

Vogle PEmails

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To: Vogle PEmails
Cc: Patel, Chandu
Subject: Request for Additional Information - SNC VEGP Units 3&4: Request for License Amendment and Exemption (LAR 17-006): ITAAC Consolidation
Attachments: Vogle LAR 17-006 - RAI.pdf

In support of the review of LAR 17-006 the staff is issuing the attached Request for Additional Information. If you have any questions, please contact me at (301) 415-3249 or Ruth.Reyes@nrc.gov.

Sincerely,

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Request for Additional Information for
Vogtle LAR 17-006, ITAAC Consolidation

The NRC regulations in 10 CFR 52.80(a) require that a COL application contain the proposed inspections, tests, and analyses (ITA), including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria (AC) that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC regulations.

Appendix C, "Inspections, Tests, Analyses, and Acceptance Criteria," to the combined licenses (COLs) for Vogtle Units 3 and 4 specifies the inspections, tests, analyses, and acceptance criteria (ITAAC) that satisfy 10 CFR 52.80(a) for each reactor unit. In License Amendment Request (LAR) 17-006, the licensee of Vogtle Units 3 and 4 proposes to delete many ITAAC from Appendix C of the Vogtle Units 3 and 4 COLs that it believes will be accomplished by other ITAAC, retaining only the ITAAC Index Number and removing other content such as the ITAAC section identification and Design Commitments. The staff requests the following additional information regarding the licensee's proposed changes to the ITAAC.

1. In Vogtle Units 3 and 4 LAR 17-006, the licensee combines multiple ITAAC into a single ITAAC without identifying the specific paragraphs of the ITA and AC to the applicable Design Commitment. See, for example, ITAAC 2.1.02.02a (13). The licensee is requested to describe the manner in which specific ITA and AC will be identified as applicable to the appropriate Design Commitment for a consolidated ITAAC. ITAAC 2.1.02.02a (13) has been recreated below:

Table 2.1.2-4 Inspections, Tests, Analyses, and Acceptance Criteria				
No.	ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
* * *				

Request for Additional Information for
Vogtle LAR 17-006, ITAAC Consolidation

**Table 2.1.2-4
Inspections, Tests, Analyses, and Acceptance Criteria**

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
13	2.1.02.02a	<p>2.a) The components identified in Table 2.1.2-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements.</p> <p>2.b) The piping identified in Table 2.1.2-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.</p> <p>3.a) Pressure boundary welds in components identified in Table 2.1.2-1 as ASME Code Section III meet ASME Code Section III requirements.</p> <p>3.b) Pressure boundary welds in piping identified in Table 2.1.2-2 as ASME Code Section III meet ASME Code Section III requirements.</p> <p>4.a) The components identified in Table 2.1.2-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.</p> <p>4.b) The piping identified in Table 2.1.2-2 as ASME Code Section III retain its pressure boundary integrity at its design pressure.</p>	<p>Inspection will be conducted of the as-built components and piping as documented in the ASME design reports.</p> <p>Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.</p> <p>A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested.</p>	<p>The ASME Code Section III design reports exist for the as-built components and piping identified in Tables 2.1.2-1 and 2.1.2-2 as ASME Code Section III.</p> <p>A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.</p> <p>A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Tables 2.1.2-1 and 2.1.2-2 as ASME Code Section III conform with the requirements of the ASME Code Section III.</p>

Request for Additional Information for
Vogle LAR 17-006, ITAAC Consolidation

**Table 2.1.2-4
Inspections, Tests, Analyses, and Acceptance Criteria**

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
		<p>5.b) Each of the lines identified in Table 2.1.2-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability</p> <p>6. Each of the as-built lines identified in Table 2.1.2-2 as designed for LBB meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.</p>	<p>Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability.</p> <p>Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.</p>	<p>A report exists and concludes that each of the as-built lines identified in Table 2.1.2-2 for which functional capability is required meets the requirements for functional capability.</p> <p>An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the dynamic effects of a line break is provided.</p>

2. In Vogle Units 3 and 4 LAR-17-006, the licensee proposes to delete several ITAAC with the intent that the Design Commitments in the deleted ITAAC will be satisfied by the remaining ITAAC. In some instances, it is not apparent that the Design Commitments in the deleted ITAAC will be accomplished as part of the remaining ITAAC. For example, the licensee proposes that ITAAC 2.1.02.12a.vi (58) will be accomplished by ITAAC 2.1.02.08d.i (32). ITAAC 2.1.02.12a.vi (58) has been recreated below:

