

## Vogle PEmails

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**From:** Hoellman, Jordan  
**Sent:** Monday, June 11, 2018 4:20 PM  
**To:** Vogle PEmails  
**Subject:** SNC Responses to NRC Clarification Questions for Cable Separation and Fire Area ITAAC  
**Attachments:** SNC Responses to Cable Separation and Fire Area ITAAC comments 06.08.18.pdf; For NRC Review Resubmittal of UIN 801 804 807 810.pdf

Attached are SNC's responses to the "Clarification Questions for Cable Separation and Fire Area ITAAC" (ADAMS Accession No. ML18155A462) and "proposed" UIN re-submittals incorporating the changes discussed in the responses (indicated by red-line). SNC included one draft UIN for each type, but the others in that "family" will be the same:

- mark-up for ITAAC 801 is included: 800 and 802 will have the same changes
- mark-up for ITAAC 804 is included: 803 and 805 will have the same changes
- mark-up for ITAAC 807 is included: 806 and 808 will have the same changes
- mark-up for ITAAC 810 is included: 809 and 811 will have the same changes

These responses and draft UINs will be discussed at a future public meeting/teleconference.

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# SNC responses on Clarification Questions for Cable Separation and Fire Area ITAAC ITAAC Index Nos. 789 through 811

## 1. For ITAAC Index Nos 800, 801, and 802 –

**(a) Do these ITAAC address the raceway and their cables for the entirety of their routes including the cables in free air and inside of control panels, switchboards, and distribution panels?**

- ITAAC 800, 801, and 802 address raceways and cables in free air (bullet #2, below). However, they do not do not include cables inside control panels, switchboards, and distribution panels (bullet #3, below). Free air cables are within the scope of the ITAAC requirements for open configurations as well as the ITAAC 800, 801, and 802 ITA and AC item 7) which states, “The minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.”
- LAR-17-036 (Amendments 112/111) which revised these ITAAC, states in part “Raceway systems are designed and used in the AP1000 plant for supporting, protecting, and routing electrical and instrumentation circuits. The raceways also play a role in the physical separation between circuits...Raceways are required to be separated by a minimum distance to reduce the probability of an internal circuit failure (e.g., a short) or external hazard (e.g., missile, fires, pipe failure) from impacting multiple circuits... Circuits are routed in either an open configuration or a closed configuration. Closed configurations include enclosed trays, conduit, and transition boxes. Open configurations include open raceways and free-air cables.” This distinction was added to UFSAR Subsection 8.3.2.4.2, which states in part, “...‘enclosed raceway’ and ‘enclosed configuration’ refer to conduit, enclosed trays or transition boxes designed and used for supporting or enclosing wires, cables or busbars. ‘Open configuration’ refers to free air cable and open cable trays.”
- The ITA (scope) of ITAAC 800, 801, and 802 is “inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with...”. Since cables are not within raceways once they enter control panels, switchboards, and distribution panels, ITAAC 800, 801, and 802 do not apply to those cable separation considerations. While UFSAR Subsection 8.3.2.4.2 does state that within panels and control switchboards the minimum horizontal separation between components or cables of different separation groups (both field-routed and vendor-supplied internal wiring) is 1 inch and the minimum vertical separation distance is 6 inches, this requirement is not within the scope of ITAAC 800, 801, and 802.
- For general clarification, SNC proposes adding “and completed” to the inspection discussion in the second sentence of the second paragraph. The proposed revised sentence would be: “Completed raceway installation, in-progress **and completed** cable installation, and completed cable terminations are inspected to ensure the separation installation specifications are satisfied.” This sentence clarification would be applicable to UINs 800 – 811.

**(b) How is the IEEE 384 discussion of cables in air (for instance, the IEEE 384 definition of raceway and cables open – open category) covered in these ITAAC?**

- Cables in air are covered within those portions of the ITA and AC which cover open configuration requirements, as well as in the ITA and AC item 7) stated above.

