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U.S. Nuclear Regulatory Commission  
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Southern Nuclear Operating Company  
Vogtle Electric Generating Plant Unit 4  
ITAAC Closure Notification on Completion of ITAAC 2.5.05.02.i [Index Number 565]

Ladies and Gentlemen:

In accordance with 10 CFR 52.99(c)(1), the purpose of this letter is to notify the Nuclear Regulatory Commission (NRC) of the completion of Vogtle Electric Generating Plant (VEGP) Unit 4 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Item 2.5.05.02.i [Index Number 565] to demonstrate that the Incore Instrumentation System (IIS) identified as seismic Category I in the Combined License (COL) Appendix C, Table 2.3.2-1 can withstand seismic design basis dynamic loads without loss of safety function. This ITAAC confirms that the Class IE equipment identified in the VEGP Unit 4 Combined License (COL) Appendix C, Table 2.5.5-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function, for the time required to perform the safety function. The closure process for this ITAAC is based on the guidance described in Nuclear Energy Institute (NEI) 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52," which was endorsed by the NRC in Regulatory Guide 1.215.

This letter contains no new NRC regulatory commitments. Southern Nuclear Operating Company (SNC) requests NRC staff confirmation of this determination and publication of the required notice in the Federal Register per 10 CFR 52.99.

If there are any questions, please contact Kelli Roberts at 706-848-6991.

Respectfully submitted,

  
Michael J. Yox  
Regulatory Affairs Director Vogtle 3 & 4

Enclosure: Vogtle Electric Generating Plant (VEGP) Unit 4  
Completion of ITAAC 2.5.05.02.i [Index Number 565]

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**Southern Nuclear Operating Company  
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Enclosure**

**Vogtle Electric Generating Plant (VEGP) Unit 4  
Completion of ITAAC 2.5.05.02.i [Index Number 565]**

### **ITAAC Statement**

#### **Design Commitment**

2. The seismic Category I equipment identified in Table 2.5.5-1 can withstand seismic design basis dynamic loads without loss of safety function.

3.a) The Class 1E equipment identified in Table 2.5.5-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function, for the time required to perform the safety function.

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

- i) Not used per Amendment No. 186
- ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.
- iii) Inspection will be performed for the existence of a report verifying that the equipment including anchorage is seismically bounded by the tested or analyzed conditions.
- i) Type tests, analysis, or a combination of type tests and analysis will be performed on Class 1E equipment located in a harsh environment.
- ii) Inspection will be performed of the Class 1E equipment and the associated wiring, cables, and terminations located in a harsh environment.

#### **Acceptance Criteria**

- i) Not used per Amendment No. 186
- ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of safety function.
- iii) A report exists and concludes that the equipment including anchorage is seismically bounded by the tested or analyzed conditions.
- i) A report exists and concludes that the Class 1E equipment identified in Table 2.5.5-1 as being qualified for a harsh environment. This equipment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.
- ii) A report exists and concludes that the Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.5.5-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

### **ITAAC Determination Basis**

This ITAAC requires that inspections, tests, and analyses be performed and documented to ensure the In-core Instrumentation System (IIS) equipment identified as seismic Category I or Class 1E in the Combined License (COL) Appendix C, Table 2.5.5-1 (the Table) is designed and constructed in accordance with applicable requirements.

ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of safety function.

Seismic Category I equipment in the Table requires type tests and/or analyses to demonstrate structural integrity and operability. Structural integrity of the passive seismic Category I mechanical equipment is demonstrated by analysis in accordance with American Society of Mechanical Engineers (ASME) Code Section III (Reference 2).

Safety-related (Class 1E) electrical equipment in the Table is seismically qualified by type testing combined with analysis in accordance with Institute of Electrical and Electronics Engineers (IEEE) Standard 344-1987 (Reference 3). This equipment includes safety-related (Class 1E) field sensors and the safety-related electrical cables and connector assemblies. The specific qualification method (i.e., type testing, analysis, or combination) used for each piece of equipment in the Table is identified in Attachment A. Additional information about the methods used to qualify AP1000 safety-related equipment is provided in the Updated Final Safety Analysis Report (UFSAR) Appendix 3D (Reference 4). The EQ Reports (Reference 5) identified in Attachment A contain applicable test reports and associated documentation and conclude that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function.

iii) A report exists and concludes that the equipment including anchorage is seismically bounded by the tested or analyzed conditions.

An inspection (Reference 11) was conducted to confirm that the seismic category I equipment identified in Table 2.5.5-1, the Class 1E Incore Thimble Assemblies, were manufactured per the qualified design. The inspection verified the equipment make/model/serial number, as well as the as-designed anchorage point to the integrated grid assembly.

Attachment A identifies the EQRR (Reference 1) that was completed to verify the seismic Category I equipment listed in the Table, including anchorage, is seismically bounded by the tested or analyzed conditions, IEEE Standard 344-1987 (Reference 3), and NRC Regulatory Guide (RG) 1.100 (Reference 6).

i) A report exists and concludes that the Class 1E equipment identified in Table 2.5.5-1 as being qualified for a harsh environment. This equipment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.

