to have substantial safety significance, commensurate with information designated as Tier 1. However, one 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 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 nonsafety-specific changes to Tier 2* information, and SNC asserted that it was submitting ~~the~~ this LAR and exemption request in order to mitigate the regulatory inefficiency associated with this issue. SNC also identified, in Enclosure 1, four examples of past Tier 2* departures that did not make safety significant changes, but nonetheless required prior NRC approval through a 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 proposed departures would have concluded with a determination that the proposed changes were not safety-significant and could therefore have been processed as a

Commented [WJ11]: This text is an appropriate characterization of the standard that should be applied to the review. However, it is not yet correct to say that this was the staff’s focus.

Furthermore, this description of the standard being applied should be a prominent part of the discussion in Section 2.0.

Commented [WJ12]: There is no basis for this claim, at least so far as AP1000 COLs are concerned. There is nothing about this proposal that would not apply generically to any AP1000 COL. Merely making this statement does not change that fact. It is much more accurate to say that the staff didn’t want to address the implications for other COLs.

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 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 nonsafety-significant changes.

In performing the technical review of the proposed changes in LAR-17-037 to the Tier 2* departure process, the NRC staff considered sections of the VEGP Units 3 and 4 UFSAR (Reference 9xx), as well as portions of the AP1000 DCD, Revision 19 (Reference 40xx). The staff also considered NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," and its ~~Supplements~~ supplements (References 41, 42xx, xx, and 43xx, ADAMS Accession Nos. ML042540268, ML060330557, and ML112061231); and NUREG-2142, "Final Safety Evaluation Report Related to the Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4," (Reference xx), documenting the staff's technical evaluation of the AP1000 reactor design certification application and VEGP Units 3 and 4 COL application, respectively. The staff reviewed the licensee's proposed changes in LAR-17-037 to evaluate the impact on the overall safety of the plant.

Tier 2* Departure Process

The regulations applicable to the departure process for changing 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 Section VIII.B.6 of this appendix. This designation expires for some Tier 2* information under paragraph VIII.B.6."
- Sections VIII.B.6.b and c requires a licensee referencing the AP1000 certified design to receive prior ~~NCR~~NRC approval prior to departing from Tier 2* information in its UFSAR, and states that certain Tier 2* information, specifically that information identified under VIII.B.6.c, reverts to Tier 2 status after the plant first achieves full power.

~~The NRC policy approach related to Tier 2* information appears in Commission SECY papers and statements of consideration of NRC regulations published in the Federal Register, summarized most recently in SECY-17-0075. In particular, includes the following:~~

- The August 28, 2007, final rule updating 10 CFR Part 52 (72 FR 49352, Reference xx, 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, Reference xx, page 25807) states that, ". . . many codes, standards, and design processes, which were not specified in Tier 1, that are acceptable

Commented [WJ13]: Does the staff agree with the licensee's view?

NRC staff should assess all pertinent Tier 2* amendments to determine if we agree that the proposed process would yield an appropriate outcome.

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.

- In COMSECY-94-024, which informed the Commission of key issues and areas of interest identified in two ongoing design certification reviews, the ABWR and the ABB-Combustion Engineering System 80+ (Reference xx), 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 is has been required for departures from Tier 2* information, more recent licensing experience indicates that imposing a requirement that of a LAR for any departure from Tier 2* information has resulted in license amendment requests some LARs for minor changes without safety significance.

- In For example, in Enclosure 1 of its December 21, 2017, LAR submittal, SNC identifies four previously approved departures from Tier 2* information for the VEGP Units 3 and 4 COLs that the licensee claims SNC asserts were not safety-significant, but nonetheless required prior NRC approval through a LAR (see LARs 12-001, 12-003, 13-001, and 13-033, References xx, xx, xx, and xx). 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 safety evaluations for license amendment nos License Amendment Nos. 3, 2, 15, and 45, respectively (References xx, xx, xx, and xx, ADAMS Accession Nos, ML12297A210, ML12278A381, ML13326A871, and ML15335A060, respectively).
- In SECY-17-0075 (Reference xx), 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 described Enclosure 1 of the LAR, SNC's proposed process would still require that any safety significant Tier 2* departure would require prior NRC approval. The staff evaluation of the LAR, which 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, Sections VIII.B.5.b and c, also concludes that application of the proposed screening criteria would require prior NRC approval for safety significant departures from Tier 2* information.

The Tier 2* screening process described in LAR-17-037 has similarities to the Tier 2 screening process described in 10 CFR Part 52, Appendix D, Section VIII.B.5. Both processes use screening criteria to determine whether prior NRC approval is required for a particular UFSAR

Commented [WJ14]: Does the staff agree with the licensee's claim?

It is also worth noting that, when Tier 2* was being formulated, it was anticipated that it was likely there would be changes with low safety significance that nonetheless would require amendments. The staff noted that the Tier 2* process would ensure there would be an opportunity for public involvement, regardless.

Commented [WJ15]: A previous version of this SE included a discussion of a previous amendment that was withdrawn due to NRC staff feedback that the topic should be addressed by rulemaking due to the generic implications (see ML14349A624). This SE does not explain why this proposal does not introduce similar concerns. **This topic is a policy issue.**

change. The proposed Tier 2* process requires screening using the new criteria followed by screening using the existing Tier 2 screening process. Under either process, the licensee would evaluate a prospective departure against a series of criteria, any one of which is sufficient to require prior NRC approval. If for the departure. In other words, if the departure meets any one of the applicable criteria, the departure would require prior NRC approval.

Commented [WJ16]: Reliance on the 50.59-like process is not an acceptable approach for Tier 1-equivalent information. As noted above, it was a conscious decision to apply additional controls beyond the 50.59-like process to Tier 2* information. Therefore, any Tier 2* information that is consistent with the intent of the designation (i.e., would otherwise be Tier 1) should be protected by means outside the 50.59-like process.

In evaluating this LAR, the staff considered a key distinction between the existing regulatory departure process for Tier 2* information, under which all departures require NRC approval regardless of their safety significance, with the criteria-based proposed process under this LAR. In particular, under the proposed process, any changes made to Tier 2* information without prior NRC approval would not allow for public comment or an opportunity for public hearing. This contrasts with the current process for departures from Tier 2* information under which all departures would be subject to prior NRC approval, public comment, and a request for hearing. In SECY-95-023, which proposed design certification rules for the ABWR and System 80+ designs, the staff acknowledged (page 47) that that, "[a]lthough Tier 2* changes may not result in unreviewed safety questions, the public will be afforded an opportunity to challenge the changes. . ." In other words, the Part 52 change process for Tier 2* information would result in public comment opportunities for nonsafety departures (see page 17, Reference xx, ML003708055).

This point is also something that should be addressed prominently in the regulatory framework discussion in Section 2.0.

The staff considers a change to this approach acceptable because, under this LAR, those any Tier 2* departures made without prior NRC approval would not involve a safety-significant change. Additionally, the public has had an opportunity to comment and request a hearing on this LAR. This approach is aligns with the current departure process for Tier 2 information, under which only departures having a "more than minimal" impact to safety require prior NRC approval, and for which the public is afforded opportunities to comment and request for a hearing.

Commented [WJ17]: This isn't quite accurate. The actual text states that "Although Tier 2* changes may not result in unreviewed safety questions, the public will be afforded an opportunity to challenge the changes (see response to topic #2 [in the cited reference])."

Commented [WJ18]: This text is inadequate, because it does not address how circumstances have changed from the Commission-approved position in SECY-95-023.

Need for Exemption

The staff recognizes that approving this LAR for the VEGP COLs is a shift from the current NRC policy approach for the departure process for changing Tier 2* information in the UFSAR of a COL. However, the departure process permitted in approval of this LAR still meets the intent of the current policy and regulation. In particular, as discussed in Section 3.2 of this LAR, the approved process continues would continue to assure that any safety-significant departures still require prior NRC approval.

Commented [WJ19]: I agree. However, the staff does not have the authority to change policy without Commission approval.

The staff determined that implementation of the license condition proposed in this LAR requires a permanent exemption from the current provisions identified in 10 CFR Part 52, Appendix D, regarding plant-specific departures from Tier 2* matters, and regarding plant-specific departures from Tier 2 information that involve a change to or departure from Tier 2* matters. Section 3.2 of this SE summarizes the staff evaluation of the necessary exemptions, which involve the requirement of 10 CFR Part 52, Appendix D, Section VIII.B.6 for prior NRC approval of departures from Tier 2* information and the requirement of 10 CFR Part 52, Appendix D, Section VIII.B.5.a for prior NRC approval of departures from Tier 2 information that involve a change to, or departure from, Tier 2* information.

Change to UFSAR

This LAR includes a change to the UFSAR, as follows. For each instance in the UFSAR where a page contains Tier 2* information, the 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 potentially result in changes to Tier 2* information where prior NRC approval would not be required. The proposed footer note accurately expresses this scenario where some change 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.

Issuance and Implementation of the License Amendment

The staff's issuance of a license amendment and exemptions associated with this LAR would be applicable to only the VEGP Units 3 and 4 COLs, and is not transferrable to other COLs. This is consistent with current regulation and policy, as reflected in the statement of considerations from the May 12, 1997, final rule for the standard design certification of the Advanced Boiling Water Reactor (62 FR 25800, [Reference xx](#), see page 25808), which clarifies that, ". . . If certain Tier 2* information is changed on a plant-specific basis, then the appropriate modification to the change process would apply only to that plant."

~~As proposed in LAR 17-037, each of the new criteria is intended to apply to a specific Tier 2* topic. However, Even though the proposed license condition states that all of the new criteria would apply to any particular departure to Tier 2* information. A crosswalk of the topics and the intended applicable criteria is listed below: 2* information, the SNC analysis identified which of the 24 specific Tier 2* topics listed in Appendix D of 10 CFR Part 52, Sections VIII.B.6.b and c each of the new criteria is intended to apply to. A crosswalk of the criteria and the topics that each is intended apply to appears below.~~

~~-As summarized in the table, for each of 15 of the 24 topics, one or more criteria were proposed. In these cases, the staff found reasonable assurance that prior NRC approval would be required for safety-significant changes to Tier 2* information by virtue of applying the proposed Tier 2* criterion, the existing Tier 2 screening criteria in Section VIII.B.5, and existing Tier 1 information. No criteria are proposed for the remaining 9 of the 24 areas. For 8 of these 9 topics, the staff concluded that the existing Tier 2 criteria are sufficient to conclude with reasonable assurance that prior NRC approval would be required for safety-significant changes to Tier 2* information. For the final topic, Section VIII.B.6.b, Item 4, "Fire Areas," no criteria are necessary because the Tier 2* information previously designated in that topic has re-designated as Tier 2 information in a previous license amendment (see Section 3.1.2 of this SE).~~

Commented [WJ20]: Do the same words appear in AP1000 SOC?

Crosswalk of Tier 2* Matters (Topics) in 10 CFR Part 52, Appendix D,
Sections VIII.B.6.b and c and LAR 17-037 Criteria

Tier 2* Topics from 10 CFR Part 52, Appendix D, Sections VIII.B.6.b and c	Intended Applicability of Criteria									None
	1	2	3	4	5	6	7	8	9	
<u>VIII.B.6.b (Tier 2* Matters (Topics) Requiring Prior NRC Approval)</u>										
Item 1, Maximum Fuel Rod Average Burn-Up			X							
Item 2, Fuel Principal Design Requirements			X							
Item 3, Fuel Criteria Evaluation Process			X							
Item 4, Fire Areas										N/A*
Item 5, Reactor Coolant Pump Type					X					
Item 6, Small-break loss-of-coolant accident (LOCA) analysis methodology			X							
Item 7, Screen Design Criteria				X						
Item 8, Heat Sink Data for Containment Pressure Analysis										X
<u>VIII.B.6.c (Tier 2* Matters (Topics) Requiring Prior NRC Approval that Revert to Tier 2 after Facility Achieves Full Power)</u>										
Item 1, Nuclear Island structural dimensions										X
Item 2, American Society of Mechanical Engineers Boiler & Pressure Vessel Code (ASME Code) Piping Design and Welding Restrictions, and ASME Code Cases										X
Item 3, Design Summary of Critical Sections							X	X	X	
Item 4, American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)–690, 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	X									
Item 5, Definition of Critical Locations and Thicknesses										X
Item 6, Seismic Qualification Methods and Standards										X
Item 7, Nuclear Design of Fuel and Reactivity Control System, Except Burn-Up Limit			X							
Item 8, Motor-Operated and Power-Operated Valves										X
Item 9, Instrumentation and Control System Design Processes, Methods, and Standards		X								
Item 10, Passive Residual Heat Removal (PRHR) Natural Circulation Test (First Plant Only)						X				
Item 11, Automatic Depressurization System (ADS) and Core Make-Up Tank (CMT) Verification Tests (First Three Plants Only)						X				

Crosswalk of Tier 2* Matters (Topics) in 10 CFR Part 52, Appendix D,
Sections VIII.B.6.b and c and LAR 17-037 Criteria

Tier 2* Topics from 10 CFR Part 52, Appendix D, Sections VIII.B.6.b and c	Intended Applicability of Criteria									None
	1	2	3	4	5	6	7	8	9	
Item 12, Polar Crane Parked Orientation										X
Item 13, Piping Design Acceptance Criteria		X								
Item 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE										X
Item 15, Human Factors Engineering		X								
Item 16, Steel Composite Structural Module Details	X									

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~~requires to submit under 10 CFR Part 52, Appendix D, Section 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 ~~documentation of~~ 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 technical specifications are not subject to this license condition or the exemptions granted and would still require prior NRC approval. ~~SNC would not be required to prepare and document evaluations of such departures that involve changes to Tier 1 information or technical specifications.~~

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:”

As described in the following evaluations 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 the LAR SNC. Therefore, the staff is including a limitation requiring SNC to fully implement the procedural guidance described in Enclosures 1U and 8U of the LAR prior to implementation of the license amendment.

Commented [WJ21]: What is meant by “fully implement?” This could be an issue for inspectors, as there can easily be disagreement on this point.

The proper approach would be to review and confirm the adequacy of the procedures within this SE.

Evaluation of Tier 2* Topics against Proposed Screening Criteria

Each of the 24 topic areas listed under 10 CFR Part 52, Appendix D, Sections VIII.B.6.b and VIII.B.6.c was evaluated by the subject matter experts in the NRC staff. The following sections describe the staff's evaluation of how the proposed License Condition 2.D.(13) screening criteria process will continue to ~~assure~~ provide reasonable assurance that any safety-significant change to Tier-2* information ~~(from 10 CFR Part 52, Appendix D, Sections VIII.B.6.b and VIII.B.6.c)~~ would continue to require prior NRC approval or would otherwise receive appropriate regulatory control. The evaluation is organized according to the above-listed 24 categories of Tier 2* ~~matter~~ topics identified in Sections VIII.B.6.b and VIII.B.6.c.

- 3.1.1 VIII.B.6.b, Item 1, Maximum Fuel Rod Average Burn-Up
- VIII.B.6.b, Item 2, Fuel Principal Design Requirements
- VIII.B.6.b, Item 3, Fuel Criteria Evaluation Process
- VIII.B.6.b, Item 5, Reactor Coolant Pump Type
- VIII.B.6.b, Item 6, Small-Break Loss-of-Coolant Accident (LOCA) Analysis Methodology
- VIII.B.6.c, Item 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 contained in the fuel system, reactor system, and design basis accident UFSAR information, as well as the Tier 1 and Tier 2 information related to this topic. These Tier 2* items are addressed by the guidance and bases information presented in Enclosure 1 of LAR-17-037 for ~~proposed~~ screening Criterion No. ~~3~~ 3 appearing in the proposed license condition. The majority of these Tier 2* items are not addressed in Tier 1. Since nuclear fuel design is expected to ~~change~~ over time and the fuel is routinely replaced on a relatively frequent basis, the AP1000 DCD identified these items as Tier 2* in order to allow improvements to the fuel design to be implemented via the license amendment process instead of requiring a license exemption, as would be required for items 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 in 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 screening process would result in the appropriate change process being selected for hypothetical changes. The license condition proposed by SNC in Supplement 4, dated August 3, 2018, would require prior staff approval for any departures which:

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 methods 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 methodology described in UFSAR Subsections 15.6.5.4B.2.2 or 15.6.5.4B.2.3.

In RAI LAR-17-037-9 (Reference xx) Question 1, the staff requested additional clarification regarding how the proposed screening process would address potential changes to topical report WCAP-12488-, "Fuel Criteria Evaluation Process." (Reference xx), which is the fuel criteria and evaluation process. Specifically, the staff ~~wanted to know~~ requested information

Commented [WJ22]: Suggest "change" vs. "improve," as it is likely that economics will be the driver.

Commented [WJ23]: This is an appropriate statement which should be used to support a conclusion that the proposal properly protects Tier 1-equivalent information.

Commented [HD24]:
Q for SRSB:

Are you aware of a nonproprietary version of this document (WCAP-14204) that is in ADAMS? I could not find one. The reference in the UFSAR reads:

[Davidson, S. L. (Ed.), "Fuel Criteria Evaluation Process," WCAP-12488-A (Proprietary) and WCAP-14204-A (Non-Proprietary), October 1994.]*

Is it possible that this document appears in a pre-ADAMS archive?
It may be necessary to get the document from the other system or Westinghouse and add it to ADAMS.

about whether WCAP-12488 was referenced by Technical Specifications or the methodologies listed in the Core Operating Limits Report (COLR) (Reference xx) and, if so, how the screening process would address the potential discrepancy with the change process required for Technical Specifications or the methodologies listed in the COLR. In its response dated June 18, 2018 (Reference xx), SNC stated that “[t]he proposed changes to the Tier 2* evaluation process does not affect the Technical Specifications change control process requirements specified in 10 CFR Part 52, Appendix D, VIII.B.5.a or the specific Technical Specifications 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 Technical Specifications or in the COLR. The staff finds this acceptable since the ~~changes provided in the response would prevent potential conflicts between the proposed change process and the change process~~ clarified how the change processes associated with Technical Specifications or COLR methodologies— would not be affected by the proposed change process.

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 (~~staff review and i.e., prior NRC approval~~) considering for information regarding burnup limits, which the Tier 1 nature of the top staff considers safety significant.

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 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. This statement is 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 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 ~~result in the appropriate change process being selected.~~ require prior NRC approval for changes to Tier 2* information having safety significance commensurate with Tier 1.

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

Commented [HD25]:

Q for SRSB:

Can you provide a more formal title or reference for the COLR document?

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 per the NRC-endorsed guidance NEI 96-07, 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 are no proposed screening criteria for changes to Tier 2* information associated with small break loss-of-coolant accident (LOCA) analysis methodology. Due to the uniqueness of the AP1000 design, 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 screening criteria be included in the Tier 2* departure evaluation process that captures the critical safety aspect of the Tier 2* information for small-break LOCA analysis methodology.

SNC stated in letter dated June 18, 2018, that the Tier 2* information associated with 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 small-break LOCA methodology 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 ~~ensures~~ provides assurance that ~~safety significant~~ the proposed license condition would require prior NRC approval for changes to Tier 2* information associated with ~~safety significant~~ small-break LOCA analysis methodology ~~would require prior NRC approval.~~

The staff evaluated the nuclear fuel related items 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. ~~Based on~~ For the staff’s review of the information provided reasons described above, the staff finds that the proposed license condition and supporting guidance acceptable because they provide reasonable assurance that prior NRC approval would be required for safety-significant changes to the subject Tier 2* information having safety significance commensurate associated with Tier 1 would require prior NRC review and approval under the proposed screening methodology described in LAR-17-037, nuclear fuel. The staff confirmed that the ~~changes made~~ information provided by SNC in prior supplements appeared in the final Supplement 4 of LAR-17-037, dated August 3, 2018.

3.1.2 VIII.B.6.b, Item 4, Fire Areas

Enclosure 5 of SNC’s December 21, 2017, (Reference xx),₁ submittal of LAR-17-037 states that SNC did not propose any screening 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 xx). 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, Section VIII.B.6.b, Item 4. As a result, the requirements in Section 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 Section VIII.B.5, thereby assuring that any safety significant changes to this

Commented [HD26]:
Can SRSB add a phrase here about how the AP1000 design is unique (as far as the uniqueness is relevant to SBLOCA and the NOTRUMP code).

Commented [HD27]:
SRSB:
Can you add a phrase here about how the AP1000 design is unique (as far as the uniqueness is relevant to SBLOCA and the NOTRUMP code).

Commented [WJ28]: This conclusion should state that changes to Tier-1 equivalent information will be identified and receive prior review and approval.

Commented [WJ29]: This is a good expression of a conclusion consistent with the standard that should be applied. However, it does not align with the overall framework described in Sections 2.0 and 3.1, or with the conclusions described for other technical areas.

Commented [VWC30]: Don: We will update this section when the revised LAR comes in.

Commented [HD31R30]:
I inserted an update

information are subject to prior NRC review approval. Therefore, the staff finds that the proposed license condition with respect to fire area information in the UFSAR is acceptable.

3.1.3 VIII.B.6.b, Item 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 Reactor Coolant Pump type (10 CFR Part 52, Section VIII.B.6.b, Item 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* matter using the proposed license condition (screening criteria) presented in Enclosure 3 of SNC's letter dated December 21, 2017. Enclosure 5 states that for Item 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 screening criteria is required. Therefore, per Enclosure 5, the change process in paragraph VIII.B.5 is not applicable and no additional screening criteria is 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 utilizes a sealless "canned motor design" RCP. The attribute of being a "canned motor design" is important because this specific type of pump addressed other safety significant issues such as reactor coolant pressure boundary integrity, flywheel integrity, and missile generation. Other types of pumps that have different design features and methodologies have not been reviewed to ensure these safety significant issues are adequately addressed.

However, using the proposed license condition, 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). Therefore, 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 xx, ML18102B683) 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 screening criteria which would require NRC approval.

In a letter dated May 11, 2018 (Reference xx), SNC proposed to include Criterion No. 5, "Results in a change to RCP type (canned motor design)," which would result in the need to obtain NRC approval. In its supplement to LAR-17-037 dated August 3, 2018 (Reference xx), 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, Criterion No. 5 would provide reasonable assurance that safety significant departures from Tier 2* information related to the RCP type would receive prior NRC approval, and therefore is acceptable to the staff.