## SNC responses on Clarification Questions for Cable Separation and Fire Area ITAAC

- IEEE 384 defines cables in free air as, “That portion of a cable not routed in either a raceway or an enclosure”. IEEE 384 gives three categories for separation distances
  - 1) Open to open: Includes open tray to open tray, open tray to free-air cable, and free-air cable to free-air cable configurations.
  - 2) Enclosed to enclosed: Includes enclosed tray to enclosed tray, enclosed tray to conduit, and conduit to conduit configurations.
  - 3) Enclosed to open: Includes enclosed tray to open tray, enclosed tray to free-air cable, conduit to open tray, and conduit to free-air cable configurations.

This discussion in IEEE 384 is consistent with UFSAR Section 8.3.2.4.2 discussed in bullet #2 of response 1(a) above, and as such, cables in air are covered within the scope of open configurations and ITA and AC item 7) stated above.

**(c) Should IEEE 384 and the correct sections of UFSAR 8.3.1.3.4 and 8.3.2.4.2 be referenced in these UINs because the UINs presently lack detail about the physical arrangement of trays vertically and horizontally, the routing of cables in panels and switchboards, the routing of cables in conduits and trays, and the use of solid or enclosed trays. Section 5.1 of IEEE 384 provides separation criteria for cables and raceways.**

- Vertical and horizontal separation requirements for all configurations, including conduit, enclosed trays, and transition boxes (enclosed configuration) and free air cable and open cable trays (open configuration) are included within the ITA and AC of ITAAC 800. Referencing IEEE 384 and the UFSAR could add confusion as exceptions to IEEE 384 were taken as discussed in UFSAR section 8.3.2.4.2 and the UFSAR includes panel and switchboard requirements that are not included in the ITAAC.

### 2. For ITAAC Index Nos 803, 804, and 805 –

**(a) Are the barriers as defined in these ITAAC in agreement with the barrier as addressed in IEEE 384 when it discusses a raceway fully enclosed with the barrier around it or are they constructed differently and in different locations in regard to the raceways and cables?**

- Yes, SNC is committed to IEEE 384 and Regulatory Guide 1.75 with exceptions as discussed in UFSAR Appendix 1A and Subsection 8.3.2.4.2, and as such, barriers as defined in these ITAAC are in accordance with IEEE 384. The barriers as defined in these ITAAC would be specific to the given configuration and inspected as required per these ITAAC.

**(b) Are the barriers as used in these ITAAC meant to be just between raceways or also between cables and should these UINs define that?**

- Barriers are between circuits of all configurations which do not meet the physical separation distances required by ITAAC 800, 801, or 802. This is consistent with the wording of the UIN. The ITAAC 803, 804, and 805 ITA states, “Where minimum separation distances are not maintained, the circuits are run in enclosed raceways or barriers are provided.” Additionally, as discussed in the first bullet of response 2(a), any barrier would be in accordance with IEEE 384.

## SNC responses on Clarification Questions for Cable Separation and Fire Area ITAAC

**(c) Should IEEE 384 and the correct section of the UFSAR be referenced in these UINs to provide access to information on how barriers are utilized, when and where they are used, about their composition, and the definition of enclosed trays which the references provide? Section 5.1.1.2.e of IEEE 384 provides a definition for enclosed trays, and Figures 5, 6, and 7 in IEEE 384 provide information on the use of barriers.**

- As discussed above, any barrier would be specific to the given situation and would be in accordance with IEEE 384. The scope of this UIN is the inspections performed to verify that where minimum separation distances are not met, the circuits are run in enclosed raceways or barriers are provided. IEEE 384 and the UFSAR do not include methodology for performing these inspections.
- SNC proposes adding “barriers” to the first and second sentences in the second paragraph of the UIN to state that barriers are installed in accordance with design drawings, installation specifications issued for construction and work package requirements and to state that barriers are inspected to ensure the separation installation specifications are satisfied. The proposed revised sentences would be: “Class 1E electrical cables, raceways, **and barriers** are installed in accordance with design drawings, installation specifications issued for construction and work package requirements. Completed raceway installation, in-progress and completed cable installation, completed cable terminations, **and barriers** are inspected to ensure the separation installation specifications are satisfied.” This sentence clarification would be applicable to UINs 803, 804 and 805.