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
58	2.1.02.12a.vi	12.a) The automatic depressurization valves identified	vi) See item 8.d.i in this table.	vi) See item 8.d.i in this table. The ADS stage 1-3 valve flow resistances are

Request for Additional Information for
Vogtle LAR 17-006, ITAAC Consolidation

		in Table 2.1.2-1 perform an active safety-related function to change position as indicated in the table		verified to be consistent with the ADS stage 1-3 path flow resistances.
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The ITA and Acceptance Criteria for ITAAC 2.1.02.08d.i (32) do not discuss verification that the automatic depressurization valves will change position as specified in the Design Commitment for ITAAC 2.1.02.12a.vi (58). A similar example is where the licensee proposes that ITAAC 2.1.02.12a.vii (59) will be accomplished by ITAAC 2.1.02.08d.ii (33). There are other instances where specific text has not been redistributed to the ITAAC that will subsume them. ITAAC 2.1.01.03 (3) is an example where the Design Commitment has not been redistributed (recreated below):

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3	2.1.01.03	3. The FHS preserves containment integrity by isolation of the fuel transfer tube penetrating containment	See ITAAC Table 2.2.1-3, items 1 and 7	See ITAAC Table 2.2.1-3, items 1 and 7

The licensee is requested to describe the manner in which it will ensure that the removal of specific ITAAC information does not imply that these ITAAC requirements have been removed for the AP1000 design and that these requirements will still be verified as complete and documented as part of the remaining ITAAC.

3. The containment Atmosphere Monitor's (PSS-RE027) main function is to detect RCS pressure boundary leakage. In order to perform this function, the monitor needs to be designed, located, and installed appropriately in order to ensure that it can adequately detect leakage in accordance with its minimum design requirements. The design commitment of ITAAC 835 stated that, "The diverse leak detection methods provide the non-safety related function of detecting small leaks when RCS leakage indicates possible reactor coolant pressure boundary degradation." In LAR 17-006, the licensee proposes removing ITAAC 835, as the Inspections, Tests, Analyses, and Acceptance Criteria reference ITAAC Table 3.5-6, Item 1. However, the design commitment is not included in ITAAC Table 3.5-6, Item 1. Therefore, the removal of this ITAAC is also removing this design commitment. As a result, there is no longer a requirement to satisfy this design commitment as part of completing the ITAAC.

Request for Additional Information for
Vogtle LAR 17-006, ITAAC Consolidation

The licensee is requested to either 1) retain the design commitment for this ITAAC; or 2) provide additional justification regarding why it is acceptable to remove this design commitment from the ITAAC.

4. Vogtle Units 3 and 4 LAR 17-006 includes only partial tables of the ITAAC with asterisks used to identify spacing among the individual ITAAC. For example, LAR 17-006 indicates that ITAAC 2.2.02.01 (119) will be used to accomplish ITAAC 2.2.07e.i (143), but ITAAC 2.2.02.01 (119) does not appear in the partial ITAAC tables provided with LAR 17-006. The licensee is requested to provide a complete redline markup of the Appendix C ITAAC tables to verify that all appropriate ITAAC are retained in the final version of Appendix C. The licensee is also requested to describe any plans to modify ITAAC 2.2.02.01 (119) or any other functional arrangement ITAAC for mechanical equipment.
5. In Vogtle Units 3 and 4 LAR 17-006, the licensee discusses the combination of Valve Qualification ITAAC grouped as Category 5 in LAR 17-006. The example in LAR 17-006 of ITAAC 2.2.01.11a (114) combines subparagraph (i) and (ii). The “test report” specified in the Acceptance Criteria for subparagraph (i) relates to the qualification testing of the motor-operated valve (MOV) design. The “report” specified in the Acceptance Criteria for subparagraph (ii) relates to the production test of the as-built MOV. The licensee is requested to describe the manner in which these two different reports will be addressed in the ITAAC Closure Notification Letter for the combined ITAAC 2.2.01.11a (114).
6. In LAR 17-006, the licensee includes a “roadmap” that specifies those ITAAC that will be deleted and accomplished by other ITAAC. The consolidated set of ITAAC must have sufficient clarity of scope (design commitment), methodology (i.e. inspection, test, analysis), and acceptance criteria without reference to a roadmap or previous ITAAC versions in order to track and demonstrate compliance with the Design Commitments found to be necessary and sufficient to assure the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC regulations. In the proposed mark-up, LAR 17-006 proposes to delete the ITAAC number and only retain the ITAAC Index Number. This ITAAC Index Number does not currently exist in plant-specific Tier 1, so it is unclear how this ITAAC consolidation will be organized in site-specific Tier 1, since the markups in LAR 17-006 contain an ITAAC Index Number. The licensee is requested to demonstrate how the proposed consolidated ITAAC will stand alone and demonstrate that all of the Design Commitments originally satisfied by the ITAAC are still met.
7. ITAAC 2.1.01.03 (3) involves the fuel transfer tube isolation valve (FHS-PL-V001) for verifying containment leak rate test. While ITAAC 2.2.01.07.i (107) (Table 2.2.1-3 Item 7.i) relates to a leak rate test criteria, the licensee states in Enclosure 5 that the fuel transfer isolation valve (FHS-PL-V001) does not fit under ITAAC 108 (Table 2.2.1-3 Item 7.ii). This changes the basis for the original ITAAC 3 and appears to correct an error.