3.1.4 VIII.B.6.b, Item 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, Section VIII.B.6.b, Item 7), as well as the Tier 1 and Tier 2 information related to this topic. Tier 2* items associated with screen design criteria are found in UFSAR Subsection 6.3.2.2.7.1, "General

Commented [WJ32]: Does not align with framework described in Sections 2.0 and 3.0. Does not conclude changes to Tier 1-equivalent information will receive prior review and approval.

Screen Design Criteria,” and include limits on types of insulation which may be used inside containment and containment resident debris.

Tier 2* Item 7 was incorporated in the 10 CFR Part 52, Appendix D as part of the AP1000 DC Amendment final rule ~~in~~ on December ~~of~~ 30, 2011 (~~Reference xx~~ 76 FR 82079). Supplement 2 to NUREG-1793 provides the basis for adding Tier 2* Item 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[out] 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.

~~The provisions of 10 CFR Part 52, Appendix D, Section VIII in part outline processes for changes and departures to Tier 2 and Tier 2* information. In LAR-17-037, SNC proposes a site-specific (i.e., VEGP Units 3 and 4) permanent exemption and license amendment to allow plant-specific departures from Tier 2* matters and from Tier 2 information that involves a change to or departure from Tier 2* matters.~~

~~The site-specific permanent exemption and license amendment 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 screening criteria. SNC performed an analysis of screen design criteria and developed a new screening criterion that would determine whether an associated Tier 2* departure qualifies for the departure evaluation process outlined in 10 CFR Part 52, Appendix D, Section VIII.B.5.~~

LAR-17-037 as supplemented by ~~LAR-17-037S2~~ on May 11, 2018, in response to RAI LAR-17-037-4, (~~Reference xx~~), contains new License Condition 2.D.(13) and a new screening Criterion No. 4 to address Tier 2* Item 7. ~~If approved, SNC would be subject to the conditions specified below: 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:”~~

~~(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 proposed departures that:~~

~~4. Adversely affect the containment debris limits or debris screen design criteria;~~

~~(6) 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 under and in compliance with the Tier 2 change processes 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.~~

As proposed in License Condition 2.D.(13), a Tier 2* departure associated with Item 7 would qualify to be evaluated under the Tier 2 departure evaluation process unless, ~~for example,~~ 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 ~~Nuclear Energy Institute (NEI) 96-07~~, "Guidelines for 10 CFR 50.59 Evaluations," dated November 2000 (ADAMS Accession No. ML003771157). ~~Reference xx~~. In ~~Regulatory Guide (RG) 1.187~~, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," ~~(Reference xx)~~. Position C.1, the staff finds that NEI 96-07 provides methods that are acceptable to the staff for complying with the provisions of 10 CFR 50.59 ~~(see ADAMS Accession No. ML003759710)~~. In LAR-17-037, SNC ~~identifies~~ ~~identified~~ that adverse effects are described in NEI 96-07 and adverse effects ~~criteria~~ ~~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 "no more than minimal" standard used in Section VIII paragraph B.5.b.

In ~~LAR-17-037S2~~ ~~the supplement dated May 11, 2018~~, SNC ~~provides~~ ~~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~~ ~~License Condition 2.D.(13)~~.

~~Based on the discussion above~~, the staff finds the proposed new ~~License Condition~~ ~~license condition~~ and associated screening ~~criteria~~ ~~provides~~ ~~Criterion No. 4~~ ~~provide~~ reasonable assurance that ~~departures~~ ~~prior NRC approval would be required for any departure~~ from Tier 2* Item 7 ~~that are adverse~~, ~~would receive prior NRC approval~~ ~~information having safety significance commensurate with Tier 1~~ and is consistent with the staff evaluation contained in Supplement 2 to NUREG-1793. In addition, while application of the proposed screening ~~criteria~~ ~~criteria~~ would ensure that any departures from Tier 2* information that are adverse would continue to require prior NRC approval, departures that would improve safety or would

Commented [WJ33]: Staff appears to be relying on the 50.59-like process to ensure changes to Tier 1-equivalent information receive prior review and approval. This is not an appropriate outcome, because of the conscious decision by the Commission to apply additional controls beyond the 50.59-like process to Tier 2*.

Commented [WJ34]: Does not align with framework described in Sections 2 and 3.0. Text is close to the mark, but does not conclude changes to Tier 1-equivalent information will be identified as such and receive prior review and approval.

result in no more than a minimal impact to safety could proceed as a departure without prior NRC approval. Therefore, the staff finds License Condition 2.D.(13) is acceptable for processing Tier 2* departures and Tier 2 departures that involve a change to or departure from Tier 2* information related to VIII.B.6.b Item 7. The staff confirmed that the changes made by SNC appeared in the ~~final~~ Supplement 4 of LAR-17-037.

3.1.5 VIII.B.6.b, Item 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, Section VIII.B.6.b, Item 8), as well as the Tier 2 information related to this topic. Tier 2* items associated with heat sinks are found in VEGP 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."

Subsection VIII.B.6.b Item 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 xx~~, ADAMS Accession No. ML11168A040), 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 and were consistent with development of Tier 1 information for the AP1000 certified design. 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 ~~was found~~ 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 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 screening criteria: stated in proposed License Condition 2.D.(13)(a).

SNC performed an analysis of heat sink data for containment pressure analysis ~~to determine whether an associated Tier 2* departure qualifies for and determined that the departure evaluation screening process outlined applicable to Tier 2 departures~~ in 10 CFR Part 52, Appendix D, Section 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 Item 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* Item 8 are

adequately addressed by paragraph 10 CFR 52, Appendix D, Section VIII.B.5. Therefore, although applicable by process, the additional screening 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* Item 8.

In ~~SECY-17-0075, "Planned Improvements in Design Certification Tiered Information Designations"~~ (Reference xx, ML16196A321), 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 additional heat sink information did not have substantial safety significance, 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. This reinforces the staff judgement that the additional heat sink information does not have substantial safety significance.

Commented [WJ35]: We need to take care to consider whether we want to make statements like this. Essentially, we're pre-approving a proposal to change the designation of this information from Tier 2* to Tier 2.

The staff finds the provisions provided in the "50.59-like" criteria found in 10 CFR Part 52, Appendix D, Section VIII.B.5 and applied to Tier 2* Item 8 as part of License Condition 2.D.(13) are 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, review on the staff evaluation contained in Supplement 2 of NUREG-1793, and review of SECY-17-0075. From the review, the staff has reasonable assurance that the license condition will identify safety significant changes to Tier 2* information regarding heat sinks and containment pressure analysis, such that a license amendment (i.e., prior NRC approval) would be required based on one or more of the "50.59" like criteria, even if the information was not designated as Tier 2*.

Commented [WJ36]: This conclusion inappropriately relies upon the 50.59-like process to protect Tier 2* information. This particular information may not be Tier 1-equivalent, per the discussion above, but I think it is problematic to say that a particular topic isn't Tier 1-equivalent, in toto.

- 3.1.6 VIII.B.6.c, Item 1, Nuclear Island ~~structural dimensions~~ Structural Dimensions
VIII.B.6.c, Item 3, Design Summary of Critical Sections
VIII.B.6.c, Item 4, American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)-690, 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, Item 5, Definition of Critical Locations and Thicknesses
VIII.B.6.c, Item 6, Seismic Qualification Methods and Standards
VIII.B.6.c, Item 12, Polar Crane Parked Orientation
VIII.B.6.c, Item 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE
VIII.B.6.c, Item 16, Steel Composite Structural Module Details

There may be a way to finesse this item. If it is authoritatively demonstrated that none of the information is Tier 1-equivalent, then the proposed process protects Tier 1-equivalent information, by definition.

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 xx) that pertain to

the structural engineering related to the eight Tier 2* topics listed in 10 CFR Part 52, Appendix D, Section VIII.B.c, including consisting of Items 1, 3, 4, 5, 6, 12, 14, and 16. The staff also examined portions of the “Final Safety Evaluation Report for the Vogtle Electric Generating Plant/VEGP Units 3 and 4 Combined License Application,” (Reference xx, ML110450302) 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* screening process that ensures to assure that any change to Tier 2* information which would affect the safety significance of the information continues to require prior NRC approval.

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

For Tier 2* Item 4 (American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)–690, 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 Item 16 (Steel Composite Structural Module Details), SNC proposed Criterion No. 1. Criterion No. 1 states that prior NRC approval would be required for Tier 2* departures which, “Involve design methodology or construction materials that deviate 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.” Under LAR-17-037, SNC proposes that Criterion No. 1, combined with the Tier 2 screening criteria in Section VIII.B.5, is adequate to assure that safety significant changes to Tier 2* information under Item 4 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, Section 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 other structural engineering related Tier 2* topics identified in Section VIII.B.6.c, besides the design summary of critical sections (Item 3), SNC did not propose additional screening criteria. The staff review regarding these Tier 2* topics appears below:

For Item 1, Nuclear Island Structural Dimensions, and Item 5, Definition of Critical Locations and Thicknesses, SNC stated that no additional criteria were necessary because Tier 1 information adequately addressed the safety significant aspects of this information. The staff considers the SNC’s approach to be acceptable because Items 1 and 5 are Tier 1 information and SNC is not proposing any changes to those items.

For Item 6, Seismic Qualification Methods and Standards, and Item 12, Polar Crane Parked Orientation, SNC stated that no additional criteria were necessary because the Tier 2 screening criteria in Section 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 accepts the justification provided by SNC because Items 6 and 12 are related to the methodology used in the plant-specific DCD, especially the orientation of the polar crane which used in the analysis methods for applying mass in the analysis model.

For Item 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE, SNC stated that no additional criteria were necessary because the Tier 1 information combined with the Tier 2 screening criteria in Section VIII.B.5 were adequate to assure that safety significant changes to Tier 2* information under these topics would be

Commented [HD37]:
SEB: Can this be re-stated more clearly? I do not understand it.

E.g., The staff agrees that there is no Tier 2* information under this topic that has safety significance commensurate with Tier 1. Therefore, the staff found that application of the Tier 2 screening criteria to this information is adequate to assure that safety-significant changes to this information require prior NRC approval.

Commented [HD38]:
SEB: Can this be re-stated more clearly? I do not understand it.

E.g., The staff agrees that there is no Tier 2* information under this topic that has safety significance commensurate with Tier 1. Therefore, the staff found that application of the Tier 2 screening criteria to this information is adequate to assure that safety-significant changes to this information require prior NRC approval. (same as above)

identified to require prior NRC approval. The staff agrees with the justification provided by SNC because the additional screening criteria are not applicable to Tier 1.

VIII.B.6.c. Item The staff has 3, Design Summary of Critical Sections

The staff evaluated SNC's proposal to depart from the Tier 2* change process by screening all proposed changes to the Tier 2* structural design, as reflected in SNC's ~~final~~ supplement to LAR-17-037, dated August 3, 2018. The screening criteria separate those changes that would continue to require prior NRC approval via license amendment requests from those that would not require prior NRC approval. Changes that 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 (Section VIII.B.6.c, Item 3-), the reconciliation would occur in the completion of ITAAC 3.3.00.02a and would be required in order to complete license conditions 2.D.(12)(g)(1) and (2) in the VEGP Units 3 and 4 COL.

The staff reviewed ~~each of the proposed criteria-Criterion No. 1, described above, to ensure~~ assurance that any Tier 2* changes involving deviations from codes and standards which would affect the safety- significance of the information ~~are captured by would require prior NRC approval. The staff also reviewed Criteria Nos. 7, 8, and 9, which would require prior NRC approval for Tier 2* changes 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, 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: ~~process proposed in the LAR. The screens~~

(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 screening criteria would segregate changes that are design changes which would ~~continue to~~ require prior NRC approval (the retained fraction of the changes) from those field construction changes that would not require prior NRC approval (the passing fraction).

Commented [HD39]:

SEB: Can this be re-stated more clearly? I don't understand this either.

E.g., The staff agrees that there is no Tier 2* information under this topic that has safety significance commensurate with Tier 1. Therefore, the staff found that application of the Tier 2 screening criteria to this information is adequate to assure that safety-significant changes to this information require prior NRC approval. (same as above)

~~Thus~~As discussed below, the staff determined the Tier 2* screening process proposed by SNC to be acceptable ~~design because safety-significant changes that could impact~~ the ~~safety-significance of portions of the safety~~Tier 2* information related to the design of critical structures ~~designated as Tier 2*~~ would still require prior NRC approval.

The staff's rationale for the acceptance of SNC's proposed screening 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. The staff finds ~~these to be~~this criterion acceptable because it addresses the appropriate attributes for ~~screening because 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 which would not be compatible with analytical methods that would be used in the reconciliation analysis. Similarly, design codes, if changed from the approved design codes, could lead to departures from the design basis that may result in outcomes that would be incompatible for reconciliation with the approved design.

SNC's proposed Criterion No. 8 requires prior NRC approval for a change to the steel faceplates, internal trusses, tie-bars, or headed studs of the steel-concrete (SC) module walls in the Nuclear Island or Shield Building, including SC-to-reinforced concrete (RC) connections. The staff finds this ~~appropriate~~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 these tested configurations is incompatible for design reconciliation, if modified. The SC building has been analyzed along with the ~~reinforced concrete~~RC portion as an integral structure. Changes to the Shield Building RC portion may impact the response of the Shield Building which is subject to beyond design basis loads. The connections between the SC to RC in the Shield Building provide a behavioral transition between the SC to RC, and hence changes in this area would not be amenable to reconciliation after construction.

SNC's proposed Criterion No. 9 addresses changes to the demand to capacity (D/C) ratio of a critical section of the structure. The ~~staff continues to use the~~D/C ratio ~~as is~~ safety significant because it is the parameter that ~~would serve as the control~~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. ~~Under Criterion No. 9, SNC would 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 basement sections, affected by a departure by:~~

~~(i) Using the Tier 2* 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 ~~or and~~ Appendix 3H ~~Table~~tables that directly states the D/C ratio or states the area of steel provided and ~~the area of steel that~~ required for the affected structural member, ~~or, if UFSAR Section 3.8 and Appendix 3H tables do not contain such information, the licensee would 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 for any Tier 2* change that impacts the safety significance of any affected critical section.~~

Commented [HD40]:

SEB: Can you please edit this to clarify what this refers to? For example, if it refers to what is allowed under 9.ii, then edit to state:

... If UFSAR Section 3.8 and Appendix 3H tables do not contain such information, Criterion No. 9.ii provides a method under which the licensee would use the average ratio across the entire affected critical section, provided that ... etc.

Similarly, if the previous sentence refers to Criterion 9.i, that should be stated.

~~(ii) Providing the same total area of Staff Review of Supplement 4, Enclosure 18, "Response to NRC Request for Additional Information (RAI) LAR 17-037-2"~~

~~In Supplement 4, Enclosure 18, SNC provided an example of a field change that normally occurs during construction. SNC stated:~~

~~[a]n example of a common situation during construction is when a reinforcing bar is moved or cannot be placed due to interference. To address this situation and ensure that the critical section structure continues to perform as expected, the design authority may choose to add reinforcement at a nearby location. Thus, the design authority examines the ratio of required reinforcement to provided reinforcement using the total area of the steel across the entire critical section using any combination of rebar sizes and spacing allowed by the design basis/bases codes used in the UFSAR as the total area of steel provided specified in UFSAR Section 3.8 and Appendix 3H Tables marked Tier 2*.~~

~~For Tier 2* **Item 4** (American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC) 690, 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 **Item 16** (Steel composite structural module details), SNC proposed Criterion No. 1. Criterion No. 1 states that prior NRC approval would be required for Tier 2* departures which, "involve design methodology or construction materials that deviate 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." Under LAR 17-037, SNC proposes that Criterion No. 1, combined with the Tier 2 screening criteria in Section VIII.B.5, is adequate to assure that safety significant changes to Tier 2* information under Item 4 would be identified to require prior NRC approval. [State whether the staff agrees, and why.] However, the SNC submittal did not identify a Tier 2* departure that might occur regarding the potential field changes. Therefore, in its review of information regarding RC Design in Supplement 4, Enclosure 18, the staff did not consider SNC's example design change involving movement or removal of a reinforcement bar.~~

~~In conclusion, the~~

~~For other structural engineering related Tier 2* topics identified in Section VIII.B.6.c, SNC did not propose any additional screening criteria, as follows:~~

~~For **Item 1**, nuclear island structural dimensions, and **Item 5**, definition of critical locations and thicknesses, SNC stated that no additional criteria were necessary because Tier 1 information adequately addressed the safety significant aspects of this information. [State whether the staff agrees, and why.]~~

~~For **Item 6**, Seismic qualification methods and standards, and **Item 12**, Polar crane parked orientation, SNC stated that no additional criteria were necessary because the Tier 2 screening criteria in Section 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. [State whether the staff agrees, and why.]~~

~~For **Item 14**, Containment vessel design parameters, including ASME Code, Section III, Subsection NE, SNC stated that no additional criteria were necessary because the Tier 1 information combined with the Tier 2 screening criteria in Section VIII.B.5 were adequate to~~

Commented [HD41]:

SEB: I deleted the information regarding the audit because it was unclear why it was there. The statement regarding lack of an example in the submittal only applies to the submittal (submitted under oath), not the audit.

assure that safety significant changes to Tier 2* information under these topics would be identified to require prior NRC approval. [State whether the staff agrees, and why.]

Conclusion

The LAR has requested a Tier 2* process change intended to reduce the need for prior NRC approval of design changes during construction, including those resulting from construction activities and from adjustments to field run commodities, such as steel reinforcement bars. The staff finds it appropriate to defer the safety evaluation of these the proposed process, which allows the licensee to implement nonsafety-significant design changes to SNC without prior NRC approval as a continual process through part of the license amendment change process as SNC described in Enclosure 18 of SNC's August 3, 2018, supplement, acceptable because the process would still require prior NRC approval for safety significant departures.

SNC is subject to additional requirements that, combined with this LAR, provide reasonable assurance that VEGP Units 3 and 4 would be constructed and operated in compliance with applicable regulations. In particular, SNC has committed to structural ITAAGs 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, which require, among other things, reconciliation of the as-built plant and approved design. The staff finds this exemption to the Tier 2* change process acceptable because the final confirmation of the safety of the as-built plant continues to be unaffected by this procedural change, which still remain as committed via a The reconciliation analysis of the as-built plant would account for all changes to the plant, including for Tier 2* changes, both nonsafety-significant changes implemented without prior NRC approval as well as safety-significant changes implemented with the approved design conforming to the acceptance criteria of 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 conditions 2.D.(12)(g)(1) and (2) in the VEGP Units 3 and 4 COL condition and to include information about each departure in the periodic reports submitted to NRC under 10 CFR Part 52, Appendix D, Section X.B.1.

Based on these findings, the NRC staff concludes that there is reasonable assurance that the requirements of GDC 2, and GDC 4 of 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," Appendix A ("General Design Criteria for Nuclear Power Plants"), and 10 CFR Part 50, Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants," will continue to be met. Therefore, the staff finds the proposed Tier-2* changes to be departure evaluation process, as described in the August 3, 2018, supplement, acceptable, as established by the license conditions proposed in this LAR.

- 3.1.7 VIII.B.6.c, Item 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, Item 8, Motor-Operated and Power-Operated Valves
VIII.B.6.c, Item 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 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, Sections VIII.B.6.b and VIII.B.6.c, but the staff additionally reviewed the Tier 2 topic of the DCD to independently verify that the full scope of topics was addressed. Based on this

Commented [HD42]:

SEB: The reference to ITAAC should be specific. Is this the ITAAC you were referring to?

Commented [HD43]:

SEB: The reference to ITAAC needs to be specific. Is this the ITAAC you were referring to?

Commented [HD44]:

SEB: The reference to license conditions should be specific. Is this the license condition you were referring to? (not (g)(6)?). I put in (g)(1) and (2) because those were the ones cited on the previous page)

Commented [WJ45]:

This conclusion appears relies upon a future activity with an indeterminate outcome. The as-built reconciliation with the design has no bearing on whether the changed design is acceptable. Part 52 is intended to ensure both that an acceptable design has been built (which is how this conclusion is characterized) and that an acceptable design will be built. It is not clear how this latter aspect of Part 52 is preserved.

The conclusion does not align with the framework described in Sections 2 and 3.0, and does not obviously ensure Tier 1-equivalent changes are identified as such, and receive prior review and approval.

Commented [HD46]:

SEB: If these regulations are cited in the conclusion, they also need to be discussed in the evaluation because it's not clear how we arrived at this conclusion.

For example, add statements about what these regulations require, how SNC currently meets these regulations at Vogtle 3 and 4, and how the SNC departure evaluation process would not affect how SNC meets the requirements of these regulations.

independent verification, the staff prepared a RAI discussed below. ~~The following Tier 2* topics are addressed in this section of the safety evaluation:~~

- ~~VIII.B.6.c, Item 2, American Society of Mechanical Engineers Boiler & Pressure Vessel Code (ASME BPV Code) piping design and welding restrictions, and ASME BPV Code Cases,~~
- ~~VIII.B.6.c, Item 8, Piping design acceptance criteria, and~~
- ~~VIII.B.6.c, Item 13, Motor-operated and power-operated valves.~~

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, SNC initially proposed four screening criteria to be used in order to determine if a Tier 2* departure could be evaluated under the Tier 2 departure evaluation process, which is located in Paragraph VIII.B.5 of Appendix D to 10 CFR Part 52. Of the proposed criteria, Criteria Nos. 1 and 2 are applicable to the topics within the scope of the MEB mechanical engineering review. These criteria, as SNC proposed in its final August 3, 2018, supplement to LAR-17-037, read as follows:

- 1) Involve design methodology or construction materials that deviate 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 screening criteria, as complemented by the Tier 2 departure evaluation process, for their adequacy in determining which departures require prior NRC approval.

ASME Code Piping Design and Welding Restrictions, and ASME Code Cases

The staff reviewed the Tier 2* text in the DCD regarding ASME BPV Code piping design and welding restrictions and ASME BPV Code Cases. 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, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III" (Reference xx), 1.84, which lists ASME BPV Code, Section III, Code Cases acceptable for use and those acceptable with certain conditions. The Tier 2* information regarding these Code Cases is consistent with RG-1.84 and is adequately controlled by this RG, ~~as incorporated by reference in the regulations through 10 CFR 50.55a,~~ as SNC has committed to satisfying the necessary conditions imposed on the utilized Code Cases. 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. Much of the 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.