### **3. For ITAAC Index Nos 806, 807, and 808.**

**(a) What is the analysis utilized in these ITAAC meant to demonstrate – no potential degradation of cables in adjacent raceways due to the lack of the required separation distance?**

- The scope of ITAAC 806, 807, and 808 is an inspection to verify that an analysis was performed for cases in which separation distances are less than those specified in ITAAC 800, 801, or 802 and not run in enclosed raceways or provided with barriers per ITAAC 803, 804, or 805. These analyses, if required, will be performed on a case by case basis and will be based on tests performed to determine the flame retardant characteristics of the proposed cable installation, considering features such as cable insulation and jacket materials, cable tray fill, and cable tray arrangement, as discussed in NUREG-1793 Section 8.3.2.2.

**(b) Should IEEE 384 and the correct section of the UFSAR be referenced in their UINs so as to provide information on the purpose of the analysis, how the analysis is performed, when it is performed, and how to interpret the results of the analysis? For example, Section 5.6.2 of IEEE 384 provides the basis for analysis of circuits inside of switchboards.**

- IEEE 384 and the UFSAR do not include methodology for performing the inspections required for these ITAAC. However, for clarification, SNC proposes adding this additional sentence to UINs 806, 807, and 808: “**The analyses for this ITAAC were performed in accordance with standard IEEE 384 and demonstrate that the effects of lesser separation do not impact the ability of Class 1E circuits to perform their safety related functions.**”

**4. For ITAAC Index Nos 809, 810, and 811 –**

**(a) What must be done in the qualification of non-Class 1E cables to label them as associated circuits in the context of these ITAAC and should their UINs address that? IEEE 384 states that associated circuits must be qualified as Class 1E cables but do not have to address their functionality. Presently the UINs do not state anything about the qualification of the cables in order to classify them as Class 1E circuits. Section 4.5 of IEEE 384 discusses how associated circuits become associated circuits and their qualification means.**

- The ITAAC 809, 810, and 811 AC states, "...non-Class 1E wiring that is not separated from Class 1E or associated wiring by the minimum separation distance or by a barrier or analyzed is treated as Class 1E wiring." Therefore, the circuits in the context of ITAAC 809, 810, and 811 will be treated as Class 1E wiring. Since SNC is committed to IEEE 384 and Regulatory Guide 1.75 with exceptions as discussed in UFSAR Appendix 1A and Subsection 8.3.2.4.2, associated circuits would be in accordance with IEEE 384 section 5.5. However, the scope of these ITAAC is an inspection to verify that non-Class 1E wiring that is not separated from Class 1E or associated wiring by the minimum separation distance (ITAAC 800, 801, or 802) or by a barrier (ITAAC 803, 804, or 805) or analyzed (ITAAC 806, 807, or 808) is treated as Class 1E wiring. The qualification of these cables is not part of performance of the ITA and is outside the scope of the methodology for performance and documentation of the inspections required by the ITAAC, and therefore outside the scope of the UIN.

**5. For ITAAC Index Nos 800, 803, 806, and 809 – The NRC preferably would like these ITAAC for this plant location to be submitted separately with one cover letter for each ITAAC and the enclosure being its UIN or ICN. This also applies for other plant locations. The reason is that VOICES, the ITAAC tool for implementation of the NRC's ITAAC verification process, can only accept one ITAAC per UIN or ICN, and this is also true for the document control process that enters each UIN or ICN into ADAMS.**

- NRO-REG-103, Rev. 1, "Inspections, Tests, Analyses, And Acceptance Criteria Closure Verification Process (ICVP)", Section 3.1, "Notification Receipt and Initial Processing", describes the process for licensee submittal of multiple ICNs and UINs under one cover letter. This section also addresses how these submittals consisting of multiple UINs with one cover letter, are to be electronically submitted to ensure proper processing in NRC document control (ADAMS).

**(a) Would it be feasible to write these UINs similar to example D2 of NEI 08-01 that includes more detail on raceway system layout design, the basis for installation of raceways and conduits, the inspection of cables and raceways before and after installation to verify separation distances, and the identification of any violations to separation distances after installation of cables and raceways? Example D2 is the NEI 08-01 example applicable to this ITAAC, and its content was agreed upon by both the NRC and industry.**

- Since ITAAC 800, 803, 806, and 809 specifically discuss the quality control inspections of raceways, SNCs submitted UINs reflect Vogtle 3&4's current methodology for completing these ITAAC. NEI 08-01 example D-2 includes items which do not align or are outside the scope of the planned methodology.