The harsh environment Class 1E equipment in the Table is qualified by type testing and/or analyses. Class 1E electrical equipment type testing is performed in accordance with IEEE Standard 323-1974 (Reference 7) and RG 1.89 (Reference 8) to meet the requirements of 10 CFR 50.49. Type testing of safety-related equipment meets the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 3. Attachment A identifies the EQ program and

specific qualification method for each piece of Class 1E electrical equipment located in a harsh environment. Additional information about the methods used to qualify AP1000 safety-related equipment is provided in the UFSAR Appendix 3D (Reference 4). EQ Reports (Reference 5) identified in Attachment A contain applicable test reports/analysis and associated documentation and conclude that the equipment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.

ii) A report exists and concludes that the Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.5.5-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

The harsh environment Class 1E equipment in the Table is qualified by the type testing and/or analyses identified in the EQ Reports listed in Attachment A. Class 1E electrical equipment type testing is performed in accordance with IEEE Standard 323-1974 (Reference 7) and RG 1.89 (Reference 8) to meet the requirements of 10 CFR 50.49. Type testing of safety-related equipment meets the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 4. Attachment A identifies the EQ program and specific qualification method for each piece of Class 1E electrical equipment located in a harsh environment. Additional information about the methods used to qualify AP1000 safety-related equipment is provided in the UFSAR Appendix 3D (Reference 4). EQ Reports (Reference 5) and EQRR Reports (Reference 1) identified in Attachment A contain applicable test reports/analysis and associated documentation and conclude that the equipment and the associated wiring, cables, and terminations can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.

Inspection is accomplished by verifying a quality assurance data package (Reference 12) exists that concludes that the equipment was constructed as per design.

Together, these reports (References 1, 5, and 12) provide evidence that the ITAAC Acceptance Criteria requirements are met:

- A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of safety function;
- A report exists and concludes that the equipment including anchorage is seismically bounded by the tested or analyzed conditions;
- A report exists and concludes that the Class 1E equipment identified in Table 2.5.5-1 as being qualified for a harsh environment. This equipment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function;
- A report exists and concludes that the Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.5.5-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

References 1, 5, and 12 are available for NRC inspection as part of the Unit 4 ITAAC 2.5.05.02.i Completion Package (Reference 9).

### **ITAAC Finding Review**

In accordance with plant procedures for ITAAC completion, Southern Nuclear Operating Company (SNC) performed a review of all ITAAC findings pertaining to the subject ITAAC and associated corrective actions. This finding review, which included now-consolidated ITAAC Indexes 566, 567, 568, and 569, found no relevant ITAAC findings associated with this ITAAC.

The ITAAC completion review is documented in the ITAAC Completion Package for ITAAC 2.5.05.02.i (Reference 9) and is available for NRC review.

### **ITAAC Completion Statement**

Based on the above information, SNC hereby notifies the NRC that ITAAC 2.5.05.02.i was performed for VEGP Unit 4 and that the prescribed acceptance criteria are met.

Systems, structures, and components verified as part of this ITAAC are being maintained in their as-designed, ITAAC compliant condition in accordance with the approved plant programs and procedures.

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

1. EQ Reconciliation Reports (EQRR) as identified in Attachment A for Unit 4
2. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section III, "Rules for Construction of Nuclear Power Plant Components," 1998 Edition with 2000 Addenda
3. IEEE Standard 344-1987, "IEEE Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations"
4. Vogtle 3&4 Updated Final Safety Analysis Report Appendix 3D, "Methodology for Qualifying AP1000 Safety-Related Electrical and Mechanical Equipment"
5. Equipment Qualification (EQ) Reports as identified in Attachment A
6. Regulatory Guide 1.100, Rev. 2, "Seismic Qualification of Electric and Mechanical Equipment for Nuclear Power Plants"
7. IEEE Standard 323-1974, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations"
8. Regulatory Guide 1.89, Rev 1, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants"
9. 2.5.05.02.i-U4-CP-Rev 0, "ITAAC Completion Package"
10. DCP\_DCP\_010657, "Summary of IITA Equipment Qualification"
11. SVP\_SVP\_018473, "Incore Instrumentation Thimble Assemblies Seismic Qualification Summary"



12. APP-JE90-VQQ-001, Rev. 1 "Quality Release & Certificate of Conformance – JE90"

### Attachment A

#### System: In-core Instrumentation System (IIS)

Equipment Name <sup>+</sup>	Seismic Cat. I <sup>+</sup>	Class 1E/ Qual. For Harsh Envir. <sup>+</sup>	Envir. Zone <sup>1</sup>	Envir Qual Program <sup>2</sup>	Type of Qual.	EQ Reports	EQRR
Incore Thimble Assemblies (at least three assemblies in each core quadrant)	Yes	Yes <sup>(3)</sup> /Yes <sup>(3)</sup>	1	E * S	Type Tests & Analysis	SV4-JS94-VBR-001 / SV4-JS94-VBR-002 (Cable Assemblies)  DCP_DCP_010657 (Harsh)  SVP_SVP_018473 (Seismic)	2.5.05.02.i-U4-EQRR- PCD001-Rev0

#### Notes:

+ Excerpt from COL Appendix C Table 2.5.5-1

- See Table 3D.5-1 of UFSAR
- E - Electrical Equipment Program  
S = Qualified for submergence or operation with spray  
\* - Harsh Environment
- Only applies to the safety-related assemblies. There are at least two safety-related assemblies in each core quadrant.