The staff notes that the ASME BPV Code is incorporated by reference in 10 CFR 50.55a of the NRC regulations as 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 relief from or an alternative to those specific requirements in the edition and

Commented [WJ47]: This text should state something along the lines of "adequacy to ensure changes to Tier 1-equivalent information are identified as such, and receive prior review and approval."

Commented [HD48]:
MEB: What is the revision number of this RG that you are citing? <https://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/rg/division-1/division-1-81.html>

Commented [WJ49]: The staff is inappropriately relying upon the 50.59-like process. I'll note that such reliance isn't surprising, given the lack of structure provided for conducting the review.

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 relief from or an alternative to specific ASME BPV Code requirements applicable to VEGP Units 3 and 4.

Based on this understanding, the staff finds that the proposed SNC process provides reasonable assurance that the Tier 2* information regarding ASME BPV Code piping design and welding restrictions and ASME BPV Code Cases will be controlled adequately.

Commented [WJ50]: Conclusion is off the mark, given its reliance on the 50.59-like process.

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 Section VIII.B.6.b and VIII.B.6.c. Therefore, the staff requested clarification regarding the control of this information. Specifically, the CVS piping inside containment is non-ASME BPV Code piping (ASME B31.1 Code) 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 non-ASME BPV Code piping would be addressed by the proposed process and if any additional topics need to be addressed. (Reference xx). In its RAI response dated May 11, 2018, SNC indicated that it utilized the AP1000 DCD (Reference xx) “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 non-ASME BPV Code piping requirements, this table characterizes the text as “ASME Code Piping Design Restrictions.” SNC acknowledged that the ASME BPV Code and ASME B31.1 Code 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.

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 non-ASME BPV Code piping. This Tier 1 information requires that the ~~non-safety~~nonsafety-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 ~~acknowledges~~clarified that deviation from this requirement would require prior NRC approval, as indicated in the response to RAI LAR-17-037-1, Question 1.

Commented [WJ51]: How does the proposed process ensure this requirement will be consistently applied? Is this requirement addressed in the criteria? If it is not explicit within the criteria, why are we confident it will be addressed in implementing procedures?

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 NRC staff concludes that the SNC proposal is acceptable, ~~as because~~ NRC review and approval will be required for changes that reduce Code commitments in a ~~potentially~~safety-significant manner.

Commented [WJ52]: Similar to comments regarding inappropriate reliance on the 50.59-like process, the staff appears to be relying upon a change control process distinct from the Commission-approved mechanism for addressing changes to Tier 2* information. Such an approach is a change in policy.

Design Acceptance Criteria Discussion

In its initial submittal, SNC referenced its proposed Criterion No. 2 for piping design acceptance criteria (DAC). However, SNC did not discuss in detail the topic of piping DAC in the submittal. Therefore, the NRC staff issued RAI LAR-17-037-1, Question 2, to request clarification regarding the treatment of piping DAC. 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). The staff determined that proposed Criterion No. 2 to the SNC process ensures that changes are adequately controlled. **Therefore, the staff finds the SNC proposal to be acceptable, as potentially safety-significant changes to the DAC process would require prior NRC review and approval.**

VIII.B.6.c, Item 13, Motor-Operated and Power-Operated Valves

In its initial submittal, SNC provided proposed screening 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 motor-operated and power-operated valves (MOVs and POVs, respectively) 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 screening criteria intended for this Tier 2* topic. 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 screening 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 function 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 the ASME Standard QME-1-2007, “Qualification of Active Mechanical Equipment Used in Nuclear Power Plants” (~~Reference 8 in UFSAR Subsection 5.4.16~~) (~~Reference xx~~), 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 (Reference 8).” (~~Reference 8, as cited in UFSAR Subsection 5.4.8.3 is ASME Standard QME-1-2007.~~)

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 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 xx, ADAMS Accession No. ML17226A034); and VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017004 and 05200026/2017004, dated February 14, 2018 (Reference xx, ADAMS Accession No. ML18045A476)). During those inspections, the staff has found the requirements to implement ASME QME-1-2007 to be clearly understood and applied for the qualification of MOVs and POVs. Because safety-significant changes to Tier 2* information related to MOVs and POVs would require prior NRC approval by applying the VIII.B.5.b criteria, the staff concludes that the SNC proposal for the screening criteria for Tier 2* departures with respect to MOV and POV qualification is acceptable.

Commented [WJ53]: Inappropriate reliance on the 50.59-like process, both here and in text above.

3.1.8 VIII.B.6.c, Item 9, Instrumentation and Control 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* matters 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 Section VIII.B.5 of Appendix D to 10 CFR Part 52. Criterion No. 2 of the proposed set of criteria for design processes represents the screening criterion that was developed as a result of the analysis that was related to, among other matters, the instrumentation and control (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, SNC defines 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 found that the material change proposed under Criterion No. 2 for the I&C design processes would also impact corresponding Tier 1 information, and the proposed screening process under Criterion No. 2 would continue to assure that any safety-significant change to I&C related Tier 2* information would still require prior NRC approval. In addition, in LAR-17-037, SNC listed several examples as non-material changes for Criterion No. 2, which are related to editorial changes, clarifications, correction of inconsistencies, and other changes that do not change the meaning or substance of information presented in the Tier 2* matters. Under SNC's proposed process, those non-material changes would be then be evaluated under the departure evaluation process for Tier 2 information using the criteria in Appendix D of 10 CFR Part 52, Section VIII.B.5. The staff finds that the detailed guidance under screening Criterion No. 2 is acceptable because safety-significant changes to Tier 2* information under the topic VIII.B.6.c, Item 9 would still require prior NRC approval under SNC's proposed process because the changes 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 Section 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 3 and 4 plant-specific Tier 1 DCD and for

which some Tier 2* information is contained in the VEGP 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 found that the certified DCD Table 1-1, "Index of AP1000 Tier 2 Information Requiring NRC Approval for Change" also includes Topical Report WCAP-17179, "AP1000 Component Interface Module Technical Report" (Reference xx), 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 Tier 1, 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 xx).

In the RAI response dated June 18, 2018 (Reference xx), SNC addressed the staff's concern and ~~proposed to identify~~ identified the design process for the CIM ~~is~~ as one of the design processes subject to Criterion No. 2. SNC also stated in the RAI response, ~~in part~~, 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 ~~final~~ August 3, 2018, supplement to LAR-17-037.

After conducting the above review of LAR-17-037 and RAI responses, the staff found that ~~SNC provided detailed guidance for Criterion No. 2 to screen the the departure evaluation process and its implementing guidance, as updated in Enclosures 3U and 1U, respectively, of SNC's August 3, 2018, submittal, provide reasonable assurance that safety-significant Tier 2* departures for design processes related to I&C system design processes, methods, and standards sufficient to assure that safety-significant changes to Tier 2* information under the topic VIII.B.6.c, Item 9 would still require prior NRC approval under SNC's proposed process because the changes 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 Section VIII.B.5.~~ Therefore, the staff finds that Criterion No. 2 ~~in the 2 and its implementing guidance, as revised, final in the August 3, 2018, submittal of this LAR, is acceptable for evaluating the departures to Tier-2* information covered under Section VIII.B.6.c, Item 9.~~

- 3.1.9 VIII.B.6.c, Item 10, Passive Residual Heat Removal (PRHR) Natural Circulation Test (First Plant Only)
VIII.B.6.c, Item 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 that invoke the Tier 2* change process that requires prior NRC approval via a license amendment for departures from Tier 2* information; and

Commented [WJ54]: Inappropriate reliance on the 50.59-like process.

Paragraph VIII.B.5.a for Tier 2 information that involves a change to, or departure from, Tier 2* information. SNC proposed the following as Criterion No. 6:

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 VIII.B.6.c, Items 10 and 11, SNC's proposed Criterion No. 6 address departures from Tier 2* information would be material changes to 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 Supplement 4, dated August 3, 2018 (Reference xx), 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 a material change and 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 Final Safety Evaluation Report (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 [ADAMS Accession Number ML003779028 Reference xx])

The staff determined that there is reasonable assurance that SNC's Tier 2* departure evaluation process, including the application of Criterion No. 6 involving changes to Tier 2* information regarding certain pre-operational tests, would require prior NRC approval for safety-significant changes because Criterion No. 6 would screen in any change that could influence the outcome of the identified first plant test and first three plants tests; therefore, the staff finds the proposed screening process acceptable for Tier 2* information under Section VIII.B.6.c, Items 10 and 11.

3.1.10 VIII.B.6.c, Item 15, Human Factors Engineering

The staff uses the guidance in NUREG-0800 the SRP, Chapter 18 (Reference xx) of the SRP, "Human Factors Engineering," 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," (Reference xx) states, "The human factors engineering process is designed to meet the human factors

Commented [WJ55]: Is there a common understanding or definition of "editorial changes?"

Commented [WJ56]: This conclusion does not align with the framework outlined in Sections 2 and 3.0, and does not clearly ensure that changes to Tier 1-equivalent information will be identified as such for prior NRC review and approval.

Commented [HD57]:
HOIB: Can you cite the appropriate version of this SRP document?

<https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/ch18/>

engineering design process requirements specified in NUREG-0711." (The AP1000 FSAR/VEGP UFSAR was prepared in accordance with Revision 2 of NUREG-0711, "Human Factors Engineering Program Review Model" (Reference xx)). 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 is therefore compliant with 10 CFR 50.34(f)(2)(iii).

Criterion No. 2 in Enclosure 1 of LAR-17-037 applies to the human factors design process. This guidance is intended to determine which planned changes constitute a "material change" to a design process in applying Criterion No. 2. SNC's initial December 21, 2017 submittal of LAR-17-037, Section 3, "Technical Evaluation," page 10 of 19, provides examples of changes considered material changes, as well as examples of changes considered non-material changes.

Because the lists of material and non-material changes are not 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 are material changes.

~~Misinterpreting~~The staff considered that misinterpretation of a material change as a non-material change could potentially lead to safety consequences. ~~Staff~~The staff also identified a concern that applying the proposed screening process to prospective departures of Tier 2* topic VIII.B.6.c, Item 15, "Human Factors Engineering," could result in the licensee making changes to the Tier 2* information without prior NRC approval using the Tier 2 change process that could circumvent the positions taken by NRC staff in the relevant safety evaluation 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 design certification 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 (Reference xx) to address the issues described above. The RAI response dated June 18, 2018, ~~RAI response (Reference xx)~~ includes Enclosure 13, which updates the list of material changes to include altering a detail that serves as the basis for NRC staff acceptance as documented in an NRC safety evaluation.

Staff reviewed LAR-17-037 and the RAI response in Enclosure 13. Using the relevant NRC safety evaluations as an additional basis for identifying material changes provides a reasonable means of supplementing the guidance in Enclosure 1 because the NRC safety evaluations 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 safety evaluation, 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 safety evaluation (for instance if the staff considered information, but did not find it was necessary to include in the staff's safety evaluation). ~~This Changes to this type of information, however, should be minimal. Moreover, it~~ would still be identified as ~~material~~requiring prior NRC approval through the application of the remainder of the guidance in Enclosure 1. ~~Therefore, the possibility of inappropriately categorizing material as non-material would be minimized using this strategy.~~

~~Staff also considered the advanced nature of the HFE design at the time of the LAR submittal.~~

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 and issue resolution verification. Additionally, ITAAC No. 3.2.00.01e involves verification of the human-system interface (HSI), 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 27th and June 28th, 2018, SNC submitted Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Closure Notifications (ICNs) for ITAAC Nos. 3.2.00.01c.ii and 3.2.00.01d (ITAAC Index Nos. 742 and 743, respectively) (ADAMS Accession No. ML18179A072 and ML18180A103 (References xx and xx)). These ITAAC are related to integrated system validation (ISV) and the resolution of human error discrepancies. Both of these activities occur late in the design process (see NUREG-0711). ICNs are submitted when the licensee believes the inspections, tests, or analyses supporting an ITAAC ~~is~~ are complete and the specified acceptance criteria are met.
- If the licensee were to revise aspects of the program subject to these ITAAC after the ITAAC were completed, the licensee would be required to resubmit revised ICNs for staff verification. NRC ~~review~~ verification of these ICNs is pending. During the week of June 18, 2018, the staff conducted an inspection of the ISV process and the human error deficiency resolution process (Reference xx, ADAMS Accession No. ML18207A243 ~~Pending as of 7-30-18~~). The final inspection report is pending and should be issued later this summer. The preliminary results of the inspection support July 30, 2018, supports closing ITAAC Index Nos. 742 3.2.00.01c.ii and 743 3.2.00.01d.
- When ITAAC Index Nos. 742 and 743 are closed, there will only be two open HFE ITAAC remaining, ITAAC Nos. 3.2.00.01e and 3.2.00.02 (ITAAC Index Nos. 744 and 745, respectively) also have not been closed by the licensee. These ITAAC are both related to the design implementation activities described in NUREG-0711. The design implementation plan (DI IP) is an NRC approved Tier 2* document that describes precisely how SNC will provide evidence sufficient to close the associated ITAAC. Design implementation activities are the final HFE activities to be completed prior to the 10 CFR 52.103(g) finding. In other words, nearly all of the work associated with NRC approved Tier 2* HFE implementation plans is already complete.

Given Because of the advanced nature of the HFE design, it is unlikely for VEGP Units 3 and 4, the staff had to consider the possibility that there will become future changes to any 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 ~~has~~ remains not already been fully implemented, therefore, the number of any HFE changes that related to unimplemented portions of the program would be considered under this LAR are expected to be few, if any. Additionally, limited to that plan. Because the ITAAC remain part of the licensing basis of VEGP Units 3 and 4 until the Commission finding pursuant to 10 CFR 52.103(g) that the acceptance criteria of all ITAAC have been met. If, if SNC made changes to the ITAAC aspects of the program following their completion of the corresponding ITAAC and prior to the 10 CFR 52.103(g) finding, SNC would be required to request NRC approval of those changes and would

Commented [HD58]:
HOIB:

I revised the discussion that accounted for the advanced nature of the HFE program because it did not account for a scenario whereby SNC would make changes to already completed and inspected aspects of the program.

Please review the revision to see whether it is acceptable to you. What it says now is that, for cases where SNC would make changes to the already completed parts of the program, SNC would be subject to Criterion 2, plus re-closure/ re-verification of the ITAAC.

Commented [GB59]: This is pre-decisional, although it was communicated to the licensee at the debriefing during the exit meeting. The report will likely be issued mid-August. We may need to update this depending on the timing.

I'd rather leave it in here if we can because it illustrates just how far along AP1000 is, but this can be reworked if this is inappropriate to include at this time.

In fact, the argument probably stands alone without the second bullet.

Commented [GB60]: I discussed this with PM, Don Habib on 7.10.18. We decided to leave this in the draft for now. If OGC has an objection, we can rework it at that time. It is likely that the inspection report will be issued by that time and we can replace this bullet with a reference to the complete report.

Commented [GB61]: This looks redundant, but I promise you it's not. It drives everyone nuts every time I write it (including me), but it needs to be this way.

Commented [WJ62]: The likelihood of changes is not a basis for approving the amendment.

~~be required to re-submit~~resubmit closure notices for ~~those ITAAC~~ for verification by NRC. ~~The ITAAC provide additional assurance that the acceptability of changes to previously approved aspects of the program would be subject to staff verification.~~

Commented [HD63]: HOIB: Is this insert acceptable?

~~The staff finds that~~For the advanced nature reasons described above, including the acceptability of Criterion No. 2 and the accompanying implementation guidance, as revised by SNC in its supplement dated August 3, 2018, and the HFE design at-related ITAAC included in Appendix C of the VEGP Units 3 and 4 inherently limits the type of changes, as well as the consequences to any changes that are not reviewed by the NRC. ~~In addition~~COLs, the staff finds that the controls described in the LAR submittal, in conjunction with the RAI response in Enclosure 13, provide an adequate method for screening Tier 2* HFE changes for treatment like Tier 1 or Tier 2 changes. This departure evaluation process described in LAR-17-037 provides reasonable assurance that ~~prior NRC approval would be required for any changes to the safety-significant departures from~~ Tier 2* HFE information of safety significance will be treated appropriately using the change process described in LAR-17-037 and its supplements ~~related to HFE.~~

Commented [WJ64]: The conclusion does not clearly state that Tier 1-equivalent changes will be identified as such. The text "treatment like Tier 1" is close to the mark with regard to the need for prior NRC review and approval. It is not clear whether the staff relied upon the 50.59-like process as part of its acceptance of the proposal with regard to Tier 1-equivalent information.

Arguably, this is the only area where a position that the action is applicable only to Vogtle has any substance.

Commented [WJ65]: This summary does not state that the proposal clearly identifies changes to Tier 1-equivalent information. Given the improper reliance on the 50.59-like process in much of the discussion, it appears that the overall conclusion is based on that inappropriate basis.

3.1.9 SUMMARY OF TECHNICAL EVALUATION

For the reasons discussed above, the staff finds that the proposed Tier 2* departure evaluation process and screening criteria in License Condition 2.D.(13) provide reasonable assurance that any future safety-significant departures from Tier 2* information will continue to require prior NRC approval. Therefore, the staff finds the proposed changes to be acceptable. As previously noted, the staff review and conclusions are specific to the VEGP Units 3 and 4. The staff did not consider, and the conclusions of the review do not apply to, other designs certified ~~and/or~~ other combined licenses issued under 10 CFR Part 52, including other AP1000 combined licenses. ~~Other certified designs have different Tier 2* information than that for the AP1000 certified design. Other COLs that reference the AP1000 design may contain different Tier 2 and Tier 2* information.~~

3.2 EVALUATION OF EXEMPTION

The regulations in Section 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. Paragraph VIII.B.5.a provides the basis for which licensees may depart from Tier 2 information without NRC approval. The departure may be taken provided the departure does not involve 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 requested exemption would allow departures from Tier 2 information that involve Tier 2* information not meeting any of the new screening criteria provided the departure did not involve a departure from Tier 1 information, the TS, or require a license amendment under Section 2.D.(13) of the license.
- Paragraph VIII.B.6.b. Paragraph VIII.B.6.b requires a licensee who references 10 CFR

Part 52, Appendix D to obtain NRC approval prior to departing from the eight identified categories of Tier 2* matters. (SNC was previously granted an exemption from Item 4 of Paragraph VIII.B.6.b, regarding Fire Areas [ADAMS Accession Number ML15191A128].) The requested exemption would allow application of the Tier 2 change process outlined in VIII.B.5 for qualifying Tier 2* departures for the remaining seven identified categories of Tier 2* matters, based on new screening criteria. 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. Paragraph VIII.B.6.c refers to paragraph VIII.B.6.b for the departure process which requires a licensee who references 10 CFR Part 52, Appendix D to obtain NRC approval prior to departing from the 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 change process outlined in VIII.B.5 for qualifying Tier 2* departures based on new screening criteria. 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, "Specific exemptions," 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 circumstances for which an exemption may be granted. It is necessary for one of these bases 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 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 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's evaluation determined that special circumstances of 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 specific paragraphs and portions of paragraphs of 10 CFR Part 52, Appendix D. 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. 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 change process does not affect physical or cyber security. The existing regulatory processes for changing licensing basis information pertaining to physical security and cyber security are not affected by this change. The change does 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 changes 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 this exemption.

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 II and VIII that describe the change process for Tier 2* information. As stated in SECY-17-0075 (Reference xx), the purpose of the Tier 2* designation is to control certain information which the staff has determined to have safety significance commensurate with Tier 1 information. In the final rule certifying the AP1000 design, NRC described Tier 2* information as including "...certain significant information [that] only exists in Tier 2 [that] the Commission does not want [...] to be changed without prior NRC approval" (71 FR 4474, Reference xx). Accordingly, the underlying purpose of requiring prior NRC approval for departures from Tier 2* information is to prevent potentially safety-significant changes to plant-specific DCD Tier 2 information without prior NRC review and approval. However, compliance with 10 CFR Part 52, Appendix D, Section VIII, B.6.a., currently requires the licensee to obtain NRC approval for any change to Tier 2* information, including changes having no more than a minimal impact to safety.

Special circumstances are present in the particular circumstances discussed in LAR-17-037 because the application of the change control process provided in Section VIII.B.6.b and c—under which NRC approval is required for any change to Tier 2* information, even if the change has a minimal 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 intent of the rule, that is, NRC prior approval of a safety significant change, would still be achieved. The license condition granted under this LAR does not affect, or allow to be affected, 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 applicable regulatory requirements will continue to be met. 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 exist.

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 NRC 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, [Reference xx](#)). 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 xx](#)). Some of the issues discussed in the public comments do not specifically pertain to the proposed NSHC determination. However, the NRC staff has addressed both the issues within the scope of the proposed NSHC and those that are not within the scope. A summary of the comments and the NRC staff responses appears below.

General Comments and Observations

(1) *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 was 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.

(1) *NRC Response*

NRC Response

~~The staff agrees with both comments.~~ LAR 14-008, "Request for Exemption and License Amendment regarding Changes to Tier 2* Information," dated August 7, 2014 (Reference xx, ML14219A579) 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 screening criteria in Section 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 xx and xx, ML14324A077 and ML14349A624). LAR-17-037 proposes a different screening approach than the approach previously proposed by SNC in LAR 14-008.

This LAR provides a different approach to evaluating departures from Tier 2* information in the Vogtle UFSAR. The resulting license amendment resulting from this LAR applies to only two COLs under a single licensee and does not apply to other licensees or plants. Because this license amendment differs from current regulation, exemptions are being granted with issuance of the amendment.

(4)(2) Public Comment

(2)(1) NRC Response

B.1 Cover Letter:

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

(2) NRC Response

Enclosure 1 of LAR-17-037 (Reference XX) 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 nonsafety-significant departure not requiring 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. For example, a departure not requiring prior NRC approval can be implemented without the licensee's preparation and the staff's review of a LAR. The staff considers it reasonable to conclude that the administrative burden associated with certain previously approved LAR departures, such as those identified in the LAR, would have been reduced, and possible future LARs would be reduced if prior NRC approval would not be required.

(3) 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.

(3) NRC Response

The scope of SECY-17-0075 is limited to current Commission policy regarding Tier 2* implementation for future design certifications. 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. As such, SECY-17-0075, which provides a comprehensive summary of past and current NRC policy and regulation relevant to Tier 2* information, has only limited applicability to the current decision. 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. The staff notes that the background section of SECY-17-0075 provides a comprehensive summary of past NRC policy and regulation relevant to Tier 2* information, which was cited in this SE.