## SNC responses on Clarification Questions for Cable Separation and Fire Area ITAAC

**(b) Would it be possible to revise the introductory paragraphs of each respective UIN for a given plant location to state how the UINs for a given location relate to each other? This would also entail revising other paragraphs in the UINs that address those relationships and making each UIN or ICN submittal be individual for each ITAAC as stated above in opening sentence for this item 5.**

- All UINs currently include a second to last paragraph which references the other ITAAC. For instance, the ITAAC 800 second to last paragraph states, “Exceptions are not included within the scope of this ITAAC and are addressed within the scope of ITAAC 3.3.00.07d.iii.a (Enclosure 2), ITAAC 3.3.00.07d.iv.a (Enclosure 3), or ITAAC 3.3.00.07d.v.a (Enclosure 4).” Additionally, all UINs include an introductory paragraph which discusses what requirements were not met to invoke the given ITAAC. For instance, the ITAAC 806 introductory paragraph states, “Multiple ITAAC are performed to ensure that physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables. In accordance with this ITAAC, separation distances for circuits that do not meet the criteria of ITAAC 3.3.00.07d.ii.a or ITAAC 3.3.00.07d.iii.a may be based on analyses. For circuits that have separation distances based on analyses, the subject ITAAC requires inspections to confirm that separation distances have been analyzed. The Class 1E cables and raceways and non-Class 1E cables inside containment are designed to be appropriately separated in accordance with APP-GW-E1-001 (Reference 1). Installation Specifications provided to the constructor identify separation criteria, consistent with the ITAAC commitment.”

### **6. For ITAAC Index Nos 803, 806, and 809 at one location –**

**(a) Would it be possible to state in their UINs the hierarchical relationship between the parent ITAAC 800 and these alternatives so that the reader understands which alternative is used first, second, and third to satisfy the separation requirements not met for the parent ITAAC 800 for the specific routing situation?**

- There is no hierarchical relationship between ITAAC 800, 803, 806, and 809. Inspections are performed to ensure that the requirements are satisfied. As raceways and cables will either meet the physical separation criteria, be provided a barrier, or be analyzed per design, inspections will be performed to ensure that design requirement were satisfied. As discussed in first bullet of response 5(b), these UINs include an introductory paragraph and second to last paragraph which explain the relationship between the ITAAC.

**(b) If there is no hierarchical relationship between these ITAAC and the parent ITAAC 800, would it be possible for their UINs to state that for a given routing situation that the alternatives can be utilized in any order?**

- An “or” is utilized in the UINs in the second to last paragraph to designate that any alternative may apply. For example, UIN 800 states, “Exceptions are not included within the scope of this ITAAC and are addressed within the scope of ITAAC 3.3.00.07d.iii.a (Enclosure 2), ITAAC 3.3.00.07d.iv.a (Enclosure 3), or ITAAC 3.3.00.07d.v.a (Enclosure 4).”

## SNC responses on Clarification Questions for Cable Separation and Fire Area ITAAC

- 7. For ITAAC Index Nos 797 and 798 – Would it be possible to address the reference to UFSAR 9.5.1.2.1.1 in their UINs and otherwise expand on the information provided to describe what fire barriers were verified and to what requirements.**
  - Fire Barriers will be specific to the given area and design need. ITAAC 797 and 798 require inspections to be performed to verify that fire barriers exist between fire areas identified in Table 3.3-3 inside the given area.
  
- 8. For ITAAC Index Nos 792, 793, and 794 we have accepted the UINs for these ITAAC.**
  - (a) Would it be feasible to have their ICNs be more similar to example D2 of NEI 08-01 and to reference UFSAR section 8.3.2.4.2 because more detail is provided on the routing of Class 1E cables in their respective divisional raceways than the UINs themselves?**
    - Since ITAAC 792, 793, and 794 specifically discuss the quality control inspections of as-built Class 1E divisional cables and raceways, SNCs submitted UINs reflect Vogtle 3&4's current methodology for completing these ITAAC. NEI 08-01 example D-2 includes items which do not align or are outside the scope of the planned methodology.
  