Request for Additional Information for
Vogtle LAR 17-006, ITAAC Consolidation

However, Enclosure 2 of LAR 17-006 is supposed to list all exemptions for ITAACs that will be changed but this enclosure does not list changing ITAAC 2.2.01.07.ii (108) so that FHS-PL-V001 is excluded from the requirement to open within 60 seconds of an actuation signal. Therefore, this is a change in scope of the associated or original Design Commitment ITA for the Fuel Handling System which needs an exemption request. The licensee is requested to:

- a. add ITAAC 108 (Table 2.2.1-3 Item 7.ii) to Enclosure 2, Exemption Request, of LAR 17-006 with the appropriate justification for the ITAAC modification to exclude the fuel transfer isolation valve (FHS-PL-V001) from the requirement to close within 60 seconds of an actuation signal;
 - b. verify for all Tier 1 sections where a reference is made to ITAAC 108 (i.e., Table 2.2.1-3 Item 7.ii) and identify whether there are other manually operated containment isolation valves that ITAAC 108 (Table 2.2.1-3 Item 7.ii) should not be applied, specifically for the Reference ITAAC Index Numbers 174, 239, 279, 298, 329, 370, 401, 441, 469, 478, 482, 702, 724, and 773 given in the Category 1 table in Enclosure 1 of LAR 17-006; and
 - c. provide additional justification regarding the removal of Reference ITAACs 3, 174, 239, 279, 298, 329, 370, 401, 441, 469, 478, 482, 702, 724, and 773 as to how ITAAC 107 (Table 2.2.1-3 Item 7.i) and ITAAC 108 (Table 2.2.1-3 Item 7.ii) ensures all containment leakage pathways and containment isolation valves would be adequately tested and ensures the various Design Commitments are still met. For example, ITAAC 298 is in regards to CVS containment isolation valves listed in Table 2.3.2-1. However, because Table 2.2.1-1 does not list the CVS containment isolation valves of Table 2.3.2-1, deleting ITAAC 298 could result in these CVS valves not to being evaluated for the timing response requirement to close within 60 seconds upon receipt of an actuation signal per ITAAC 108.
8. ITAAC 520 design commitment requires that, “The [diverse actuation system] DAS manual actuation of [automatic depressurization system] ADS, [in-containment refueling water storage tank] IRWST injection, and containment recirculation can be executed correctly and reliably.” The licensee asserts that “Completion of the Reference ITAAC (520) is accomplished when the referenced ITAAC (739, 740, 741, 742, 743 and 744) are completed...”

NRC staff used NUREG-0711 to assess the applicant’s implementation plans for conducting the human factors process. The referenced ITAAC 739-742 are intended to provide evidence that a state-of-the-art human factors program has been conducted. NUREG-0711 Chapter 11 uses “verification and validation evaluations to comprehensively determine that the HFE design conforms to the human factors engineering (HFE) design principles and that it enables plant personnel to successfully perform their tasks to assure plant safety and operational goals.” A sampling strategy (i.e. not all human system interfaces (HSIs)/operational conditions are evaluated) is used

Request for Additional Information for
Vogtle LAR 17-006, ITAAC Consolidation

for human factors verification and validation to guide the selection of conditions/HSIs to review. Execution of DAS manual actuation of ADS, IRWST injection, and containment recirculation is not specifically called out for verification and validation in Chapter 11 of NUREG-0711. Thus, it is not clear from ITAAC 739-742 alone that the entirety of the scope of ITAAC 520 is addressed if the proposed license amendment request is accepted.

The licensee is requested to provide clarification regarding how the DAS manual actuation of: 1) ADS, 2) IRWST injection and, 3) containment recirculation will be specifically tested to ensure correct and reliable execution. Explain how the NRC will be able to ensure that these three important DAS manual actions will not be eliminated in the sampling process used in ITAAC 739-742 if ITAAC 520 is eliminated.