Commented [WJ66]: I strongly disagree. A key point made by SECY-17-0075 is that it is the intent of Tier 2* to be equivalent to Tier 1 information.

In reviewing the LAR, the staff has kept the Commission informed of the staff review and decisions regarding this LAR and exemption.

(4) 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 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).

(4) NRC Response

As part of the staff review, the staff requested additional information (see RAI 17-037-2) for some Tier 2* information related to CVS piping inside containment that is non-ASME Code piping subject to additional requirements for design, fabrication, examination, inspection, and testing that did not clearly align into one of the 24 Tier 2* topics identified under 10 CFR Part 52, Section VIII.B.6. SNC's response dated April 6, 2018 (Reference xx), clarified that this information was included under the Tier 2* related to ASME Code, Section VIII.B.6.(c)(2), and that the itemized listing of all Tier 2* information in AP1000 DCD Introduction Table 1-1 (Reference xx, ML11171A303) 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 screening criteria in Section VIII.B.5, to be applied to any prospective Tier 2* change that is not determined to require prior NRC approval under the new criteria. The two sets of criteria—combined as described in the LAR—provide a lower bound for the Tier 2* departures that are safety significant and require prior NRC approval. As proposed under this LAR, there is reasonable assurance that a prospective departure that would not require prior NRC approval as determined through screening, would not be safety significant.

(5) 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 52, Appendix D)

It is the commenters 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.

(5) NRC Response

SNC's significant hazard consideration for this LAR, as presented in Enclosure 1, Section 4.3, of its December 21, 2017, submittal, focuses on the direct consequences resulting from implementation of this LAR. Because this LAR only affects SNC administrative processes for evaluations and decision-making about prospective Tier 2* departures, the staff agrees with the SNC statements about the lack of direct impacts. However, the staff also considered it appropriate to consider the indirect impacts from this LAR. Specifically, implementation of this LAR authorizes SNC to implement certain Tier 2* changes without prior NRC approval, and it is appropriate for the staff to consider the impacts resulting from these changes. In considering these indirect impacts, the staff found the conclusions of SNC's significant hazards consideration valid because the impacts from any Tier 2* departure made without prior NRC approval would be bounded by the Tier 2 screening criteria in Appendix D of 10 CFR Part 52, Section VIII.B.5. Application of these criteria would assure that any authorized change made without prior NRC approval would meet the standards for significant hazards consideration in 10 CFR 50.92.

The staff agrees with

the commenter about this LAR not being enveloped by the examples identified in the No Significant Hazards Consideration 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 enveloping all determinations. The rule also includes examples that of amendments considered likely to involve significant hazards considerations. The staff considers the two lists to be only examples, and has reasonably concluded that the two lists combined do not represent a complete listing of all possible amendments.

(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 staff agrees with the commenter's statement that the proposed license condition is different from the change processes in 10 CFR Part 52, Appendix D. As noted in Section 3.2 of this SE, approval of this LAR requires exemptions from specific regulatory requirements involving the change processes for Tier 2* information in the VEGP Units 3 and 4 UFSAR. The staff also agrees that approval of this LAR and granting of the associated exemptions is a different approach than previously used regarding the Tier 2* change process, and is keeping the Commission informed on how this LAR relates to current policy. Current NRC policy and regulation regarding the Tier 2* departure requirements was developed without the benefit of actual experience in COL construction and licensing. Approval of this LAR is informed by the license amendment experience for the VEGP Units 3 and 4 COLs described by SNC in the LAR. The Commission is not changing its current overall policies or regulations regarding the Tier 2* change process. Experience resulting from implementation of the proposed screening 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" (ML16061A451, Reference XX). Specifically:

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

Commented [WJ67]: It may be true that the Commission is not changing its *overall* policy, but that's not the same as saying this action is consistent with that overall policy.

- In the staff review, the staff did not identify any aspect of the proposed license condition language that is not clear or open to different interpretations.
- The screening process described in the proposed license condition is not already addressed by (i.e., duplicative of) an existing rule, requirement, order, or regulation.
- The proposed license condition is not open ended. Under the proposed license condition, implementation of the proposed screening process would be required prior 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 continue 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 the 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*

Public Comment

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 only nonsafety significant changes to Tier 2* information, and the staff finds it reasonable that with this LAR, future LARs involving only nonsafety-significant Tier 2* departures could be avoided, 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 ~~3.4~~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 is necessary to allow 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. 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 of those changes would be limited to those having impacts bounded by the consequences allowed under 10 CFR Part 52, Appendix VIII, Section B.5, ~~for which the~~ The licensee may already ~~perform~~make such changes without prior NRC approval. Such changes would involve no significant hazards consideration, no significant change in the types or significant increase in the amounts of any effluents that may be released offsite; and no significant increase in individual or cumulative occupational radiation exposure. 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 Section 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 ~~an exemption~~exemptions from specific regulations as cited in Section ~~3.2~~ of the SE.

The staff has concluded, 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) there is reasonable assurance that 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) ~~letter from~~, Southern Nuclear Operating Company, dated December 21, 2017 (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 Additional Information \(RAI\) Transmittal for Vogtle Units 3 and 4 License Amendment and Exemption: Changes to Tier 2* Departure Evaluation Process \(LAR-17-037 \(RAI LAR 17 037 1\),037S5\), Southern Nuclear Operating Company](#), dated ~~March 7~~[August 10](#), 2018 (ADAMS Accession No. ~~ML18066A747~~[ML18222A553](#)).
7. [SECY-17-0075, "Planned Improvements in Design Certification Tiered Information Designations,"](#) dated July 24, 2017 (ADAMS Accession No. ML16196A321).
8. [Request SECY-95-023, "Proposed Design Certification Rules for the Advanced Boiling Water Reactor \(ABWR\) and System 80+ Standard Designs,"](#) dated February 1, 1995 (ADAMS Accession No. ML003708055).
9. [SRM-SECY-95-023, "Proposed Design Certification Rules for the Advanced Boiling Water Reactor \(ABWR\) and System 80+ Standard Designs,"](#) (ADAMS Accession No. ML003708194).
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."
13. ASME Standard QME-1-2007 Edition, "Qualification of Active Mechanical Equipment Used in Nuclear Power Plants."
14. 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.
15. NUREG-0711, "Human Factors Engineering Program Review Model," Revision 2, 2004.
16. 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).
17. AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A500).
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).
Additional Information (RAI) Transmittal
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-17-037 (RAI- 12-003) (TAC No. RP9403), October 25, 2012 (ADAMS Accession No. ML12278A381).
- 7-24. 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-17-037-2), dated April 12, 2018 13-001, 010, 011, 012, AND 013) (TAC Nos. RP9468, 9469, 9453, 9454, and 9455), December 6, 2013 (ADAMS Accession No. ML18102B682ML13326A871).

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).

28. Core Operating Limits Report [info to be provided]

29. 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).

8-30. 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).

9-31. 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).

40. 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).

11.1. 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).

12. Audit Plan—Vogtle Electric Generating Plant, Units 3 and 4 (LAR-17-037), dated June 12, 2018 (ADAMS Accession No. ML18156A340).

13.1. Audit Summary—Vogtle Electric Generating Plant, Units 3 and 4 (LAR-17-037), dated June 25, 2018 (ADAMS Accession No. ML18164A261).

14. Vogtle Electric Generating Plant, Units 3 and 4 Updated Final Safety Analysis Report, Revision 7 and Tier 1, Revision 6, dated June 15, 2018 (ADAMS Accession No. ML181799A234).

15.1. AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A500).

16.1. NUREG-1793, "Final Safety Evaluation Report Related to the Certification of the AP1000 Standard Design," dated December XX, 2011 (ADAMS Accession No. ML112061231).

17.32. NEI 96-07, "Guidelines for 10-CFR-50.59 Evaluations," dated Implementation," Revision 1, Nuclear Energy Institute, November 2000. (ADAMS Accession Number No. ML003771157).

Commented [HD68]:

SRSB: Can you provide an ML# for this reference from page 15? It is also referenced in the DCD/UFSAR, but I could not find it in ADAMS.

Commented [HD69]:

SRSB to advise on referencing this "report."

- ~~48-33.~~ Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments" (ADAMS Accession No. ML003759710).
- ~~19.~~ 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 Analysis," dated June 14, 2011 (ADAMS Accession No. ML11168A040).
- ~~20.1.~~ SECY 17-0075, "Planned Improvements in Design Certification Tiered Information Designations," dated July 24, 2017 (ADAMS Accession No. ML16196A321).
- ~~34.~~ 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)
- ~~35.~~ 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).
- ~~36.~~ 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).
- ~~37.~~ 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).
- ~~24-38.~~ VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017002 and 05200026/2017002, dated August 10, 2017 (ADAMS Accession No. ML17226A034).
- ~~22-39.~~ VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017004 and 05200026/2017004, dated February 14, 2018 (ADAMS Accession No. ML18045A476).
- ~~40.~~ Request for Additional Information (RAI) Transmittal for Vogtle Units 3 and 4 LAR-17-037 (RAI LAR-17-037-2), dated April 12, 2018 (ADAMS Accession No. ML18102B682).
- ~~41.~~ WCAP-17179-P and WCAP-17179-NP, "AP1000 Component Interface Module Technical Report," Revision 2, July 2010 (ADAMS Accession No. ML102170259).
- ~~42.~~ 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).
- ~~43.~~ NEI 98-03, "Guidelines for Updating Final Safety Analysis Reports," Revision 1, June 1999 (ADAMS Accession No. ML003779028).
- ~~23-44.~~ NRC Inspection of Westinghouse Electric Company Report Number 99900404/2017-202, dated Pending as of 7 July 30 ~~18~~, 2018 (ADAMS Accession No. ML18207A243).

45. 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> 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 (Accession Number (ADAMS Accession No. ML18228A838).

~~24. ML15101A129).~~

Attachment 4

Markup of August 21, 2018 Draft Safety Evaluation

By John Segala

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS
RELATED TO AMENDMENT NOS. [XXX AND XXX]
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](#) Agencywide Documents Access and Management System (ADAMS) Accession No. ML17355A416), and supplemented by letters dated April 6, May 11, June 18, August 3, and August 10, 2018 ([References 2, 3, 4, 5](#), and 6 ADAMS Accession Nos. ML18096B328, ML18131A263, ML18169A431, ML18215A461, and ML18222A553, respectively), 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 implement a criteria-based evaluation process to determine whether a proposed departure from Tier 2* information in the [Updated Final Safety Analysis Report \(UFSAR\)](#) would require prior NRC approval.

Pursuant to Section 52.63(b)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR), 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 allow SNC to implement the criteria-based departure process described in the license condition

Commented [SJ1]: (1) Throughout the safety evaluation (and in the license condition wording) we seem to use UFSAR and plant-specific DCD interchangeably. We should make sure we are appropriately using these terms throughout the safety evaluation as well as throughout the license condition wording. In the LAR, it states "...in the plant-specific Tier 2 DCD portion of the UFSAR..."

in place of the process provided in the regulations that requires prior NRC approval prior to any departure from Tier 2* information. The criteria-based process in the license condition would apply to departures that involve only Tier 2* information or a combination of Tier 2* and Tier 2 information. However, under this license amendment, any departure that involved changes to Tier 1 information or technical specifications (TSs) would still require prior NRC approval, regardless of whether it also involved a change to Tier 2* information. The staff's review of the exemption request, as well as the LAR, is included in this safety evaluation.

The supplements dated April 6, May 11, June 18, August 3, and August 10, 2018, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (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).

2.0 REGULATORY EVALUATION

LAR-17-037 proposes License Condition 2.D.(13) to implement a criteria-based evaluation process to determine whether a proposed departure from Tier 2* information in the UFSAR would require prior NRC approval. To find this LAR acceptable, the staff would will need to conclude with reasonable assurance that the proposed license condition evaluation process provides reasonable assurance that prior NRC review and approval will be required for safety significant departures to Tier 2* information. is adequate to require prior NRC approval for safety significant changes to Tier 2* information.

Commented [SJ2]: See previous comment (1)

Commented [SJ3]:

The NRC 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.

Commented [SJ4]: See previous comment (1)

10 CFR Part 52, Appendix D, Section VIII, "Processes for Changes and Departures," 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.

Commented [SJ5]: See previous comment (1)

Commented [SJ6]: See previous comment (1)

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a combined license (COL). The proposed change involves the addition of a new COL License Condition 2.D.(13) to specify the process for evaluating departures from plant-specific Tier 2* information and departures from Tier 2 information that involve a change to Tier 2* information in the UFSAR. The regulatory processes affected are specified in 10 CFR Part 52, Appendix D, Section VIII, Paragraphs VIII.B.5 and VIII.B.6 and would be subject to the conditions and limitations set forth in new License Condition 2.D.(13). Therefore, NRC approval, including the granting of exemptions, is required prior to making the plant-specific proposed change in this LAR.

Commented [SJ7]:

10 CFR 52.7, "Specific Exemptions," specifies that the Commission may grant exemptions from the requirements of Part 52. In 10 CFR 52.7 points to the requirements listed in 10 CFR 50.12, "Specific exemptions," for specific exemptions. Therefore, any exemption from requirements in Appendix D to 10 CFR Part 52 must meet the requirements of 10 CFR 50.7 and 50.12.

Commented [SJ8]: (2) Shouldn't this be 52.7?

10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion (GDC) 1, "Quality standards and records," requires that structures, systems,

~~and components (SSCs) important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. The proposed exemption involves the change process for Tier 2* material involving the codes and standards used for design, fabrication, erection, and testing for SSCs. Therefore, this criterion is considered in the evaluation.~~

~~10 CFR Part 50, Appendix A, GDC 2, "Design bases for protection against natural phenomena," requires SSCs to be designed to withstand the effects of natural phenomena, and requires the SSC designs to reflect appropriate consideration of the most severe of the natural phenomena historically reported for the site and surrounding area.~~

~~10 CFR Part 50, Appendix A, GDC 4, "Environmental and dynamic effects design bases," requires SSCs to be designed to accommodate the effects of and to be compatible with environmental conditions associated with normal operation, maintenance, testing, and accidents.~~

~~10 CFR Part 50, Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants," describes earthquake engineering requirements related to nuclear power plants.~~

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

~~10 CFR 50.34(f)(2)(iii) requires that a licensee provide, for Commission review, a control room design that reflects state of the art human factor principles prior to committing to fabrication or revision of fabricated control room panels and layouts.~~

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

- SECY-17-0075, "Planned Improvements in Design Certification Tiered Information Designation," dated July 24, 2017 (Reference xx, ML16196A321) describes the regulatory and policy background regarding Tier 2* information.
- SECY-95-023, "Proposed Design Certification Rules for the Advanced Boiling Water Reactor (ABWR) and System 80+ Standard Designs," dated February 1, 1995 (Reference xx, ML003708055), as approved by SRM-SECY-95-023, "Proposed Design Certification Rules for the Advanced Boiling Water Reactor (ABWR) and System 80+ Standard Designs," (ML003708194) acknowledges that an opportunity for public comment is provided for nonsafety departures of Tier 2*.
- COMSECY-94-024, "Implementation of Design Certification and Light-Water Reactor Design Issues," dated May 31, 1994 (Reference xx, ML003708079), 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 xx), authorizes the use of the Tier 2* designation.

Commented [SJ9]: (3) The NRC staff previously concluded in the AP1000 DC and Vogtle COL reviews that all of the information in Tier 2 (including the Tier 2* information) met the NRC's regulations and applicable guidance. This LAR is only focused on what change control process is applied to the information designated as Tier 2*, so these regulations and guidance should not be included as the regulatory basis for the staff's safety finding in this safety evaluation.

Commented [SJ10]: See previous comment (3)

- “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 xx” (Reference xx), lists American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (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 xx), 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 xx), 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 xx), 2007, as updated. Also, commonly known as the “Standard Review Plan” (SRP).~~
- ~~NUREG 0711, “Human Factors Engineering Program Review Model,” Revision 2 (Reference xx), 2004.~~

Commented [SJ11]: See previous comment (3)

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 screening criteria to determine whether a proposed Tier 2* departure would qualify to utilize the Tier 2 departure evaluation process. Qualifying Tier 2* departures would be further evaluated under the existing Tier 2 departure evaluation process. Non-qualifying Tier 2* departures would continue to require prior NRC approval. Under the process described in this LAR, any safety significant Tier 2* departure would require prior NRC approval.

Commented [SJ12]:

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 identify the exemptions associated with the LAR;
- Exempts SNC from certain provisions of 10 CFR Part 52, Appendix D, Sections 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.

Commented [SJ13]: See previous comment (1)

The license condition proposed by this LAR, as updated in the supplement dated August 3, 2018, is replicated below:

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

Commented [SJ14]: See previous comment (1)

(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 involving a change to or departure from Tier 2* information; except for departures that:

1. Involve design methodology or construction materials that deviate 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,

Commented [SJ15]: See previous comment (1)

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,

Commented [SJ16]: See previous comment (1)

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 methods 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 methodology described in UFSAR Subsections 15.6.5.4B.2.2 or 15.6.5.4B.2.3,

Commented [SJ17]: See previous comment (1)

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,

Commented [SJ18]: See previous comment (1)

8. Result in a change to the design of the steel faceplates, internal trusses, Nuclear Island or the Shield Building, including SC-to-reinforced concrete (RC) connections,

Commented [SJ19]: (5) SC should be defined as [steel concrete] with brackets

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

Commented [SJ20]: See previous comment (1)

(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*;

Commented [SJ21]: See previous comment (1)

Commented [SJ22]: See previous comment (1)

(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 under and in compliance with the Tier 2 change processes 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:

Commented [SJ23]: (6) This should not be "may". This should be a "must" or a "shall". Also, shouldn't "...under and in compliance with the..." just be "...in compliance with the..."

1. The departure or change to Tier 2* information shall remain Tier 2* information in the plant-specific DCD.

Commented [SJ24]: See previous comment (1)

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, "~~Processes for Changes and Departures~~," 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 a LAR for any proposed change to Tier 2* information. This requirement for prior NRC approval for changes to Tier 2* information is unconditional; it does not involve evaluation of any prospective change against any criteria and does not consider the safety importance of the change that is being considered. This contrasts with 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. Under this LAR, the Tier 2* process would no longer require prior NRC approval in all cases and instead ~~would~~

resemble the Tier 2 departure process under which SNC would evaluate each departure to determine whether prior NRC approval is required.

Commented [SJ25]:

The staff reviewed the SNC initial submittal for LAR-17-037 dated December 21, 2017, and its supplements. As described in Enclosure 1 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:

Commented [SJ26]:

- Is the Tier 2* information adequately addressed in the VEGP 3 and 4 Plant-specific Tier 1 DCD or VEGP 3 and 4 ~~Combined License (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?

The results of SNC's analysis, as updated in its August 3, 2018, supplement, are summarized in Enclosure 5 of the LAR. The SNC analysis determined that 8 of the 24 Tier 2* topics were adequately covered by existing Tier 1 information, covered by another regulation or the combined license, and/or did not rise to the level of Tier 1 safety significance. Under this LAR, SNC did not identify any additional screening criteria for these Tier 2* topics, and the LAR intends that, for any departure under these topics, the determination of whether the departure involves a safety-significant matter could be adequately addressed by applying the Tier 2 screening criteria in 10 CFR Part 52, Appendix D, Section VIII.B.5. For 1 of the 24 Tier 2* topics related to fire areas, no criteria are necessary because the staff previously approved a license amendment to re-designated this Tier 2* topic as Tier 2 information (see Section 3.1.2 of this SE).

Commented [SJ27]: These are the findings that I think the technical staff needs to make for each of the 8 Tier 2* topics for which SNC did not propose any screening criteria. See comment (11) below.

Since SNC did not propose screening criteria, they have pre-determined in this LAR that these topics (1) are already covered by Tier 1 which would require submittal of an exemption request for NRC review for departures to the topic, (2) are already covered by 50.55a which would require submittal of an alternative to the code for NRC review, and/or (3) do not contain the same safety significance as Tier 1 information so can be treated as Tier 2 information and be evaluated against the Tier 2 screening criteria in VIII.B.5 to determine the need for NRC review.

The Tier 2* Analysis Results Table in Enclosure 5U identifies whether the Tier 2* topics are adequately addressed in Tier 1, covered by 10 CFR 50.55a, and/or adequately addressed by VII.B.5.

Commented [SJ28]:

Commented [SJ29]: (8) This should be 15 instead of 16. Page 12 of this safety evaluation and the associated table list 15 Tier 2* topics in this category. In addition, the bottom of page 9 of 28 of Enclosure 1U of the LAR lists 15.

For the remaining 16 of the 24 Tier 2* topics, the SNC analysis, as updated in its August 3, 2018, supplement, identified additional criteria to be included in the proposed

screening process, to determine whether the change would require prior NRC approval (i.e., a license amendment).

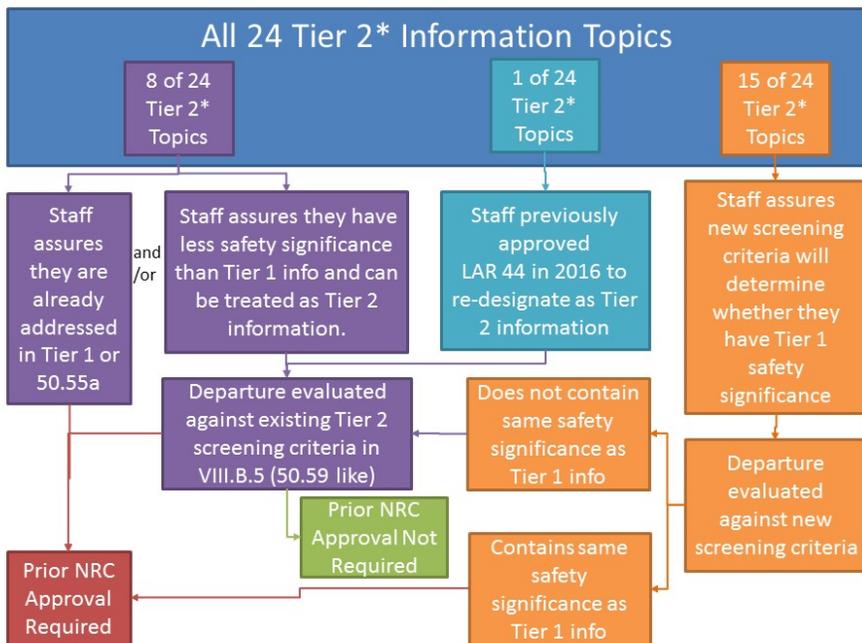


Figure 1

The staff review, summarized in the following sections, confirmed the results of the SNC analysis.