- 9. For ITAAC Index Nos 789, 790, and 791 we have accepted the UINs for these ITAAC. (a) Would it be feasible to have their ICNs reference UFSAR section 8.3.2.3 because more detail is provided on the color schemes for Class 1E cables and their raceways and the actual marking of them? Section 5.1.2 of IEEE 384 provides details on the identification of raceways and cables.**
  - The prescribed inspections, tests, and analyses for these ITAAC are quality control inspections of the as-built Class 1E cables and the as-built raceways that route the Class 1E cables to verify that class 1E cables and communication cables associated with only one division, and the raceways that route these cables in a given building are identified by the appropriate color code. The UFSAR expands upon the information provided in Tier 1 and is available for review.



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**Southern Nuclear Operating Company**  
**ND-18-0500814**  
**Enclosure 1**

**Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4**  
**Docket No.: 52-025 & 52-026**

**Completion Plan for Uncompleted ITAAC 3.3.00.07d.ii.b [Index Number 801]**

PROPOSED

### **ITAAC Statement**

#### Design Commitment

7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.

#### Inspections, Tests, Analyses

Inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

ii.b) Within other plant areas (limited hazard areas), the minimum separation is defined by one of the following:

- 1) The minimum vertical separation is 5 feet and the minimum horizontal separation is 3 feet.
- 2) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables  $\leq 2/0$  AWG. This minimum vertical separation is 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees.
- 3) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low-voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation is 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees.
- 4) For configurations that involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch.
- 5) For configurations involving an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway.
- 6) For configuration involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions.
- 7) The minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.

#### Acceptance Criteria

Results of the inspection will confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

ii.b) Within other plant areas inside the non-radiologically controlled area of the auxiliary building (limited hazard areas), the separation meets one of the following:

- 1) The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more.
- 2) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables  $\leq 2/0$  AWG. This minimum vertical separation may be reduced to 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees.
- 3) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low-voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation may be reduced to 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees.
- 4) For configurations that involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch.
- 5) For configurations that involve an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway.
- 6) For configurations that involve enclosed raceways, the minimum vertical and horizontal separation is 1 inch.
- 7) The minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.

#### **ITAAC Completion Description**

Multiple ITAAC are performed to ensure that physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables. This ITAAC requires inspections of the as-built raceways that route Class 1E cables and raceways that route non-Class 1E cables inside the non-radiologically controlled area of the auxiliary building to confirm that physical separation between raceways that route Class 1E cables of different divisions and between raceways that route Class 1E cables and raceways that route non-Class 1E cables meet the required separation distances. The Class 1E cables and raceways and non-Class 1E cables inside the non-radiologically controlled area of the auxiliary building are designed to be appropriately separated in accordance with APP-GW-E1-001 (Reference 1). Installation specifications provided to the constructor identify the separation criteria, consistent with the ITAAC commitment.

Class 1E electrical cables and raceways are installed in accordance with design drawings, installation specifications issued for construction and work package requirements. Completed raceway installation, in-progress **and completed** cable installation, and completed cable terminations are inspected to ensure the separation installation specifications are satisfied.

Inspections are performed in accordance with the Construction Quality Verification Program 26139-000-4MP-T81C-N7101 (Reference 2). The completed inspection records document the satisfactory separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables.

Cable Separation Reports XXX (References 3 and 4) identify the inspection reports associated with the raceway separation inspections and confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

Within other plant areas inside the non-radiologically controlled area of the auxiliary building (limited hazard areas), the separation meets one of the following:

- 1) The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more.
- 2) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables  $\leq 2/0$  AWG. This minimum vertical separation may be reduced to 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees.
- 3) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low-voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation may be reduced to 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees.
- 4) For configurations that involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch.
- 5) For configurations that involve an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway.
- 6) For configurations that involve enclosed raceways, the minimum vertical and horizontal separation is 1 inch.
- 7) The minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.