In conducting the review, as shown in Figure 1, the staff focused on assuring that the new license condition evaluation process provides reasonable assurance that prior NRC review and approval will be required for safety significant departures to Tier 2* information. For the 8 of the 24 Tier 2* topics, the staff focused on assuring that these topics (1) are already covered by Tier 1 which would require submittal of an exemption request for NRC review for departures to the topic, (2) are already covered by 50.55a which would require submittal of an alternative to the code for NRC review, and/or (3) do not contain the same safety significance as Tier 1 information so can be treated as Tier 2 information and departures can be evaluated against the Tier 2 screening criteria in VIII.B.5 to determine the need for NRC review. For the 15 of the 24 Tier 2* topics, the staff focused on assuring that the proposed new screening criteria provide reasonable assurance that SNC will appropriately determine whether departures to these topics contain the same safety significance as Tier 1 information and screening criteria would continue

Commented [SJ30]: (9) This figure is my understanding of how the license condition evaluation process works and the evaluation/conclusions that the NRC staff should be making in the safety evaluation.

Commented [SJ31]: (10) This is the overall conclusion that the staff should make in this safety evaluation, but is also dependent on the staff making the conclusions in both comments (11) and (12) below.

Commented [SJ32]: (11) This is the conclusion that the technical staff should make for each of these 8 Tier 2* topics.

Since SNC proposed no screening criteria for these topics, the staff should confirm that these topics (1) are already covered by Tier 1 which would require submittal of an exemption request for NRC review for departures to the topic, (2) are already covered by 50.55a which would require submittal of an alternative to the code for NRC review, and/or (3) do not contain the same safety significance as Tier 1 information so can be treated as Tier 2 information and be evaluated against the Tier 2 screening criteria in VIII.B.5 to determine the need for NRC review.

Commented [SJ33]: (12) This is the conclusion that the technical staff should make for each of these 15 Tier 2* topics.

Since SNC proposed screening criteria for these topics, the staff should confirm that the proposed new screening criteria provides reasonable assurance that SNC will appropriately determine whether departures to these topics contain the same safety significance as Tier 1 information.

Commented [SJ34]: (13) To aid in clarity, I think the SER starting on page 14 should be divided into two sections, one for the 8 topics and one for 15 topics to align the staff's evaluations with the associated findings/conclusions that need to be made (see previous comments 10, 11, and 12).

to require prior NRC approval for any safety significant changes to Tier 2* information and would protect that Tier 2* information having safety significance commensurate with Tier 1.

The staff review and conclusions ~~are were limited site specific~~ to the VEGP Units 3 and 4 COLs. The staff did not consider, and the conclusions of the review do not apply to, the AP1000 design in general or other certified designs, or other combined licenses issued under 10 CFR Part 52, including other AP1000 combined licenses.

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 Section 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 Section VIII.B.5 are met, 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 per Section VIII.B.6 of the Part 52 appendices.

SECY-17-0075, “~~Planned Improvements in Design Certification Tiered Information Designations,~~” discusses how Tier 2* information is intended to have substantial safety significance, commensurate with information designated as Tier 1. However, one 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 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 nonsafety-specific changes to Tier 2* information. SNC asserted that it was submitting this LAR and exemption request in order to mitigate the regulatory inefficiency associated with this issue. SNC also identified, in Enclosure 1, four examples of past Tier 2* departures that did not make safety significant changes, but nonetheless required prior NRC approval through a 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 proposed departures would have concluded with a determination that the proposed changes were not safety significant and could therefore have been processed as a departure

Commented [SJ35]: (14) OGC may be able to come up with better wording, but I think that no matter what we say here the NRC would not have a basis to deny the same LAR being submitted in the future by another AP1000 COL licensee. Since the information designated as Tier 2* is different across all of the certified designs, I do believe that an ESBWR COL for instance could not adopt this LAR as is since they would need to customize the LAR to be applicable to the specific ESBWR Tier 2* topics.

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 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 nonsafety-significant changes.

In performing the technical review of the proposed changes in LAR-17-037 to the Tier 2* departure process, the NRC staff considered sections of the VEGP Units 3 and 4 UFSAR (Reference xx), as well as portions of the AP1000 DCD, Revision 19 (Reference xx). The staff also considered NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design," and its supplements (References xx, xx, and xx, ADAMS Accession Nos. ML042540268, ML060330557, and ML112061231); and NUREG-2142, "Final Safety Evaluation Report Related to the Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4" (Reference xx), documenting the staff's technical evaluation of the AP1000 reactor design certification (DC) application and VEGP Units 3 and 4 COL application, respectively. ~~The staff reviewed the licensee's proposed changes in LAR-17-037 to evaluate the impact on the overall safety of the plant.~~

Commented [SJ36]: I don't think this is needed here.

Tier 2* Departure Process

The regulations applicable to the departure process for changing 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 Section VIII.B.6 of this appendix. This designation expires for some Tier 2* information under paragraph VIII.B.6."
- Sections VIII.B.6.b and c requires a licensee referencing the AP1000 certified design to receive prior NRC approval prior to departing from Tier 2* information in its UFSAR, and states that certain Tier 2* information, specifically that information identified under 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.”

- In COMSECY-94-024, which informed the Commission of key issues and areas of interest identified in two ongoing [design certification DC](#) reviews, the ABWR and the ABB-Combustion Engineering System 80+, 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 asserts that](#) more recent licensing experience indicates that imposing a requirement of a LAR for any departure from Tier 2* information has resulted in some LARs for minor changes without safety significance.

- For example, in Enclosure 1 of its December 21, 2017, LAR submittal, 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 a 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 safety evaluations [\(SEs\)](#) for License Amendment Nos. 3, 2, 15, and 45, respectively (References xx, xx, xx, and xx, ADAMS Accession Nos. ML12297A210, ML12278A381, ML13326A871, and ML15335A060, respectively).
- 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 described Enclosure 1 of the LAR, [SNC asserted that the](#)s proposed process would still require that any safety significant Tier 2* departure would require prior NRC approval. The staff evaluation of the LAR, which 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, Sections VIII.B.5.b and c, also concludes that application of the proposed screening criteria would require prior NRC approval for safety significant departures from Tier 2* information.

The Tier 2* screening process described in LAR-17-037 has similarities to the Tier 2 screening process described in 10 CFR Part 52, Appendix D, Section VIII.B.5. Both processes use screening criteria to determine whether prior NRC approval is required for a particular UFSAR change. [However, the newly proposed screening criteria are also used to determine whether the Tier 2* departure contains the same safety significance as Tier 1 information.](#) The proposed Tier 2* process requires screening using the new criteria followed by screening using the

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Commented [SJ38]: Should this state: ...in Enclosure 1U of the August 3, 2018, LAR submittal...?

Commented [SJ39]: (15) Referencing the NRC staff’s safety evaluations at the end of this paragraph may imply to the reader that the NRC staff agrees with SNC’s assertion that these four specific previously approved departures from Tier 2* information were not safety significant. Have we confirmed with the cognizant technical staff that they agree?

Commented [SJ40]: (16) Note - This is a general statement in the SECY that was based on initial reviews done by the Tier 2* working group members of many different LARs which supports the general argument that requiring LARs for all departures from Tier 2* information has resulted in some LARs for minor changes without safety significance. However, it does not necessarily mean that the technical staff agrees that the 4 specific departures mentioned in the previous bullet were not safety significant.

existing Tier 2 screening process. Under either process, the licensee would evaluate a prospective departure against a series of criteria, any one of which is sufficient to require prior NRC approval for the departure. In other words, if the departure meets any one of the applicable criteria, the departure would require prior NRC approval.

Commented [SJ41]: (17) I think these paragraphs are not needed and are redundant with the new information I added in comments (10) through (13).

In evaluating this LAR, the staff considered a key distinction between the existing regulatory departure process for Tier 2* information, under which all departures require NRC approval regardless of their safety significance, with the criteria-based proposed process under this LAR. In particular, under the proposed process, any changes made to Tier 2* information without prior NRC approval would not allow for public comment on the no significant hazards consideration or an opportunity for a member of the public to request a hearing. This contrasts with the current process for departures from Tier 2* information under which all departures would be subject to prior NRC approval, public comment on the no significant hazards consideration, and an opportunity request for a member of the public to request a hearing. In SECY-95-023, which proposed design certification rules for the ABWR and System 80+ designs, the staff acknowledged that, “[a]lthough Tier 2* changes may not result in unreviewed safety questions, the public will be afforded an opportunity to challenge the changes. . .” In other words, the Part 52 change process for Tier 2* information would allow for public comment on the no significant hazards consideration and result in an opportunity for a member of the public to request a hearing public comment opportunities for nonsafety departures (see page 17, Reference xx, ML003708055).

The staff considers a change to this approach acceptable because, under this LAR, any Tier 2* departure made without prior NRC approval would not involve a safety-significant change. Additionally, the public has had an opportunity to comment on the no significant hazards consideration and request a hearing on this LAR. This approach aligns with the current departure process for Tier 2 information, under which only departures having a “more than minimal” impact to safety require prior NRC approval, and for which the public is afforded opportunities to comment on the no significant hazards consideration and request a hearing.

Commented [SJ42]: (18) When the NRC receives a LAR, my understanding is that we issue a FRN to allow for public comment on the no significant hazards consideration and an opportunity for a member of the public to request a hearing.

Need for Exemption

The staff recognizes that approving this LAR for the VEGP COLs is a shift from the current NRC approach for the departure process for changing Tier 2* information in the UFSAR of a COL. However, the departure process permitted in approval of this LAR still meets the intent of the current policy and regulation. In particular, as discussed in Section 3.2 of this LAR, the approved process would continue to assure that any safety-significant departures still require prior NRC approval.

The staff determined that implementation of the license condition proposed in this LAR requires a permanent exemption from the current provisions identified in 10 CFR Part 52, Appendix D, regarding plant-specific departures from Tier 2* matters, and regarding plant-specific departures from Tier 2 information that involve a change to or departure from Tier 2* matters. Section 3.2 of this SE summarizes the staff evaluation of the necessary exemptions, which involve the requirement of 10 CFR Part 52, Appendix D, Section VIII.B.6 for prior NRC approval of departures from Tier 2* information and the requirement of 10 CFR Part 52, Appendix D, Section VIII.B.5.a for prior NRC approval of departures from Tier 2 information that involve a change to, or departure from, Tier 2* information.

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Change to UFSAR Footer #Notes

Commented [SJ44]:

This LAR includes a change to the UFSAR, as follows. For each instance in the UFSAR where a page contains Tier 2* information, the 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 potentially result in changes to Tier 2* information where prior NRC approval would not be required. The proposed footer note accurately expresses this scenario where some change 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.

Issuance and Implementation of the License Amendment

The staff's issuance of a license amendment and exemptions associated with this LAR would be applicable to only the VEGP Units 3 and 4 COLs, and is not transferrable to other COLs. This is consistent with current regulation and policy, as reflected in the statement of considerations from the May 12, 1997, final rule for the standard design certification DC of the Advanced Boiling Water Reactor ABWR (62 FR 25800, see page 25808), which clarifies that, ". . . If certain Tier 2* information is changed on a plant-specific basis, then the appropriate modification to the change process would apply only to that plant."

Even though the proposed license condition states that all of the new criteria would apply to any particular departure to Tier 2* information, the SNC analysis identified which of the 24 specific Tier 2* topics listed in Appendix D of 10 CFR Part 52, Sections VIII.B.6.b and c each of the new criteria is intended to apply to. A crosswalk of the criteria and the topics that each is intended apply to appears below.

As summarized in the table, for each of the 15 of the 24 Tier 2* topics, one or more screening criteria were proposed. In these cases, the staff determined that the proposed new screening criteria provide reasonable assurance that SNC will appropriately determine whether departures to these topics contain the same safety significance as Tier 1 information. ~~found reasonable assurance that prior NRC approval would be required for safety significant changes to Tier 2* information by virtue of applying the proposed Tier 2* criterion, the existing Tier 2 screening criteria in Section VIII.B.5, and existing Tier 1 information. SNC did not propose any~~ No screening criteria are proposed for the remaining 9 of the 24 areas Tier 2* topics. For 8 of these 9 topics, the staff concluded that these topics (1) are already covered by Tier 1 which would require submittal of an exemption request for NRC review of departures to the topic, (2) are already covered by 50.55a which would require submittal of an alternative to the code for NRC review, and/or (3) do not contain the same safety significance as Tier 1 information so can be treated as Tier 2 information and departures can be evaluated against the Tier 2 screening criteria in VIII.B.5 to determine the need for NRC review, the existing Tier 2 criteria are sufficient

Commented [SJ45]: See previous comment (14) where OGC may be able to come up with better wording.

Commented [SJ46]: See previous comment (8). I believe that 15 is the correct number (instead of 16) since this is consistent with the associated table below and on bottom of page 9 of 28 of Enclosure 1U of the LAR.

to conclude with reasonable assurance that prior NRC approval would be required for safety significant changes to Tier 2* information. For the final topic, Section VIII.B.6.b, Item 4, "Fire Areas," no criteria are necessary 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 3.1.2 of this SE). For all 24 Tier 2* topics, the staff found that new license condition evaluation process provides reasonable assurance that prior NRC review and approval will be required for departures to safety significant Tier 2* information.

Commented [SJ47]: See previous comments (10) through (12)

Crosswalk of Tier 2* Matters (Topics) in 10 CFR Part 52, Appendix D, Sections VIII.B.6.b and c and LAR 17-037 Criteria

Tier 2* Topics from 10 CFR Part 52, Appendix D, Sections VIII.B.6.b and c	Intended Applicability of Criteria									None
	1	2	3	4	5	6	7	8	9	
VIII.B.6.b (Tier 2* Matters (Topics) Requiring Prior NRC Approval)										
Item 1, Maximum Fuel Rod Average Burn-Up			X							
Item 2, Fuel Principal Design Requirements			X							
Item 3, Fuel Criteria Evaluation Process			X							
Item 4, Fire Areas										N/A*
Item 5, Reactor Coolant Pump Type					X					
Item 6, Small-break loss-of-coolant accident (LOCA) analysis methodology			X							
Item 7, Screen Design Criteria				X						
Item 8, Heat Sink Data for Containment Pressure Analysis										X
VIII.B.6.c (Tier 2* Matters (Topics) Requiring Prior NRC Approval that Revert to Tier 2 after Facility Achieves Full Power)										
Item 1, Nuclear Island structural dimensions										X
Item 2, American Society of Mechanical Engineers Boiler & Pressure Vessel Code (ASME Code) Piping Design and Welding Restrictions, and ASME Code Cases										X
Item 3, Design Summary of Critical Sections	X						X	X	X	
Item 4, American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)-690, 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	X									
Item 5, Definition of Critical Locations and Thicknesses										X

Commented [SJ48]: (19) This * should be defined at the bottom of the table to indicate that this topic has been re-designated as Tier 2 information in a previously approved LAR.

Commented [SJ49]: LAR Enclosure IU on page 11 of 28 states that Criterion 1 is related to critical sections. We should make sure all of the information in this table is consistent with the information on pages 11 and 12 of LAR Enclosure IU.

Crosswalk of Tier 2* Matters (Topics) in 10 CFR Part 52, Appendix D,
Sections VIII.B.6.b and c and LAR 17-037 Criteria

Tier 2* Topics from 10 CFR Part 52, Appendix D, Sections VIII.B.6.b and c	Intended Applicability of Criteria									None
	1	2	3	4	5	6	7	8	9	
Item 6, Seismic Qualification Methods and Standards										X
Item 7, Nuclear Design of Fuel and Reactivity Control System, Except Burn-Up Limit			X							
Item 8, Motor-Operated and Power-Operated Valves										X
Item 9, Instrumentation and Control System Design Processes, Methods, and Standards		X								
Item 10, Passive Residual Heat Removal (PRHR) Natural Circulation Test (First Plant Only)						X				
Item 11, Automatic Depressurization System (ADS) and Core Make-Up Tank (CMT) Verification Tests (First Three Plants Only)						X				
Item 12, Polar Crane Parked Orientation										X
Item 13, Piping Design Acceptance Criteria		X								
Item 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE										X
Item 15, Human Factors Engineering		X								
Item 16, Steel Composite Structural Module Details	X									

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 ~~requires required~~ to submit under 10 CFR Part 52, Appendix D, Section 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.

Commented [SJ50]:

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 ~~technical specification~~ TSs are not subject to this license condition or the exemptions granted 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.”

As described in the following evaluations 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 ~~the this LAR-SNC~~. Therefore, the staff is including a limitation requiring SNC to fully implement the procedural guidance described in Enclosures 1U and 8U of the LAR prior to implementation of the license amendment.

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

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Evaluation of the 15 of the 24 Tier 2* Topics with Screening Criteria

Commented [SJ53]: See previous comment (13)

The following sections describe the staff's evaluation of how (1) the screening criteria in the proposed License Condition 2.D.(13) screening criteria process will result in SNC appropriately determining whether departures to these topics contain the same safety significance as Tier 1 information, and (2) the proposed license condition process will ensure that prior NRC review and approval will be required for safety significant departures to Tier 2* information, continue to provide reasonable assurance that any safety significant change to Tier 2* information would continue to require prior NRC approval or would otherwise receive appropriate regulatory control. ~~The evaluation is organized according to the above-listed 24 categories of Tier 2* topics identified in Sections VIII.B.6.b and VIII.B.6.c.~~

Commented [SJ54]: See previous comments (10) through (12)

- 3.1.1 VIII.B.6.b, Item 1, Maximum Fuel Rod Average Burn-Up
- VIII.B.6.b, Item 2, Fuel Principal Design Requirements
- VIII.B.6.b, Item 3, Fuel Criteria Evaluation Process
- ~~VIII.B.6.b, Item 5, Reactor Coolant Pump Type~~
- VIII.B.6.b, Item 6, Small-Break Loss-of-Coolant Accident (LOCA) Analysis Methodology
- VIII.B.6.c, Item 7, Nuclear Design of Fuel and Reactivity Control System, Except Burn-Up Limit

Commented [SJ55]: (20) Item 5 is also evaluated below, so deleted this one.

The staff reviewed the proposed changes presented in LAR-17-037 in relation to Tier 2* information contained in the fuel system, reactor system, and design basis accident UFSAR information, as well as the Tier 1 and Tier 2 information related to this topic. These five Tier 2* items, consisting of VIII.B.6.b Items 1, 2, 3, and 6, and VIII.B.6.c, Item 7, are addressed by the guidance and bases information presented in Enclosure 1 of LAR-17-037 for screening Criterion No. 3 appearing in the proposed license condition. The majority of these Tier 2* items 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 items as Tier 2* in order to allow improvements to the fuel design to be implemented via the license amendment process instead

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of requiring a license exemption, as would be required for items 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 in 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 screening process would result in the appropriate change process being selected for hypothetical changes. The license condition proposed by SNC in Supplement 4, dated August 3, 2018, would require prior staff approval for any departures which:

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 methods 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 methodology described 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 xx](#)) Question 1, the staff requested additional clarification regarding how the proposed screening process would address potential changes to topical report WCAP-12488, "Fuel Criteria Evaluation Process," ([Reference xx](#)), which is the fuel criteria and evaluation process. Specifically, the staff requested information about whether WCAP-12488 was referenced by [Technical Specification TSs](#) or the methodologies listed in the [Core Operating Limits Report \(COLR\)](#) ([Reference xx](#)) and, if so, how the screening process would address the potential discrepancy with the change process required for [Technical Specification TSs](#) or the methodologies listed in the COLR. In its response dated June 18, 2018 ([Reference xx](#)), SNC stated that "[t]he proposed changes to the Tier 2* evaluation process does not affect the [Technical Specification TSs](#) change control process requirements specified in 10 CFR Part 52, Appendix D, VIII.B.5.a or the specific [Technical Specification 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 [Technical Specification TSs](#) or in the COLR. The staff finds this acceptable since the response clarified how the change processes associated with [Technical Specification TSs](#) or COLR methodologies would not be affected by the proposed change process.

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.

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

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Q for SRSB:

Are you aware of a nonproprietary version of this document (WCAP-14204) that is in ADAMS? I could not find one. The reference in the UFSAR reads:

[Davidson, S. L. (Ed.), "Fuel Criteria Evaluation Process," WCAP-12488-A (Proprietary) and WCAP-14204-A (Non-Proprietary), October 1994.]*

Is it possible that this document appears in a pre-ADAMS archive? It may be necessary to get the document from the other system or Westinghouse and add it to ADAMS.

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Q for SRSB:

Can you provide a more formal title or reference for the COLR document?

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 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. This statement is 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 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 Tier 1.

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 per the NRC-endorsed guidance NEI 96-07, 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 are no proposed screening criteria for changes to Tier 2* information associated with small break ~~loss of coolant accident (LOCA)~~ analysis methodology. Due to the uniqueness of the AP1000 design, 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 screening criteria be included in the Tier 2* departure evaluation process that captures the critical safety aspect of the Tier 2* information for small-break LOCA analysis methodology.

SNC stated in letter dated June 18, 2018, that the Tier 2* information associated with 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 small-break LOCA methodology 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 changes to Tier 2* information associated with safety significant small-break LOCA analysis methodology.

The staff evaluated the nuclear fuel system, reactor system, and design basis accident related items 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 screening criterion

Commented [HD59]:

SRSB:

Can you add a phrase here about how the AP1000 design is unique (as far as the uniqueness is relevant to SBLOCA and the NOTRUMP code).

No. 3 is acceptable since it will appropriately determine whether departures to these topics contain the same safety significance as Tier 1 information, and the staff finds that that the proposed license condition and supporting guidance are acceptable because they provide reasonable assurance that prior NRC approval would be required for safety-significant changes to Tier 2* information associated with nuclear fuel these topics. The staff confirmed that the information provided by SNC in prior supplements appeared in Supplement 4 of LAR-17-037, dated August 3, 2018.

3.1.32 VIII.B.6.b, Item 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, Section VIII.B.6.b, Item 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* matter using the proposed license condition (screening criteria) presented in Enclosure 3 of SNC's letter dated December 21, 2017. Enclosure 5 initially states-stated that for Item 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 screening criteria is required. Therefore, per Enclosure 5, the change process in paragraph VIII.B.5 is not applicable and no additional screening criteria is 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 utilizes a sealless "canned motor design" RCP. The attribute of being a "canned motor design" is important because this specific type of pump addressed other safety significant issues such as reactor coolant pressure boundary integrity, flywheel integrity, and missile generation. Other types of pumps that have different design features and methodologies have not been reviewed to ensure these safety significant issues are adequately addressed.

However, using the proposed license condition, 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). Therefore, 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 xx, ML18102B683) 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 screening criteria which would require NRC approval.

In a letter dated May 11, 2018 (Reference xx), 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. In its supplement to LAR-17-037 dated August 3, 2018 (Reference xx), 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 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

Commented [SJ60]: (21) I think that all of the Tier 2* Topics in this section (Evaluation of the 15 of the 24 Tier 2* Topics with Screening Criteria) should have a similar conclusion. See previous comments (10) through (12).

I made an attempt to craft the language.

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Commented [SJ62]:

Commented [SJ63]:

~~topic would provide reasonable assurance that safety significant departures from Tier 2* information related to the RCP type would receive prior NRC approval, and therefore is acceptable to the staff.~~

Commented [SJ64]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

I made an attempt to craft the language.

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3.1.43 VIII.B.6.b, Item 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, Section VIII.B.6.b, Item 7), as well as the Tier 1 and Tier 2 information related to this topic. Tier 2* items 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 which may be used inside containment and containment resident debris.

Tier 2* Item 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* Item 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[out] 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 xx), contains new License Condition 2.D.(13) and a new screening Criterion No. 4 to address Tier 2* Item 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 Item 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 xx). In RG 1.187 (Reference xx), Position C.1, the staff finds 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 identified that adverse effects are described in NEI 96-07 and adverse effects 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 “no 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 and associated screening Criterion No. 4 provide reasonable assurance that prior NRC approval would be required for any departure from Tier 2* Item 7 information having safety significance commensurate with Tier 1 and is consistent with the staff evaluation contained in Supplement 2 to NUREG-1793. In addition, while application of the proposed screening criteria would ensure that any departures from Tier 2* information that are adverse would continue to require prior NRC approval, departures that would improve safety or would result in no more than a minimal impact to safety could proceed as a departure without prior NRC approval. Therefore, the staff finds that the proposed license condition is acceptable because it provides reasonable assurance that prior NRC approval would be required for safety significant License Condition 2.D.(13) is acceptable for processing Tier 2* departures and Tier 2 departures that involve a change to or departures from Tier 2* information related to VIII.B.6.b Item 7. The staff confirmed that the changes made by SNC appeared in the Supplement 4 of LAR-17-037.

3.1.4 VIII.B.6.c, Item 3, Design Summary of Critical Sections
VIII.B.6.c, Item 4, American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)–690, 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, Item 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 xx) that pertain to the structural engineering related to the ~~eight~~ ^{three} Tier 2* topics listed in 10 CFR Part 52, Appendix D, Section VIII.B.c, consisting of Items ~~1, 3, 4, 5, 6, 12, 14,~~ 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* screening process to assure that any change to Tier 2* information which would affect the safety significance of the information continues to require prior NRC approval.

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

For Tier 2* Item 4 (American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC)–690, 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* Item 16 (Steel Composite Structural Module Details), SNC proposed Criterion No. 1. Criterion No. 1 states that prior NRC approval would be required for Tier 2* departures which, “Involve design methodology or construction materials that deviate from a code or standard credited in the

Commented [SJ66]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

This is a really good writeup, so I propose only minor changes for consistency.

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plant-specific DCD for establishing the criteria for the design or construction of a structure, system, or component (SSC) important to safety.” Under LAR-17-037, SNC proposes that Criterion No. 1, combined with the Tier 2 screening criteria in Section VIII.B.5, is adequate to assure that safety significant changes to Tier 2* information under Items 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, Section 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 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.

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

The staff evaluated SNC’s proposal to depart from the Tier 2* change process by screening all proposed changes to the Tier 2* structural design, as reflected in SNC’s supplement to LAR-17-037, dated August 3, 2018. The screening criteria separate those changes that would continue to require prior NRC approval via LARs from those that would not require prior NRC approval. Changes that 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 (Section VIII.B.6.c, Item 3), the reconciliation would occur in the completion of ITAAC 3.3.00.02a and would be required in order to complete 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 which would affect the safety significance of the information would require prior NRC approval. The staff also reviewed Criteria Nos. 7, 8, and 9, which would require prior NRC approval for Tier 2* changes 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, Nuclear Island or the Shield Building, including SC-to-RC connections,

9. Result in an increase in the 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

Commented [SJ70]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

I made an attempt to craft the language.

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Commented [SJ72]: that?

(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 screening criteria would segregate changes that are design changes which would require prior NRC approval (the retained fraction of the changes) from those field construction changes that would not require prior NRC approval (the passing fraction). As discussed below, the staff determined the Tier 2* screening process proposed by SNC to be acceptable because safety-significant changes to the Tier 2* information related to the design of critical structures would still require prior NRC approval.

The staff's rationale for the acceptance of SNC's proposed screening 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. 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 which would not be compatible with analytical methods that would be used in the reconciliation analysis. Similarly, design codes, if changed from the approved design codes, could lead to departures from the design basis that may result in outcomes that would be incompatible for reconciliation with the approved design.

SNC's proposed Criterion No. 8 requires prior NRC approval for a change to the steel faceplates, internal trusses, tie-bars, or headed studs of the steel-concrete (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 these tested configurations is incompatible for design reconciliation, if modified. 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 which is subject to beyond design basis loads. The connections between the SC to RC in the Shield Building provide a behavioral transition between the SC to RC, and hence changes in this area would not be amenable to reconciliation after construction.

SNC's proposed Criterion No. 9 addresses changes to the D/C ratio of a critical section of the structure. The D/C ratio is safety significant 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 and that required for the affected structural member. If UFSAR Section 3.8 and Appendix 3H tables do not contain such information, the licensee would 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 for any Tier 2* change that impacts the safety significance of any affected critical section.

Staff Review of Supplement 4, Enclosure 18, "Response to NRC Request for Additional Information (RAI) LAR 17-037-2"

In Supplement 4, Enclosure 18, SNC provided an example of a field change that normally occurs during construction. SNC stated:

[a]n example of a common situation during construction is when a reinforcing bar is moved or cannot be placed due to interference. To address this situation and ensure that the critical section structure continues to perform as expected, the design authority may choose to add reinforcement at a nearby location. Thus, the design authority examines the ratio of required reinforcement to provided reinforcement using the total area of the steel across the entire critical section using any combination of rebar sizes and spacing allowed by the design bases codes used in the UFSAR.

However, the SNC submittal did not identify a Tier 2* departure that might occur regarding the potential field changes. Therefore, in its review of information regarding RC Design in Supplement 4, Enclosure 18, the staff did not consider SNC's example design change involving movement or removal of a reinforcement bar.

In conclusion, the LAR has requested a Tier 2* process change intended to reduce the need for prior NRC approval of design changes during construction, including those resulting from adjustments to field run commodities such as steel reinforcement bars. The staff finds the proposed process, which allows the licensee to implement nonsafety-significant design changes without prior NRC approval as part of the change process described in Enclosure 18 of SNC's August 3, 2018, supplement, acceptable because the process would still require prior NRC approval for safety-significant departures.

SNC is subject to additional requirements that, combined with this LAR, provide reasonable assurance that VEGP Units 3 and 4 would be constructed and operated in compliance with applicable regulations. In particular, SNC has committed to 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, which require, among other things, reconciliation of the as-built plant and approved design. The reconciliation would account for all changes to the plant, including for Tier 2* changes, both nonsafety-significant changes 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, Section X.B.1.

For the reason described above, the staff finds that Criteria Nos. 1, 7, 8, and 9 are acceptable since they 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.

Commented [HD73]:

SEB: Can you please edit this to clarify what this refers to? For example, if it refers to what is allowed under 9.ii, then edit to state:

... If UFSAR Section 3.8 and Appendix 3H tables do not contain such information, Criterion No. 9.ii provides a method under which the licensee would use the average ratio across the entire affected critical section, provided that . . . etc.

Similarly, if the previous sentence refers to Criterion 9.i, that should be stated.

Commented [HD74]:

SEB: I deleted the information regarding the audit because it was unclear why it was there. The statement regarding lack of an example in the submittal only applies to the submittal (submitted under oath), not the audit.

Commented [SJ75]:

Commented [HD76]:

SEB: The reference to ITAAC needs to be specific. Is this the ITAAC you were referring to?

Commented [SJ77]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

I made an attempt to craft the language.

Based on these findings, the NRC staff concludes that there is reasonable assurance that the requirements of GDC 2, and GDC 4 of 10 CFR Part 50, Appendix A and 10 CFR Part 50, Appendix S, will continue to be met. Therefore, the staff finds the proposed Tier 2* departure evaluation process, as described in the August 3, 2018, supplement, acceptable.

3.1.85 VIII.B.6.c, Item 9, Instrumentation and Control 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* matters 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 Section VIII.B.5 of Appendix D to 10 CFR Part 52. Criterion No. 2 of the proposed set of criteria for design processes represents the screening criterion that was developed as a result of the analysis that was related to, among other matters, the instrumentation and control (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, SNC defines 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 found that the material change proposed under Criterion No. 2 for the I&C design processes would also impact corresponding Tier 1 information, and the proposed screening process under Criterion No. 2 would continue to assure that any safety-significant change to I&C related Tier 2* information would still require prior NRC approval. In addition, in LAR-17-037, SNC listed several examples as non-material changes for Criterion No. 2, which are related to editorial changes, clarifications, correction of inconsistencies, and other changes that do not change the meaning or substance of information presented in the Tier 2* matters. Under SNC's proposed process, those non-material changes would be then be evaluated under the departure evaluation process for Tier 2 information using the criteria in Appendix D of 10 CFR Part 52, Section VIII.B.5. The staff finds that the detailed guidance under screening Criterion No. 2 is acceptable because safety-significant changes to Tier 2* information under the topic VIII.B.6.c, Item 9 would still require prior NRC approval under SNC's proposed process because the changes 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 Section 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 3 and 4 plant-specific Tier 1 DCD and for which some Tier 2* information is contained in the VEGP 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 found that the certified DCD Table 1-1 also includes Topical Report WCAP-17179, "AP1000 Component Interface Module Technical Report" (Reference xx), 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 Tier 1, and

Commented [HD78]:

SEB: If these regulations are cited in the conclusion, they also need to be discussed in the evaluation because it's not clear how we arrived at this conclusion.

For example, add statements about what these regulations require, how SNC currently meets these regulations at Vogtle 3 and 4, and how the SNC departure evaluation process would not affect how SNC meets the requirements of these regulations.

Commented [SJ79]: See previous comment (3) - This should be deleted.

Commented [SJ80]:

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 xx).

In the RAI response dated June 18, 2018 (Reference xx), 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 found that the departure evaluation process and its implementing guidance, as updated in Enclosures 3U and 1U, respectively, of SNC's August 3, 2018, submittal, provide reasonable assurance that safety-significant Tier 2* departures for design processes related to I&C system design processes, methods, and standards under the topic VIII.B.6.c, Item 9 would still require prior NRC approval. Therefore, the staff finds that Criterion No. 2 and its implementing guidance, as revised in the August 3, 2018, submittal of this LAR, 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 for evaluating the departures to Tier 2* information covered under Section VIII.B.6.c, Item 9.

3.1.96 VIII.B.6.c, Item 10, Passive Residual Heat Removal (PRHR) Natural Circulation Test (First Plant Only)
VIII.B.6.c, Item 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 that invoke the Tier 2* change process that requires prior NRC approval via a license amendment for departures from Tier 2* information; and Paragraph VIII.B.5.a for Tier 2 information that involves a change to, or departure from, Tier 2* information. SNC proposed the following as Criterion No. 6:

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 VIII.B.6.c, Items 10 and 11, SNC's proposed Criterion No. 6 address departures from Tier 2* information would be material changes to 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 Supplement 4, dated August 3, 2018 (Reference xx),

Commented [SJ81]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

Commented [SJ82]:

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 a material change and 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 xx])

The staff determined that there is reasonable assurance that SNC's Tier 2* departure evaluation process, including the application of Criterion No. 6 involving changes to Tier 2* information regarding certain pre-operational tests, would require prior NRC approval for safety-significant changes because Criterion No. 6 would screen in any change that could influence the outcome of the identified first plant test and first three plants tests. Therefore, the staff finds the proposed screening process acceptable for Tier 2* information under Section VIII.B.6.c, Items 10 and 11.

In conclusion, the staff finds that Criterion No. 6 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.

3.1.407 VIII.B.6.c, Item 15, Human Factors Engineering

The staff uses the guidance in the SRP Chapter 18, "Human Factors Engineering," 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 xx). 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 is therefore compliant with 10 CFR 50.34(f)(2)(iii).

Commented [SJ83]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

I made an attempt to craft the language.

Commented [SJ84]:

Commented [HD85]:
HOIB: Can you cite the appropriate version of this SRP document?

<https://www.nrc.gov/reading-rm/doc-collections/nureqs/staff/sr0800/ch18/>

Criterion No. 2 in Enclosure 1 of LAR-17-037 applies to the human factors design process. This guidance is intended to determine which planned changes constitute a “material change” to a design process in applying Criterion No. 2. SNC’s initial December 21, 2017, submittal of LAR-17-037, Section 3, “Technical Evaluation,” page 10 of 19, provides examples of changes considered material changes, as well as examples of changes considered non-material changes.

Commented [SJ86]: We should be clear what we mean here. Is this staff guidance or guidance in the LAR?

Because the lists of material and non-material changes are not 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 are material changes.

The staff considered that misinterpretation of a material change as a non-material change could potentially lead to safety consequences. The staff also identified a concern that applying the proposed screening process to prospective departures of Tier 2* topic VIII.B.6.c, Item 15, “Human Factors Engineering,” could result in the licensee making changes to the Tier 2* information without prior NRC approval using the Tier 2 change process that could circumvent the positions taken by NRC staff in the relevant safety evaluation 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 NRC staff acceptance as documented in an NRC safety evaluation.

The staff reviewed LAR-17-037 and the RAI response in Enclosure 13. Using the relevant NRC SEs 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.

Commented [SJ87]: Is SE previously defined?

There is some possibility that material information is not described in an NRC safety evaluation (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.

Commented [HD88]:
HOIB:
I revised the discussion that accounted for the advanced nature of the HFE program because it did not account for a scenario whereby SNC would make changes to already completed and inspected aspects of the program.
Please review the revision to see whether it is acceptable to you. What it says now is that, for cases where SNC would make changes to the already completed parts of the program, SNC would be subject to Criterion 2, plus re-closure/ re-verification of the ITAAC.

- 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 xx and xx). These ITAAC are related to ISV and the resolution of human error discrepancies. Both of these

activities occur late in the 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. If the licensee were to revise aspects of the program subject to these ITAAC after the ITAAC were completed, the licensee would be required to resubmit revised ICNs for staff verification. NRC verification of these ICNs is pending. During the week of June 18, 2018, the staff conducted an inspection of the ISV process and the human error deficiency resolution process (Reference xx, No. ML18207A243). The final inspection report, issued July 30, 2018, supports closing ITAAC Nos. 3.2.00.01c.ii and 3.2.00.01d.

- ITAAC Nos. 3.2.00.01e and 3.2.00.02 also have not been closed by the licensee. These ITAAC are both related to the design implementation activities described in NUREG-0711. The design implementation plan is an NRC approved Tier 2* document that describes precisely how SNC will provide evidence sufficient to close the associated ITAAC. Design implementation activities are the final HFE activities to be completed prior to the 10 CFR 52.103(g) finding. 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. Because the ITAAC remain part of the licensing basis of VEGP Units 3 and 4 until the Commission finding pursuant to 10 CFR 52.103(g) that the acceptance criteria of all ITAAC have been met, if SNC made changes to the aspects of the program following completion of the corresponding ITAAC and prior to the 10 CFR 52.103(g) finding, SNC would be required to resubmit closure notices for those ITAAC for verification by NRC. The ITAAC provide additional assurance that the acceptability of changes to previously approved aspects of the program would be subject to staff verification.

For the reasons described above, including the acceptability of the staff finds that Criterion No. 2 and the accompanying implementation guidance, as revised by SNC in its supplement dated August 3, 2018, and combined with the HFE-related ITAAC included in Appendix C of the VEGP Units 3 and 4 COLs will appropriately determine whether departures to these topics contain the same safety significance as Tier 1 information and, the staff finds that the departure evaluation process described in LAR-17-037 provides reasonable assurance that prior NRC approval would be required for any safety-significant departures from Tier 2* information related to HFE.

3.1.78 VIII.B.6.c, Item 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, Sections 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, SNC initially proposed

Commented [SJ89]: Based on this discussion, it appears that the staff is saying that the departure evaluation process described in LAR-17-037 is only acceptable for HFE based on the fact that Vogtle has made significant progress advancing the HFE design. Assuming this is true, then this is a specific case where the departure evaluation process in LAR-17-037 may not be appropriate for another future AP1000 COL that may have a less mature HFE design. We may need to work with OGC to place a special qualifier regarding the limits of applicability on this part of the SE writeup or ensure that the other general discussions adequately cover this situation.

Commented [SJ90]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

I made an attempt to craft the language.

Commented [SJ91]:

four screening criteria to be used in order to determine if a Tier 2* departure could be evaluated under the Tier 2 departure evaluation process, which is located in Paragraph VIII.B.5 of Appendix D to 10 CFR Part 52. Of the proposed criteria, Criteria Nos. 1 and 2 as being applicable to the topics within the scope of the mechanical engineering review. These criteria, as proposed in its August 3, 2018, supplement to LAR-17-037, read as follows:

- 1) Involve design methodology or construction materials that deviate 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 screening criteria, as complemented by the Tier 2 departure evaluation process, for their adequacy in determining which departures require prior NRC approval.

Design Acceptance Criteria Discussion

In its initial submittal, SNC referenced its proposed Criterion No. 2 for piping design acceptance criteria (DAC). However, SNC did not discuss in detail the topic of piping DAC in the submittal. Therefore, the NRC staff issued RAI LAR-17-037-1, Question 2, to request clarification regarding the treatment of piping DAC. 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). The staff determined that proposed Criterion No. 2 to the SNC process ensures that changes are adequately controlled. Therefore, the staff finds the SNC proposal to be acceptable, as potentially safety significant changes to the DAC process would require prior NRC review and approval, 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.

Commented [SJ92]:

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 Section VIII.B.6.b and VIII.B.6.c. Therefore, the staff requested clarification regarding the control of this information. Specifically, the CVS piping inside containment is non-ASME BPV Code piping (ASME B31.1 Code) 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 non-ASME BPV Code piping would be addressed by the proposed process and if any additional topics need to be addressed (Reference xx). In its RAI response dated May 11, 2018, SNC indicated that it utilized the AP1000 DCD (Reference xx) “Introduction,” Table 1-1, “Index of AP1000 Tier 2 Information

Commented [SJ93]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

I made an attempt to craft the language.

Commented [SJ94]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

I made an attempt to craft the language.

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 non-ASME BPV Code piping requirements, this table characterizes the text as “ASME Code Piping Design Restrictions.” SNC acknowledged that the ASME BPV Code and ASME B31.1 Code 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).

Commented [SJ95]: Is this correct?

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 non-ASME BPV Code piping. This Tier 1 information requires that the nonsafety-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 NRC staff concludes that 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, the SNC proposal is acceptable because NRC review and approval will be required for changes that reduce Code commitments in a safety significant manner.

Commented [SJ96]: See previous comment (21) to add a similar standard conclusion to all of the 15 of 24 Tier 2* Topics.

I made an attempt to craft the language.

Commented [SJ97]: See previous comment (13)

Evaluation of the 8 of the 24 Tier 2* Topics without Screening Criteria

The following sections describe the staff's evaluation of how these topics (1) are already covered by Tier 1 which would require submittal of an exemption request for NRC review of departures to the topic, (2) are already covered by 50.55a which would require submittal of an alternative to the code for NRC review, and/or (3) do not contain the same safety significance as Tier 1 information so can be treated as Tier 2 information and departures can be evaluated against the Tier 2 screening criteria in VIII.B.5 to determine the need for NRC review. In addition, the following sections describe the staff's evaluation of how the proposed license condition process will ensure that prior NRC review and approval will be required for safety significant departures to Tier 2* information.

Commented [SJ98]: See previous comments (10) through (12)

3.1.59 VIII.B.6.b. Item 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, Section VIII.B.6.b, Item 8), as well as the Tier 2 information related to this topic. Tier 2* items associated with heat sinks are found in VEGP 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.”

The Tier 2* Analysis Results Table in Enclosure 5U identifies whether the Tier 2* topics are adequately addressed in Tier 1, covered by 10 CFR 50.55a, and/or adequately addressed by VIII.B.5.

Commented [SJ99]:

Subsection VIII.B.6.b Item 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 xx, ADAMS Accession No. ML11168A040), 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 and were consistent with development of Tier 1 information for the AP1000 certified design. 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 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 screening 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 screening process applicable to Tier 2 departures in 10 CFR Part 52, Appendix D, Section 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 Item 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* Item 8 are adequately addressed by paragraph 10 CFR Part 52, Appendix D, Section VIII.B.5. Therefore, although applicable by process, the additional screening 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* Item 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 additional heat sink information did not have substantial safety significance, 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. This reinforces the staff judgement that the additional heat sink information does not have substantial safety significance.