Exceptions are not included within the scope of this ITAAC and are addressed within the scope of ITAAC 3.3.00.07d.iii.b (Enclosure 2), ITAAC 3.3.00.07d.iv.b (Enclosure 3), or ITAAC 3.3.00.07d.v.b (Enclosure 4).

The Cable Separation Reports (References 3 and 4) are available for NRC inspection as part of the Unit 3 and Unit 4 ITAAC 3.3.00.07d.ii.b Completion Packages (References 5 and 6, respectively).

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**List of ITAAC Findings**

In accordance with plant procedures for ITAAC completion, Southern Nuclear Operating Company (SNC) performed a review of all ITAAC findings and associated corrective actions. This review found no relevant ITAAC findings associated with this ITAAC.

**References (available for NRC inspection)**

1. APP-GW-E1-001, Electrical Systems Design Criteria
2. 26139-000-4MP-T81C-N7101, Bechtel Construction Quality Verification Program
3. Unit 3 Cable Separation Report XXX
4. Unit 4 Cable Separation Report XXX
5. ~~Unit 3 ITAAC 3.3.00.07d.ii.b-U3-CP-Rev0, ITAAC~~ Completion Package
6. ~~3.3.00.07d.ii.b-U4-CP-Rev0, ITAAC~~ Completion Package
6. ~~Unit 4 ITAAC 3.3.00.07d.ii.b~~ Completion Package
7. NEI 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52"

PROPOSED

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**Southern Nuclear Operating Company**  
**ND-18-0500814**  
**Enclosure 2**

**Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4**  
**Docket No.: 52-025 & 52-026**

**Completion Plan for Uncompleted ITAAC 3.3.00.07d.iii.b [Index Number 804]**

PROPOSED

## **ITAAC Statement**

### Design Commitment

7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.

### Inspections, Tests, Analyses

Inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

iii) Where minimum separation distances are not maintained, the circuits are run in enclosed raceways or barriers are provided.

### Acceptance Criteria

Results of the inspection will confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

iii.b) Where minimum separation distances are not met inside the non-radiologically controlled area of the auxiliary building, the circuits are run in enclosed raceways or barriers are provided.

## **ITAAC Completion Description**

Multiple ITAAC are performed to ensure that physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables. In accordance with this ITAAC, physical separation for circuits that do not meet the separation distance criteria of ITAAC 3.3.00.07d.ii.b may be provided by enclosed raceways or barriers. For circuits requiring enclosed raceways or barriers, the subject ITAAC requires inspections of the raceways that route Class 1E cables and raceways that route non-Class 1E cables inside the non-radiologically controlled area of the auxiliary building to confirm that circuits are run in enclosed raceways or have barriers provided. The Class 1E cables and raceways and non-Class 1E cables inside the non-radiologically controlled area of the auxiliary building are designed to be appropriately separated in accordance with APP-GW-E1-001 (Reference 1). Installation specifications provided to the constructor identify the separation criteria, consistent with the ITAAC commitment.

Class 1E electrical cables, ~~and~~ raceways, ~~and~~ barriers are installed in accordance with design drawings, installation specifications issued for construction and work package requirements. Completed raceway installation, in-progress ~~and~~ completed cable installation, ~~and~~ completed cable terminations, ~~and~~ barriers are inspected to ensure the separation installation specifications are satisfied. Inspections are performed in accordance with the Construction Quality Verification Program 26139-000-4MP-T81C-N7101 (Reference 2). The completed inspection records document the satisfactory separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables.

Cable Separation Reports XXX (References 3 and 4) identify the inspection reports associated with the raceway separation inspections and confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

Where minimum separation distances are not maintained inside the non-radiologically controlled area of the auxiliary building, the circuits are run in enclosed raceways or barriers are provided.

Exceptions to the subject ITAAC are not included within the scope of this ITAAC and are addressed within the scope of ITAAC 3.3.00.07d.iv.b (Enclosure 3) or ITAAC 3.3.00.07d.v.b (Enclosure 4).

The Cable Separation Reports (References 3 and 4) are available for NRC inspection as part of the Unit 3 and Unit 4 ITAAC 3.3.00.07d.iii.b Completion Packages (References 5 and 6, respectively).