The staff finds the provisions provided in the "50.59-like" criteria found in 10 CFR Part 52, Appendix D, Section VIII.B.5 and applied to Tier 2* Item 8 as part of License Condition 2.D.(13) are 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, review on the staff evaluation contained in Supplement 2 of NUREG-1793, and review of SECY-17-0075. From the review, the staff has reasonable assurance that Tier 2* Item 8 does not contain the same safety significance as Tier 1 information and therefore can be treated by SNC as Tier 2 information and just be evaluated against the Tier 2 screening criteria in VIII.B.5. In addition, the staff has reasonable assurance that the proposed Tier 2* departure evaluation process will ensure that prior NRC review and approval will be required for safety significant changes to Tier 2* Item 8. ~~the license condition will identify safety significant changes to Tier 2* information regarding heat sinks and containment pressure analysis, such that a license amendment (i.e., prior NRC approval) would be required based on one or more of the "50.59" like criteria.~~

3.1.106 VIII.B.6.c, Item 1, Nuclear Island Structural Dimensions

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

VIII.B.6.c, Item 4, American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC) 690, 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, Item 5, Definition of Critical Locations and Thicknesses

VIII.B.6.c, Item 6, Seismic Qualification Methods and Standards

VIII.B.6.c, Item 12, Polar Crane Parked Orientation

VIII.B.6.c, Item 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE

VIII.B.6.c, Item 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 xx) that pertain to the structural engineering related to the five Tier 2* topics listed in 10 CFR Part 52, Appendix D, Section VIII.B.c, consisting of Items 1, 5, 6, 12, and 14. 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. ~~For other these structural engineering related Tier 2* topics identified in Section VIII.B.6.c, besides the design summary of critical sections (Item 3), SNC did not propose additional screening criteria. The staff review regarding these Tier 2* topics appears below:~~

For Item 1, Nuclear Island Structural Dimensions, and Item 5, Definition of Critical Locations and Thicknesses, SNC stated that no additional criteria were necessary because Tier 1 information adequately addressed the safety significant aspects of this information. The staff agrees with SNC that the safety significant aspects of Items 1 and 5 are included in existing Tier 1 information. Since a change to Tier 1 information requires submittal of an exemption request for

Commented [SJ100]: (22) All of the Tier 2* Topics in this section (Evaluation of the 8 of the 24 Tier 2* Topics without Screening Criteria) should include a standard conclusion that fits the specific aspects of all of these 8 Tier 2* Topics.

The staff should conclude that the specific Tier 2* topics (1) are already covered by Tier 1 which would require submittal of an exemption request for NRC review of departures to the topic, (2) are already covered by 50.55a which would require submittal of an alternative to the code for NRC review, and/or (3) do not contain the same safety significance as Tier 1 information so can be treated as Tier 2 information and departures can be evaluated against the Tier 2 screening criteria in VIII.B.5 to determine the need for NRC review.

The Tier 2* Analysis Results Table in Enclosure 5U identifies whether the Tier 2* topics are adequately addressed in Tier 1, covered by 10 CFR 50.55a, and/or adequately addressed by VIII.B.5.

I made an attempt to craft the language.

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NRC review and approval. ~~considers the SNC's approach to be acceptable because Items 1 and 5 are Tier 1 information and SNC is not proposing any changes to those items.~~ he staff concludes that the new license condition evaluation process provides reasonable assurance that prior NRC review and approval will be required for safety significant departures to these Tier 2* information topics.

For Item 6, Seismic Qualification Methods and Standards, and Item 12, Polar Crane Parked Orientation, SNC stated that no additional criteria were necessary because the Tier 2 screening criteria in Section 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 Items 6 and 12 do not contain the same safety significance as Tier 1 information because these topics ~~accepts the justification provided by SNC because Items 6 and 12 are~~ related to the methodology used in the plant-specific DCD, especially the orientation of the polar crane which used in the analysis methods for applying mass in the analysis model. As a result, it is appropriate to treat Items 6 and 12 as Tier 2 information and have SNC use the Tier 2 screening criteria in VIII.B.5 to evaluate departures to these topics rather than creating additional screening criteria. Therefore, the staff concludes that the new license condition evaluation process provides reasonable assurance that prior NRC review and approval will be required for safety significant departures to these Tier 2* information topics.

For Item 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE, SNC stated that no additional criteria were necessary because the Tier 1 information combined with the Tier 2 screening criteria in Section 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 the justification provided by SNC ~~because the additional screening criteria are not applicable to Tier 1~~ that some aspects of Item 14 are included in existing Tier 1 information and the other aspects of Item 14 do not contain the same safety significance as Tier 1 information because these aspects are ~~Since a change to the Tier 1 information aspects would require a~~ submittal of an exemption request for NRC review and it is appropriate to treat the other aspects as Tier 2 information and use the Tier 2 screening criteria in VIII.B.5 to evaluate departures to these aspects, the staff agrees that additional screening criteria are not needed for this topic. Therefore, the staff concludes that the new license condition evaluation process provides reasonable assurance that prior NRC review and approval will be required for safety significant departures to this Tier 2* information topic.

3.1.7.11 VIII.B.6.c, Item 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, Item 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, Sections 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.

Commented [HD102]:
SEB: Can this be re-stated more clearly? I do not understand it.

E.g., The staff agrees that there is no Tier 2* information under this topic that has safety significance commensurate with Tier 1. Therefore, the staff found that application of the Tier 2 screening criteria to this information is adequate to assure that safety-significant changes to this information require prior NRC approval.

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Commented [HD103]:
SEB: Can this be re-stated more clearly? I do not understand it.

E.g., The staff agrees that there is no Tier 2* information under this topic that has safety significance commensurate with Tier 1. Therefore, the staff found that application of the Tier 2 screening criteria to this information is adequate to assure that safety-significant changes to this information require prior NRC approval. (same as above)

Commented [SJ104]: I do not think this is an adequate basis for determining the safety significance of these topics. Additional rationale should be provided by the tech staff.

Commented [SJ105]: Tech staff needs to provide a basis for why these aspects are not Tier 1 safety significant.

Commented [HD106]:
SEB: Can this be re-stated more clearly? I don't understand this either.

E.g., The staff agrees that there is no Tier 2* information under this topic that has safety significance commensurate with Tier 1. Therefore, the staff found that application of the Tier 2 screening criteria to this information is adequate to assure that safety-significant changes to this information require prior NRC approval. (same as above)

Commented [SJ107]: See previous comment (22) to add a standard conclusion that fits the specific aspects of all of the 8 of 24 Tier 2* Topics. I made an attempt to craft the language.

Commented [SJ108]:

For Item 2, ASME Code Piping Design and Welding Restrictions, and ASME Code Cases, 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 screening criteria in Section 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, which lists ASME BPV Code, Section III, Code Cases acceptable for use and those acceptable with certain conditions. 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 utilized Code Cases. 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.

The staff notes that 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 relief from or 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 relief from or an alternative to specific ASME BPV Code requirements applicable to VEGP Units 3 and 4.

Based on the above, the staff acknowledges that Item 2 is governed by 10 CFR 50.55a and that some aspects of Item 2 are included in existing Tier 1 information and the other aspects of Item 2 do not contain the same safety significance as Tier 1 information. Since (1) a change to this item would require submittal of an alternative for NRC review in accordance with 50.55a, (2) a change to the Tier 1 information aspects of this item would require a submittal of an exemption request for NRC review, and (3) it is appropriate to treat the other aspects of this item as Tier 2 information and use the Tier 2 screening criteria in VIII.B.5 to evaluate departures to these aspects, the staff agrees that additional screening criteria are not needed for this topic. Therefore, the staff concludes that the new license condition evaluation process provides reasonable assurance that prior NRC review and approval will be required for safety significant departures to this Tier 2* information topic.

Based on this understanding, the staff finds that the proposed SNC process provides reasonable assurance that the Tier 2* information regarding ASME BPV Code piping design and welding restrictions and ASME BPV Code Cases will be controlled adequately. For Item 8, Motor-Operated and Power-Operated Valves, VIII.B.6.c, Item 13, Motor-Operated and Power-Operated Valves

In its initial submittal, SNC provided in its initial submittal proposed screening 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 motor-operated and power-operated valves (MOVs and POVs, respectively) is adequately addressed in Tier 1 and by paragraph VIII.B.5 of

Commented [SJ109]: I added this for consistency with the information SNC provided in the Tier 2* Analysis Results Table in Enclosure 5U of the LAR.

Commented [HD110]:
MEB: What is the revision number of this RG that you are citing? <https://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/rg/division-1/division-1-81.html>

Commented [SJ111]: See previous comment (22) to add a standard conclusion that fits the specific aspects of all of the 8 of 24 Tier 2* Topics.

This is a pretty good evaluation writeup, but I made an attempt to craft more of a consistent language with the other 8 topics.

Commented [SJ112]: It is not clear how or if this is pertinent to the rest of the evaluation? I suggest deleting it.

Appendix D to 10 CFR Part 52, and SNC did not propose any additional screening criteria intended for this Tier 2* topic. 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 screening 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 function 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 the ASME Standard QME-1-2007, "Qualification of Active Mechanical Equipment Used in Nuclear Power Plants", 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 (Reference 8)." ("Reference 8," as cited in UFSAR Subsection 5.4.8.3 is ASME Standard QME-1-2007.)

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 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 xx, ML17226A034); and VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017004 and 05200026/2017004, dated February 14, 2018 (Reference xx, ML18045A476)). During those inspections, the staff has found the requirements to implement ASME QME-1-2007 to be clearly understood and applied for the qualification of MOVs and POVs. Because safety significant changes to Tier 2* information related to MOVs and POVs would require prior NRC approval by applying the VIII.B.5.b criteria, the staff concludes that the SNC proposal for the screening criteria for Tier 2* departures with respect to MOV and POV qualification is acceptable. Based on the above evaluation, the staff agrees with SNC that some aspects of Item 8 are included in existing Tier 1 information and the other aspects of Item 8 do not contain the same safety significance as Tier 1 information. Since a change to the Tier 1 information aspects would require a submittal of an exemption request for NRC review and it is appropriate to treat the other aspects as Tier 2 information and use the Tier 2 screening criteria in VIII.B.5 to evaluate departures to these aspects, the staff agrees that additional screening criteria are not needed for this topic. Therefore, the staff concludes that the new license

condition evaluation process provides reasonable assurance that prior NRC review and approval will be required for safety significant departures to this Tier 2* information topic.

Evaluation of the 1 of the 24 Tier 2* Topics Regarding Fire Areas

3.1.12 VIII.B.6.b, Item 4, Fire Areas

Enclosure 5 of SNC's December 21, 2017, submittal of LAR-17-037 states that SNC did not propose any screening 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 xx). 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, Section VIII.B.6.b, Item 4. As a result, the requirements in Section 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 Section VIII.B.5, thereby assuring that any safety significant changes to this information are subject to prior NRC approval. Therefore, the staff finds that the proposed license condition with respect to fire area information in the UFSAR is acceptable.

3.1.3 VIII.B.6.b, Item 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 Reactor Coolant Pump (RCP) type (10 CFR Part 52, Section VIII.B.6.b, Item 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* matter using the proposed license condition (screening criteria) presented in Enclosure 3 of SNC's letter dated December 21, 2017. Enclosure 5 states that for Item 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 screening criteria is required. Therefore, per Enclosure 5, the change process in paragraph VIII.B.5 is not applicable and no additional screening criteria is 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 utilizes a sealless "canned motor design" RCP. The attribute of being a "canned motor design" is important because this specific type of pump addressed other safety significant issues such as reactor coolant pressure boundary integrity, flywheel integrity, and missile generation. Other types of pumps that have different design features and methodologies have not been reviewed to ensure these safety significant issues are adequately addressed.

However, using the proposed license condition, 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). Therefore, 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

Commented [SJ113]: See previous comment (22) to add a standard conclusion that fits the specific aspects of all of the 8 of 24 Tier 2* Topics. I made an attempt to craft the language.

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April 12, 2018, (Reference xx, ML18102B683) 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 screening criteria which would require NRC approval.

In a letter dated May 11, 2018 (Reference xx), SNC proposed to include Criterion No. 5, “Results in a change to RCP type (canned motor design),” which would result in the need to obtain NRC approval. In its supplement to LAR-17-037 dated August 3, 2018 (Reference xx), 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, Criterion No. 5 would provide reasonable assurance that safety significant departures from Tier 2* information related to the RCP type would receive prior NRC approval, and therefore is acceptable to the staff.

3.1.5 VIII.B.6.b, Item 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, Section VIII.B.6.b, Item 8), as well as the Tier 2 information related to this topic. Tier 2* items associated with heat sinks are found in VEGP 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.”

Subsection VIII.B.6.b Item 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 xx, ADAMS Accession No. ML11168A040), 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 and were consistent with development of Tier 1 information for the AP1000 certified design. 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 WGOETHIC 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 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 screening 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 screening process applicable to Tier 2 departures in 10 CFR Part 52, Appendix D, Section 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 Item 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* Item 8 are adequately addressed by paragraph 10 CFR Part 52, Appendix D, Section VIII.B.5. Therefore, although applicable by process, the additional screening 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* Item 8.

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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 additional heat sink information did not have substantial safety significance, 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. This reinforces the staff judgement that the additional heat sink information does not have substantial safety significance.~~

~~The staff finds the provisions provided in the "50.59-like" criteria found in 10 CFR Part 52, Appendix D, Section VIII.B.5 and applied to Tier 2* Item 8 as part of License Condition 2.D.(13) are sufficient to address departures related to heat sinks for containment pressure analysis. The staff reached this finding based on guidance contained in NEI-06-07 (as endorsed by RG 1.187) regarding containment pressure analysis, review on the staff evaluation contained in Supplement 2 of NUREG-1793, and review of SECY-17-0075. From the review, the staff has reasonable assurance that the license condition will identify safety significant changes to Tier 2* information regarding heat sinks and containment pressure analysis, such that a license amendment (i.e., prior NRC approval) would be required based on one or more of the "50.59"-like criteria.~~

- ~~3.1.6—VIII.B.6.c, Item 1, Nuclear Island Structural Dimensions~~
- ~~VIII.B.6.c, Item 3, Design Summary of Critical Sections~~
- ~~VIII.B.6.c, Item 4, American Concrete Institute (ACI) 318, ACI 349, American National Standards Institute/American Institute of Steel Construction (ANSI/AISC) 690, 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, Item 5, Definition of Critical Locations and Thicknesses~~
- ~~VIII.B.6.c, Item 6, Seismic Qualification Methods and Standards~~
- ~~VIII.B.6.c, Item 12, Polar Crane Parked Orientation~~
- ~~VIII.B.6.c, Item 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE~~
- ~~VIII.B.6.c, Item 16, Steel Composite Structural Module Details~~

~~For other structural engineering related Tier 2* topics identified in Section VIII.B.6.c, besides the design summary of critical sections (Item 3), SNC did not propose additional screening criteria. The staff review regarding these Tier 2* topics appears below:~~

~~For Item 1, Nuclear Island Structural Dimensions, and Item 5, Definition of Critical Locations and Thicknesses, SNC stated that no additional criteria were necessary because Tier 1 information adequately addressed the safety significant aspects of this information. The staff considers the SNC's approach to be acceptable because Items 1 and 5 are Tier 1 information and SNC is not proposing any changes to those items.~~

~~For Item 6, Seismic Qualification Methods and Standards, and Item 12, Polar Crane Parked Orientation, SNC stated that no additional criteria were necessary because the Tier 2 screening criteria in Section VIII.B.5 were adequate to assure that safety significant changes to Tier 2*~~

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SEB: Can this be re-stated more clearly? I do not understand it.

E.g., The staff agrees that there is no Tier 2* information under this topic that has safety significance commensurate with Tier 1. Therefore, the staff found that application of the Tier 2 screening criteria to this information is adequate to assure that safety-significant changes to this information require prior NRC approval.

information under these topics would be identified to require prior NRC approval. The staff accepts the justification provided by SNC because Items 6 and 12 are related to the methodology used in the plant specific DCD, especially the orientation of the polar crane which used in the analysis methods for applying mass in the analysis model.

For Item 14, Containment Vessel Design Parameters, including ASME Code, Section III, Subsection NE, SNC stated that no additional criteria were necessary because the Tier 1 information combined with the Tier 2 screening criteria in Section 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 the justification provided by SNC because the additional screening criteria are not applicable to Tier 1.

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

The staff evaluated SNC's proposal to depart from the Tier 2* change process by screening all proposed changes to the Tier 2* structural design, as reflected in SNC's supplement to LAR 17-037, dated August 3, 2018. The screening criteria separate those changes that would continue to require prior NRC approval via license amendment request LARs from those that would not require prior NRC approval. Changes that 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 (Section VIII.B.6.c, Item 3), the reconciliation would occur in the completion of ITAAC 3.3.00.02a and would be required in order to complete License eConditions 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 which would affect the safety significance of the information would require prior NRC approval. The staff also reviewed Criteria Nos. 7, 8, and 9, which would require prior NRC approval for Tier 2* changes 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, 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:

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SEB: Can this be re-stated more clearly? I do not understand it.

E.g., The staff agrees that there is no Tier 2* information under this topic that has safety significance commensurate with Tier 1. Therefore, the staff found that application of the Tier 2 screening criteria to this information is adequate to assure that safety-significant changes to this information require prior NRC approval. (same as above)

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SEB: Can this be re-stated more clearly? I don't understand this either.

E.g., The staff agrees that there is no Tier 2* information under this topic that has safety significance commensurate with Tier 1. Therefore, the staff found that application of the Tier 2 screening criteria to this information is adequate to assure that safety-significant changes to this information require prior NRC approval. (same as above)

(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 screening criteria would segregate changes that are design changes which would require prior NRC approval (the retained fraction of the changes) from those field construction changes that would not require prior NRC approval (the passing fraction). As discussed below, the staff determined the Tier 2* screening process proposed by SNC to be acceptable because safety significant changes to the Tier 2* information related to the design of critical structures would still require prior NRC approval.

The staff's rationale for the acceptance of SNC's proposed screening 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. 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 which would not be compatible with analytical methods that would be used in the reconciliation analysis. Similarly, design codes, if changed from the approved design codes, could lead to departures from the design basis that may result in outcomes that would be incompatible for reconciliation with the approved design.

SNC's proposed Criterion No. 8 requires prior NRC approval for a change to the steel faceplates, internal trusses, tie bars, or headed studs of the steel-concrete (SC) module walls in the Nuclear Island or Shield Building, including SC to reinforced concrete (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 these tested configurations is incompatible for design reconciliation, if modified. 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 which is subject to beyond design basis loads. The connections between the SC to RC in the Shield Building provide a behavioral transition between the SC to RC, and hence changes in this area would not be amenable to reconciliation after construction.

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 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 and that required for the affected structural member. If UFSAR Section 3.8 and Appendix 3H tables do not contain such information, the licensee would 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 for any Tier 2* change that impacts the safety significance of any affected critical section.

Staff Review of Supplement 4, Enclosure 18, "Response to NRC Request for Additional Information (RAI) LAR 17-037-2"

In Supplement 4, Enclosure 18, SNC provided an example of a field change that normally occurs during construction. SNC stated:

[a]n example of a common situation during construction is when a reinforcing bar is moved or cannot be placed due to interference. To address this situation and ensure that the critical section structure continues to perform as expected, the design authority may choose to add reinforcement at a nearby location. Thus, the design authority examines the ratio of required reinforcement to provided reinforcement using the total area of the steel across the entire critical section using any combination of rebar sizes and spacing allowed by the design bases codes used in the UFSAR.

However, the SNC submittal did not identify a Tier 2* departure that might occur regarding the potential field changes. Therefore, in its review of information regarding RC Design in Supplement 4, Enclosure 18, the staff did not consider SNC's example design change involving movement or removal of a reinforcement bar.

In conclusion, the LAR has requested a Tier 2* process change intended to reduce the need for prior NRC approval of design changes during construction, including those resulting from adjustments to field run commodities such as steel reinforcement bars. The staff finds the proposed process, which allows the licensee to implement nonsafety significant design changes without prior NRC approval as part of the change process described in Enclosure 18 of SNC's August 3, 2018, supplement, acceptable because the process would still require prior NRC approval for safety significant departures.

SNC is subject to additional requirements that, combined with this LAR, provide reasonable assurance that VEGP Units 3 and 4 would be constructed and operated in compliance with applicable regulations. In particular, SNC has committed to 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, which require, among other things, reconciliation of the as-built plant and approved design. The reconciliation would account for all changes to the plant, including for Tier 2* changes, both nonsafety significant changes 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, Section X.B.1.

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SEB: Can you please edit this to clarify what this refers to? For example, if it refers to what is allowed under 9.ii, then edit to state:

... If UFSAR Section 3.8 and Appendix 3H tables do not contain such information, Criterion No. 9.ii provides a method under which the licensee would use the average ratio across the entire affected critical section, provided that . . . etc.

Similarly, if the previous sentence refers to Criterion 9.i, that should be stated.

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SEB: I deleted the information regarding the audit because it was unclear why it was there. The statement regarding lack of an example in the submittal only applies to the submittal (submitted under oath), not the audit.

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SEB: The reference to ITAAC needs to be specific. Is this the ITAAC you were referring to?

Based on these findings, the NRC staff concludes that there is reasonable assurance that the requirements of GDC 2, and GDC 4 of 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," and 10 CFR Part 50, Appendix S, "Earthquake Engineering Criteria for Nuclear Power Plants," will continue to be met. Therefore, the staff finds the proposed Tier 2* departure evaluation process, as described in the August 3, 2018, supplement, acceptable.

3.1.7 VIII.B.6.c, Item 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, Item 8, Motor Operated and Power Operated Valves
VIII.B.6.c, Item 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, Sections 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, SNC initially proposed four screening criteria to be used in order to determine if a Tier 2* departure could be evaluated under the Tier 2 departure evaluation process, which is located in Paragraph VIII.B.5 of Appendix D to 10 CFR Part 52. Of the proposed criteria, Criteria Nos. 1 and 2 are applicable to the topics within the scope of the mechanical engineering review. These criteria, as proposed in its August 3, 2018, supplement to LAR 17-037, read as follows:

- 1) Involve design methodology or construction materials that deviate 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 screening criteria, as complemented by the Tier 2 departure evaluation process, for their adequacy in determining which departures require prior NRC approval.

ASME Code Piping Design and Welding Restrictions, and ASME Code Cases

The staff reviewed the Tier 2* text in the DCD regarding ASME BPV Code piping design and welding restrictions and ASME BPV Code Cases. 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, which lists ASME BPV Code, Section III, Code Cases acceptable for use and those acceptable with certain conditions. 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 utilized Code Cases. 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

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SEB: If these regulations are cited in the conclusion, they also need to be discussed in the evaluation because it's not clear how we arrived at this conclusion.

For example, add statements about what these regulations require, how SNC currently meets these regulations at Vogtle 3 and 4, and how the SNC departure evaluation process would not affect how SNC meets the requirements of these regulations.

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MEB: What is the revision number of this RG that you are citing? <https://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/rg/division-1/division-1-81.html>

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.

The staff notes that 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 relief from or 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 relief from or an alternative to specific ASME BPV Code requirements applicable to VEGP Units 3 and 4.

Based on this understanding, the staff finds that the proposed SNC process provides reasonable assurance that the Tier 2* information regarding ASME BPV Code piping design and welding restrictions and ASME BPV Code Cases will be controlled adequately.

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 Section VIII.B.6.b and VIII.B.6.c. Therefore, the staff requested clarification regarding the control of this information. Specifically, the CVS piping inside containment is non-ASME BPV Code piping (ASME B31.1 Code) 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 non-ASME BPV Code piping would be addressed by the proposed process and if any additional topics need to be addressed (Reference xx). In its RAI response dated May 11, 2018, SNC indicated that it utilized the AP1000 DCD (Reference xx) “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 non-ASME BPV Code piping requirements, this table characterizes the text as “ASME Code Piping Design Restrictions.” SNC acknowledged that the ASME BPV Code and ASME B31.1 Code 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.

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 non-ASME BPV Code piping. This Tier 1 information requires that the nonsafety-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 NRC staff concludes that the SNC proposal is acceptable because NRC review and approval will be required for changes that reduce Code commitments in a safety-significant manner.

Design Acceptance Criteria Discussion

In its initial submittal, SNC referenced its proposed Criterion No. 2 for piping design acceptance criteria (DAC). However, SNC did not discuss in detail the topic of piping DAC in the submittal. Therefore, the NRC staff issued RAI LAR 17-037-1, Question 2, to request clarification regarding the treatment of piping DAC. 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). The staff determined that proposed Criterion No. 2 to the SNC process ensures that changes are adequately controlled. Therefore, the staff finds the SNC proposal to be acceptable, as potentially safety-significant changes to the DAC process would require prior NRC review and approval.

VIII.B.6.c, Item 13, Motor-Operated and Power-Operated Valves

In its initial submittal, SNC provided proposed screening 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 motor-operated and power-operated valves (MOVs and POVs, respectively) 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 screening criteria intended for this Tier 2* topic. 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 screening 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 function 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 the ASME Standard QME 1-2007, “Qualification of Active Mechanical Equipment Used in Nuclear Power Plants”, by text in UFSAR Subsection

~~6.4.9.3 that states "Requirements for qualification testing of power operated active valves are based on QME-1 (Reference 8)." ("Reference 8," as cited in UFSAR Subsection 5.4.8.3 is ASME Standard QME-1 2007.)~~

~~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 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 xx, ML17226A034); and VEGP Units 3 and 4—NRC Integrated Inspection Reports 5200025/2017004 and 05200026/2017004, dated February 14, 2018 (Reference xx, ML18045A176)). During these inspections, the staff has found the requirements to implement ASME QME-1 2007 to be clearly understood and applied for the qualification of MOVs and POVs. Because safety significant changes to Tier 2* information related to MOVs and POVs would require prior NRC approval by applying the VIII.B.5.b criteria, the staff concludes that the SNC proposal for the screening criteria for Tier 2* departures with respect to MOV and POV qualification is acceptable.~~

~~3.1.8—VIII.B.6.c, Item 9, Instrumentation and Control 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* matters 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 Section VIII.B.5 of Appendix D to 10 CFR Part 52. Criterion No. 2 of the proposed set of criteria for design processes represents the screening criterion that was developed as a result of the analysis that was related to, among other matters, the instrumentation and control (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, SNC defines 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 found that the material change proposed under Criterion No. 2 for the I&C design processes would also impact corresponding Tier 1 information, and the proposed screening process under Criterion No. 2 would continue to assure that any safety significant change to I&C related Tier 2* information would still require prior NRC approval. In addition, in LAR 17-037, SNC listed several examples as non-material changes for Criterion No. 2, which are related to editorial changes, clarifications, correction of inconsistencies, and other changes that do not change the meaning or substance of information presented in the Tier 2* matters. Under SNC's proposed process, those non-material changes would be then be evaluated under the departure evaluation process for Tier 2 information using the criteria in Appendix D of 10 CFR Part 52, Section VIII.B.5. The staff finds that the detailed~~

guidance under screening Criterion No. 2 is acceptable because safety significant changes to Tier 2* information under the topic VIII.B.6.c, Item 9 would still require prior NRC approval under SNC's proposed process because the changes 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 Section 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 3 and 4 plant-specific Tier 1 DCD and for which some Tier 2* information is contained in the VEGP 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 found that the certified DCD Table 1-1, "Index of AP1000 Tier 2 Information Requiring NRC Approval for Change" also includes Topical Report WCAP 17179, "AP1000 Component Interface Module Technical Report" (Reference xx), 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 Tier 1, 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 xx).

In the RAI response dated June 18, 2018 (Reference xx), 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 found that the departure evaluation process and its implementing guidance, as updated in Enclosures 3U and 1U, respectively, of SNC's August 3, 2018, submittal, provide reasonable assurance that safety significant Tier 2* departures for design processes related to I&C system design processes, methods, and standards under the topic VIII.B.6.c, Item 9 would still require prior NRC approval. Therefore, the staff finds that Criterion No. 2 and its implementing guidance, as revised in the August 3, 2018, submittal of this LAR, is acceptable for evaluating the departures to Tier 2* information covered under Section VIII.B.6.c, Item 9.

- 3.1.9 — VIII.B.6.c, Item 10, Passive Residual Heat Removal (PRHR) Natural Circulation Test (First Plant Only)
- VIII.B.6.c, Item 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 that invoke the Tier 2* change process that requires prior NRC approval via a license amendment for departures from Tier 2* information; and Paragraph VIII.B.5.a for Tier 2 information that involves a change to, or departure from, Tier 2* information. SNC proposed the following as Criterion No. 6:

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 VIII.B.6.c, Items 10 and 11, SNC's proposed Criterion No. 6 address departures from Tier 2* information would be material changes to 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 Supplement 4, dated August 3, 2018 (Reference xx), 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 a material change and 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 Final Safety Evaluation Report (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 xx])

The staff determined that there is reasonable assurance that SNC's Tier 2* departure evaluation process, including the application of Criterion No. 6 involving changes to Tier 2* information regarding certain pre-operational tests, would require prior NRC approval for safety significant changes because Criterion No. 6 would screen in any change that could influence the outcome of the identified first plant test and first three plants tests; therefore, the staff finds the proposed screening process acceptable for Tier 2* information under Section VIII.B.6.c, Items 10 and 11.

3.1.10 VIII.B.6.c, Item 15, Human Factors Engineering

The staff uses the guidance in the SRP, Chapter 18, "Human Factors Engineering," 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

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<https://www.nrc.gov/reading-rm/doc-collections/nureqs/staff/sr0800/ch18/>

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 xx). 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 is therefore compliant with 10 CFR 50.34(f)(2)(iii).

Criterion No. 2 in Enclosure 1 of LAR 17-037 applies to the human factors design process. This guidance is intended to determine which planned changes constitute a "material change" to a design process in applying Criterion No. 2. SNC's initial December 21, 2017, submittal of LAR 17-037, Section 3, "Technical Evaluation," page 10 of 19, provides examples of changes considered material changes, as well as examples of changes considered non-material changes.

Because the lists of material and non-material changes are not 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 are material changes.

The staff considered that misinterpretation of a material change as a non-material change could potentially lead to safety consequences. The staff also identified a concern that applying the proposed screening process to prospective departures of Tier 2* topic VIII.B.6.c, Item 15, "Human Factors Engineering," could result in the licensee making changes to the Tier 2* information without prior NRC approval using the Tier 2 change process that could circumvent the positions taken by NRC staff in the relevant safety evaluation 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 design certification 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 NRC staff acceptance as documented in an NRC safety evaluation.

The staff reviewed LAR 17-037 and the RAI response in Enclosure 13. Using the relevant NRC safety evaluation SEs as an additional basis for identifying material changes provides a reasonable means of supplementing the guidance in Enclosure 1 because the NRC safety evaluation 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 safety evaluation 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 safety evaluation (for instance if the staff considered information, but did not find it was necessary to include in the staff's safety evaluation 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 (HSI), 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 xx and xx). These ITAAC are related to integrated system validation (ISV) and the resolution of human error discrepancies. Both of these activities occur late in the 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. If the licensee were to revise aspects of the program subject to these ITAAC after the ITAAC were completed, the licensee would be required to resubmit revised ICNs for staff verification. NRC verification of these ICNs is pending. During the week of June 18, 2018, the staff conducted an inspection of the ISV process and the human error deficiency resolution process (Reference xx, No. ML18207A243). The final inspection report, issued July 30, 2018, supports closing ITAAC Nos. 3.2.00.01c.ii and 3.2.00.01d.
- ITAAC Nos. 3.2.00.01e and 3.2.00.02 also 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 evidence sufficient to close the associated ITAAC. Design implementation activities are the final HFE activities to be completed prior to the 10 CFR 52.103(g) finding. 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. Because the ITAAC remain part of the licensing basis of VEGP Units 3 and 4 until the Commission finding pursuant to 10 CFR 52.103(g) that the acceptance criteria of all ITAAC have been met, if SNC made changes to the aspects of the program following completion of the corresponding ITAAC and prior to the 10 CFR 52.103(g) finding, SNC would be required to resubmit closure notices for those ITAAC for verification by NRC. The ITAAC provide additional assurance that the acceptability of changes to previously approved aspects of the program would be subject to staff verification.

For the reasons described above, including the acceptability of Criterion No. 2 and the accompanying implementation guidance, as revised by SNC in its supplement dated

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I revised the discussion that accounted for the advanced nature of the HFE program because it did not account for a scenario whereby SNC would make changes to already completed and inspected aspects of the program.

Please review the revision to see whether it is acceptable to you. What it says now is that, for cases where SNC would make changes to the already completed parts of the program, SNC would be subject to Criterion 2, plus re-closure/ re-verification of the ITAAC.

August 3, 2018, and the HFE related ITAAC included in Appendix C of the VEGP Units 3 and 4 COLs, the staff finds that the departure evaluation process described in LAR 17-037 provides reasonable assurance that prior NRC approval would be required for any safety significant departures from Tier 2* information related to HFE.

3.1.9 SUMMARY OF TECHNICAL EVALUATION

For the reasons discussed above, the staff finds that the proposed Tier 2* departure evaluation process and screening criteria in License Condition 2.D.(13) provide reasonable assurance that any future safety-significant departures from Tier 2* information will continue to require prior NRC approval. Therefore, the staff finds the proposed changes to be acceptable. As previously noted, the staff review and conclusions are specific to the VEGP Units 3 and 4. The staff did not consider, and the conclusions of the review do not apply to, other designs certified or other combined licenses issued under 10 CFR Part 52, including other AP1000 combined licenses. Other certified designs have different Tier 2* information than that for the AP1000 certified design. Other COLs that reference the AP1000 design may contain different Tier 2 and Tier 2* information.

3.2 EVALUATION OF EXEMPTION

The regulations in Section 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. Paragraph VIII.B.5.a provides the basis for which licensees may depart from Tier 2 information without NRC approval. The departure may be taken provided the departure does not involve 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 requested exemption would allow departures from Tier 2 information that involve Tier 2* information not meeting any of the new screening criteria provided the departure did not involve a departure from Tier 1 information, the TS, or require a license amendment under Section 2.D.(13) of the license.
- Paragraph VIII.B.6.b. Paragraph VIII.B.6.b requires a licensee who references 10 CFR Part 52, Appendix D to obtain NRC approval prior to departing from the eight identified categories of Tier 2* matters. (SNC was previously granted an exemption from Item 4 of Paragraph VIII.B.6.b, regarding Fire Areas [ADAMS Accession Number ML15191A128].) The requested exemption would allow application of the Tier 2 change process outlined in VIII.B.5 for qualifying Tier 2* departures for the remaining seven identified categories of Tier 2* matters, based on new screening criteria. 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. Paragraph VIII.B.6.c refers to paragraph VIII.B.6.b for the departure process which requires a licensee who references 10 CFR Part 52, Appendix D to obtain NRC approval prior to departing from the 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 change process outlined in VIII.B.5 for qualifying Tier 2* departures based on new screening criteria. 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, "Specific exemptions," 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 circumstances for which an exemption may be granted. It is necessary for one of these bases 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 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 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's evaluation determined that special circumstances of 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 specific paragraphs and portions of paragraphs of 10 CFR Part 52, Appendix D. 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. 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 change process does not affect physical or cyber security. The existing regulatory processes for changing licensing basis information pertaining to physical security and cyber security are not affected by this change. The change does 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 changes 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 this exemption.

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 II and VIII that describe the change process for Tier 2* information. As stated in SECY-17-0075 (Reference xx), the purpose of the Tier 2* designation is to control certain information which the staff has determined to have safety significance commensurate with Tier 1 information. In the final rule certifying the AP1000 design, NRC described Tier 2* information as including "...certain significant information [that] only exists in Tier 2 [that] the Commission does not want [...] to be changed without prior NRC approval" (71 FR 4474, Reference xx). Accordingly, the underlying purpose of requiring prior NRC approval for departures from Tier 2* information is to prevent potentially safety-significant changes to plant-specific DCD Tier 2 information without prior NRC review and approval. However, compliance with 10 CFR Part 52, Appendix D, Section VIII, B.6.a., currently requires the licensee to obtain NRC approval for any change to Tier 2* information, including changes having no more than a minimal impact to safety.

Special circumstances are present in the particular circumstances discussed in LAR-17-037 because the application of the change control process provided in Section VIII.B.6.b and c—under which NRC approval is required for any change to Tier 2* information, even if the change has a minimal 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 intent of the rule, that is, NRC prior approval of a safety significant change, would still be achieved. The license condition granted under this LAR does not affect, or allow to be affected, 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 applicable regulatory requirements will continue to be met. 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 exist.

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 NRC 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 xx). Some of the issues discussed in the public comments do not specifically pertain to the proposed NSHC determination. However, the NRC staff has addressed both the issues within the scope of the proposed NSHC and those that are not within the scope. A summary of the comments and the NRC staff responses appears below.

General Comments and Observations

(1) *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 was 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.

(1) *NRC Response*

LAR 14-008, "Request for Exemption and License Amendment regarding Changes to Tier 2* Information," dated August 7, 2014 (Reference xx, ML14219A579) 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 screening criteria in Section 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 xx and xx, ML14324A077 and ML14349A624). LAR-17-037 proposes a different screening approach than the approach previously proposed by SNC in LAR 14-008.

This LAR provides a different approach to evaluating departures from Tier 2* information in the Vogtle UFSAR. The resulting license amendment resulting from this LAR applies to only two COLs under a single licensee and does not apply to other licensees or plants. Because this license amendment differs from current regulation, exemptions are being granted with issuance of the amendment.

(2) *Public Comment*

B.1 Cover Letter:

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

(2) *NRC Response*

Enclosure 1 of LAR-17-037 (Reference XX) 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 nonsafety-significant departure not requiring 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. For example, a departure not requiring prior NRC approval can be implemented without the licensee's preparation and the staff's review of a LAR. The staff considers it reasonable to conclude that the administrative burden associated with certain previously approved LAR departures, such as those identified in the LAR, would have been reduced, and possible future LARs would be reduced if prior NRC approval would not be required.

(3) *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.

(3) *NRC Response*

The scope of SECY-17-0075 is limited to current Commission policy regarding Tier 2* implementation for future ~~design-certification~~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. As such, SECY-17-0075, which provides a comprehensive summary of past and current NRC policy and regulation relevant to Tier 2* information, has only limited applicability to the current decision. 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. The staff notes that the background section of SECY-17-0075 provides a comprehensive summary of past NRC policy and regulation relevant to Tier 2* information, which was cited in this SE.

In reviewing the LAR, the staff has kept the Commission informed of the staff review and decisions regarding this LAR and exemption.

(4) *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).

(4) *NRC Response*

As part of the staff review, the staff requested additional information (see RAI 17-037-2) for some Tier 2* information related to CVS piping inside containment that is non-ASME Code piping subject to additional requirements for design, fabrication, examination, inspection, and testing that did not clearly align into one of the 24 Tier 2* topics identified under 10 CFR Part 52, Section VIII.B.6. SNC's response dated April 6, 2018 (Reference xx), clarified that this information was included under the Tier 2* related to ASME Code, Section VIII.B.6.(c)(2), and that the itemized listing of all Tier 2* information in AP1000 DCD Introduction Table 1-1 (Reference xx, ML11171A303) 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 screening criteria in Section VIII.B.5, to be applied to any prospective Tier 2* change that is not determined to require prior NRC approval under the new criteria. The two sets of criteria—combined as described in the LAR—provide a lower bound for the Tier 2* departures that are safety significant and require prior NRC approval. As proposed under this LAR, there is reasonable assurance that a prospective departure that would not require prior NRC approval as determined through screening, would not be safety significant.

(5) *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 commenters 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.

(5) *NRC Response*

SNC's significant hazard consideration for this LAR, as presented in Enclosure 1, Section 4.3, of its December 21, 2017, submittal, focuses on the direct consequences resulting from implementation of this LAR. Because this LAR only affects SNC administrative processes for

evaluations and decision-making about prospective Tier 2* departures, the staff agrees with the SNC statements about the lack of direct impacts. However, the staff also considered it appropriate to consider the indirect impacts from this LAR. Specifically, implementation of this LAR authorizes SNC to implement certain Tier 2* changes without prior NRC approval, and it is appropriate for the staff to consider the impacts resulting from these changes. In considering these indirect impacts, the staff found the conclusions of SNC's significant hazards consideration valid because the impacts from any Tier 2* departure made without prior NRC approval would be bounded by the Tier 2 screening criteria in Appendix D of 10 CFR Part 52, Section VIII.B.5. Application of these criteria would assure that any authorized change made without prior NRC approval would meet the standards for significant hazards consideration in 10 CFR 50.92.

The staff agrees with the commenter about this LAR not being enveloped by the examples identified in the No Significant Hazards Consideration 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 enveloping all determinations. The rule also includes examples that of amendments considered likely to involve significant hazards considerations. The staff considers the two lists to be only examples, and has reasonably concluded that the two lists combined do not represent a complete listing of all possible amendments.

(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 staff agrees with the commenter's statement that the proposed license condition is different from the change processes in 10 CFR Part 52, Appendix D. As noted in Section 3.2 of this SE, approval of this LAR requires exemptions from specific regulatory requirements involving the change processes for Tier 2* information in the VEGP Units 3 and 4 UFSAR. The staff also agrees that approval of this LAR and granting of the associated exemptions is a different approach than previously used regarding the Tier 2* change process, and is keeping the Commission informed on how this LAR relates to current policy. Current NRC policy and regulation regarding the Tier 2* departure requirements was developed without the benefit of actual experience in COL construction and licensing. Approval of this LAR is informed by the license amendment experience for the VEGP Units 3 and 4 COLs described by SNC in the LAR. The Commission is not changing its current overall policies or regulations regarding the Tier 2* change process. Experience resulting from implementation of the proposed screening 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" (ML16061A451, [Reference XX](#)). Specifically:

- The staff considers the screening 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 open to different interpretations.
- The screening process described in the proposed license condition is not already addressed by (i.e., duplicative of) an existing rule, requirement, order, or regulation.
- The proposed license condition is not open ended. Under the proposed license condition, implementation of the proposed screening process would be required prior 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 continue 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 the 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 only nonsafety significant changes to Tier 2* information, and the staff finds it reasonable that with this LAR, future LARs involving only nonsafety-significant Tier 2* departures could be avoided, 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 is necessary to allow 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. 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 of those changes would be limited to those having impacts bounded by the consequences allowed under 10 CFR Part 52, Appendix VIII, Section B.5. The licensee may already make such changes without prior NRC approval. Such changes would involve no significant hazards consideration, no significant change in the types or significant increase in the amounts of any effluents that may be released offsite; and no significant increase in individual or cumulative occupational radiation exposure. 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 Section 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 has concluded, 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) there is reasonable assurance that 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 (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. SECY-17-0075, "Planned Improvements in Design Certification Tiered Information Designations," dated July 24, 2017 (ADAMS Accession No. ML16196A321).

8. SECY-95-023, "Proposed Design Certification Rules for the Advanced Boiling Water Reactor (ABWR) and System 80+ Standard Designs," dated February 1, 1995 (ADAMS Accession No. ML003708055).
9. SRM-SECY-95-023, "Proposed Design Certification Rules for the Advanced Boiling Water Reactor (ABWR) and System 80+ Standard Designs," (ADAMS Accession No. ML003708194).
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."
13. ASME Standard QME-1-2007 Edition, "Qualification of Active Mechanical Equipment Used in Nuclear Power Plants."
14. 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.
15. NUREG-0711, "Human Factors Engineering Program Review Model," Revision 2, 2004.
16. 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).
17. AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A500).
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).
28. Core Operating Limits Report [info to be provided]
29. 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).
30. 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).
31. 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).
32. NEI 96-07, “Guidelines for 10 CFR 50.59 Implementation,” Revision 1, Nuclear Energy Institute, November 2000, (ADAMS Accession No. ML003771157).
33. Regulatory Guide 1.187, “Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments” (ADAMS Accession No. ML003759710).
34. 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)
35. 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).

Commented [HD126]:
SRSB: Can you provide an ML# for this reference from page 15? It is also referenced in the DCD/UFSAR, but I could not find it in ADAMS.

Commented [HD127]:
SRSB to advise on referencing this “report.”

36. 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).
37. 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).
38. VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017002 and 05200026/2017002, August 10, 2017 (ADAMS Accession No. ML17226A034).
39. VEGP Units 3 and 4 – NRC Integrated Inspection Reports 5200025/2017004 and 05200026/2017004, February 14, 2018 (ADAMS Accession No. ML18045A476).
40. Request for Additional Information (RAI) Transmittal for Vogtle Units 3 and 4 LAR-17-037 (RAI LAR-17-037-2), dated April 12, 2018 (ADAMS Accession No. ML18102B682).
41. WCAP-17179-P and WCAP-17179-NP, “AP1000 Component Interface Module Technical Report,” Revision 2, July 2010 (ADAMS Accession No. ML102170259).
42. 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).
43. NEI 98-03, “Guidelines for Updating Final Safety Analysis Reports,” Revision 1, June 1999 (ADAMS Accession No. ML003779028).
44. NRC Inspection of Westinghouse Electric Company Report Number 99900404/2017-202, dated July 30, 2018 (ADAMS Accession No. ML18207A243).
45. 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).