#### **List of ITAAC Findings**

In accordance with plant procedures for ITAAC completion, Southern Nuclear Operating Company (SNC) performed a review of all ITAAC findings and associated corrective actions. This review found no relevant ITAAC findings associated with this ITAAC.

#### **References (available for NRC inspection)**

1. APP-GW-E1-001, Electrical Systems Design Criteria
2. 26139-000-4MP-T81C-N7101, Bechtel Construction Quality Verification Program
3. Unit 3 Cable Separation Report XXX
4. Unit 4 Cable Separation Report XXX
5. [3.3.00.07d.iii.b-U3-CP-Rev0, ITAAC Completion Package](#)
5. ~~Unit 3 ITAAC 3.3.00.07d.iii.b Completion Package~~
6. [3.3.00.07d.iii.b-U4-CP-Rev0, ITAAC Completion Package](#)
6. ~~Unit 4 ITAAC 3.3.00.07d.iii.b Completion Package~~
7. NEI 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52"



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Enclosure 3

Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4  
Docket No.: 52-025 & 52-026

Completion Plan for Uncompleted ITAAC 3.3.00.07d.iv.b [Index Number 807]

PROPOSED

## **ITAAC Statement**

### **Design Commitment**

7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.

### **Inspections, Tests, Analyses**

Inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

iv) Separation distances less than those specified above and not run in enclosed raceways or provided with barriers are based on analysis

### **Acceptance Criteria**

Results of the inspection will confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

iv.b) For areas inside the non-radiologically controlled area of the auxiliary building, a report exists and concludes that separation distances less than those specified above and not provided with enclosed raceways or barriers have been analyzed.

## **ITAAC Completion Description**

Multiple ITAAC are performed to ensure that physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables. In accordance with this ITAAC, separation distances for circuits that do not meet the criteria of ITAAC 3.3.00.07d.ii.b or ITAAC 3.3.00.07d.iii.b may be based on analyses. For circuits that have separation distances based on analyses, the subject ITAAC requires inspections to confirm that separation distances have been analyzed. The Class 1E cables and raceways and non-Class 1E cables inside the non-radiologically controlled area of the auxiliary building are designed to be appropriately separated in accordance with APP-GW-E1-001 (Reference 1). Installation Specifications provided to the constructor identify separation criteria, consistent with the ITAAC commitment.

Class 1E electrical cables and raceways are installed in accordance with design drawings, installation specifications issued for construction and work package requirements. Completed raceway installation, in-progress **and completed** cable installation, and completed cable terminations are inspected to ensure the separation installation specifications are satisfied. Inspections are performed in accordance with the Construction Quality Verification Program 26139-000-4MP-T81C-N7101 (Reference 2). The completed inspection records document the satisfactory separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables.

Cable Separation Reports XXX (References 3 and 4) identify the inspection reports associated with the raceway separation inspections and confirm that the separation between raceways that

route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

For areas inside the non-radiologically controlled area of the auxiliary building, separation distances less than those specified above and not run in enclosed raceways or provided with barriers are based on analysis. [The analyses performed for this ITAAC are performed in accordance with IEEE Standard 384, and demonstrate that the effects of lesser separation do not impact the ability of Class 1E circuits to perform their safety related functions.](#)

Exceptions to the subject ITAAC are not included within the scope of this ITAAC and are addressed within the scope of ITAAC 3.3.00.07d.v.b (Enclosure 4).

The Cable Separation Reports (References 3 and 4) are available for NRC inspection as part of the Unit 3 and Unit 4 ITAAC 3.3.00.07d.iv.b Completion Packages (References 5 and 6, respectively).

#### **List of ITAAC Findings**

In accordance with plant procedures for ITAAC completion, Southern Nuclear Operating Company (SNC) performed a review of all ITAAC findings and associated corrective actions. This review found no relevant ITAAC findings associated with this ITAAC.

#### **References (available for NRC inspection)**

1. APP-GW-E1-001, Electrical Systems Design Criteria
2. 26139-000-4MP-T81C-N7101, Bechtel Construction Quality Verification Program
3. Unit 3 Cable Separation Report XXX
4. Unit 4 Cable Separation Report XXX
5. [3.3.00.07d.iv.b-U3-CP-Rev0, ITAAC Completion Package](#)
5. ~~[Unit 3 ITAAC 3.3.00.07d.iv.b Completion Package](#)~~
6. [3.3.00.07d.iv.b-U4-CP-Rev0, ITAAC Completion Package](#)
6. ~~[Unit 4 ITAAC 3.3.00.07d.iv.b Completion Package](#)~~
7. NEI 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52"

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**Southern Nuclear Operating Company**  
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**Enclosure 4**

**Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4**  
**Docket No.: 52-025 & 52-026**

**Completion Plan for Uncompleted ITAAC 3.3.00.07d.v.b [Index Number 810]**

PROPOSED

## **ITAAC Statement**

### **Design Commitment**

7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.

### **Inspections, Tests, Analyses**

Inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

v) Non-Class 1E wiring that is not separated from Class 1E or associated wiring by the minimum separation distance or by a barrier or analyzed is considered as associated circuits and subject to Class 1E requirements.

### **Acceptance Criteria**

Results of the inspection will confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

v.b) For areas inside the non-radiologically controlled area of the auxiliary building, non-Class 1E wiring that is not separated from Class 1E or associated wiring by the minimum separation distance or by a barrier or analyzed is treated as Class 1E wiring.

## **ITAAC Completion Description**

Multiple ITAAC are performed to ensure that physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables. In accordance with this ITAAC, non-Class 1E wiring that is not separated from Class 1E or associated wiring by the minimum separation distance and for which no barrier or analysis is provided is considered as associated circuits and subject to Class 1E requirements. The subject ITAAC requires inspections of the Class 1E and non-Class 1E raceways inside the non-radiologically controlled area of the auxiliary building to confirm that non-Class 1E wiring that is not separated from Class 1E or associated wiring by the minimum separation distance or by a barrier or analyzed is considered as associated circuits and subject to Class 1E requirements. The Class 1E cables and raceways and non-Class 1E cables inside the non-radiologically controlled area of the auxiliary building are designed to be appropriately separated in accordance with APP-GW-E1-001 (Reference 1). Installation specifications provided to the constructor identify separation criteria, consistent with the ITAAC commitment.

Class 1E electrical cables and raceways are installed in accordance with design drawings, installation specifications issued for construction and work package requirements. Completed raceway installation, in-progress and completed cable installation, and completed cable terminations are inspected to ensure the separation installation specifications are satisfied. Inspections are performed in accordance with the Construction Quality Verification Program 26139-000-4MP-T81C-N7101 (Reference 2). The completed inspection records document the

satisfactory separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables.

Cable Separation Reports XXX (References 3 and 4) identify the inspection reports associated with the raceway separation inspections and confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following:

For areas inside the non-radiologically controlled area of the auxiliary building, non-Class 1E wiring that is not separated from Class 1E or associated wiring by the minimum separation distance or by a barrier or analyzed is considered as associated circuits and subject to Class 1E requirements.

The Cable Separation Reports (References 3 and 4) are available for NRC inspection as part of the Unit 3 and Unit 4 ITAAC 3.3.00.07d.v.b Completion Packages (References 5 and 6, respectively).

#### **List of ITAAC Findings**

In accordance with plant procedures for ITAAC completion, Southern Nuclear Operating Company (SNC) performed a review of all ITAAC findings and associated corrective actions. This review found no relevant ITAAC findings associated with this ITAAC.

#### **References (available for NRC inspection)**

1. APP-GW-E1-001, Electrical Systems Design Criteria
2. 26139-000-4MP-T81C-N7101, Bechtel Construction Quality Verification Program
3. Unit 3 Cable Separation Report XXX
4. Unit 4 Cable Separation Report XXX
5. [3.3.00.07d.v.b-U3-CP-Rev0, ITAAC Completion Package](#)
5. ~~Unit 3 ITAAC 3.3.00.07d.v.b Completion Package~~
6. [3.3.00.07d.v.b-U4-CP-Rev0, ITAAC Completion Package](#)
6. ~~Unit 4 ITAAC 3.3.00.07d.v.b Completion Package~~
7. NEI 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52"