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ND-18-0041
10 CFR 52.99(c)(3)

U.S. Nuclear Regulatory Commission
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Southern Nuclear Operating Company
Vogtle Electric Generating Plant Unit 3 and Unit 4
Notice of Uncompleted ITAAC 225-days Prior to Initial Fuel Load
Item 2.1.02.05a.i [Index Number 19]

Ladies and Gentlemen:

Pursuant to 10 CFR 52.99(c)(3), Southern Nuclear Operating Company hereby notifies the NRC that as of January 16, 2018, Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4 Uncompleted Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Item 2.1.02.05a.i [Index Number 19] has not been completed greater than 225-days prior to initial fuel load. The Enclosure describes the plan for completing this ITAAC. Southern Nuclear Operating Company will, at a later date, provide additional notifications for ITAAC that have not been completed 225-days prior to initial fuel load.

This notification is informed by the guidance described in 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. In accordance with NEI 08-01, this notification includes ITAAC for which required inspections, tests, or analyses have not been performed or have been only partially completed. All ITAAC will be fully completed and all Section 52.99(c)(1) ITAAC Closure Notifications will be submitted to NRC to support the Commission finding that all acceptance criteria are met prior to plant operation, as required by 10 CFR 52.103(g).

This letter contains no new NRC regulatory commitments.

If there are any questions, please contact Tom Petrak at 706-848-1575.

Respectfully submitted,

Michael J. Yox
Regulatory Affairs Director Vogtle 3 & 4

Enclosure: Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4
Completion Plan for Uncompleted ITAAC 2.1.02.05a.i [Index Number 19]

MJY/PGL/amw

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**Southern Nuclear Operating Company**
**ND-18-0041**
**Enclosure**

# Vogtle Electric Generating Plant (VEGP) Unit 3 and Unit 4 Completion Plan for Uncompleted ITAAC 2.1.02.05a.i [Index Number 19]

**ITAAC Statement**

Design Commitment

5.a) The seismic Category I equipment identified in Table 2.1.2-1 can withstand seismic design basis loads without loss of safety function.

7.a) The Class 1E equipment identified in Table 2.1.2-1 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) Inspection will be performed to verify that the seismic Category I equipment and valves identified in Table 2.1.2-1 are located on the Nuclear Island.

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 as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions.

i) Type tests, analyses, or a combination of type tests and analyses will be performed on Class 1E equipment located in a harsh environment.

ii) Inspection will be performed of the as-built Class 1E equipment and the associated wiring, cables, and terminations located in a harsh environment.

Acceptance Criteria

i) The seismic Category I equipment identified in Table 2.1.2-1 is located on the Nuclear Island.

ii) A report exists and concludes 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 as-built 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 2.1.2-1 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.

ii) A report exists and concludes that the as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.1.2-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

**ITAAC Completion Description**

This ITAAC requires that inspections, tests, and analyses be performed and documented to ensure the Reactor Coolant System (RCS) components identified as seismic Category I or Class 1E in the Combined License (COL) Appendix C, Table 2.1.2-1 (the Table) are designed and constructed in accordance with applicable requirements.

i) The seismic Category I equipment identified in Table 2.1.2-1 is located on the Nuclear Island

To assure that seismic Category I components can withstand seismic design basis loads without loss of safety function, all the components in the Table are designed to be located on the seismic Category I Nuclear Island. In accordance with Equipment Qualification (EQ) Walkdown ITAAC Guideline (Reference 1), an inspection is conducted of the RCS to confirm the satisfactory installation of the seismically qualified components. The inspection includes verification of equipment make/model/serial number and verification of equipment location (Building, Elevation, Room). The EQ As-Built Reconciliation Reports (EQRR) (Reference 2) identified in Attachment A document the results of the inspection and conclude that the seismic Category I components are located on the Nuclear Island.

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

Seismic Category I components in the Table require type tests and/or analyses to demonstrate structural integrity and operability. Structural integrity of the seismic Category I valves, as well as other passive seismic Category I mechanical equipment, is demonstrated by analysis in accordance with American Society of Mechanical Engineers (ASME) Code Section III (Reference 3). Functionality of the subset of active safety-related valves under seismic loads is determined using the guidance of ASME QME-1-2007 (Reference 4).

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 5). This equipment includes safety-related (Class 1E) field sensors and the safety-related active valve accessories such as electric actuators, position switches, pilot solenoid valves and electrical connector assemblies. The specific qualification method (i.e., type testing, analysis, or combination) used for each component 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 6). The EQ Reports (Reference 7) 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 as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions.

An inspection (Reference 1) is conducted to confirm the satisfactory installation of the seismically qualified components in the Table. The inspection verifies the equipment make/model/serial number, as-designed equipment mounting orientation, anchorage and clearances, and electrical and other interfaces. The documentation of installed configuration of

seismically qualified components includes photographs and/or sketches/drawings of equipment/mounting/interfaces.

As part of the seismic qualification program, consideration is given to the definition of the clearances needed around the equipment mounted in the plant to permit the equipment to move during a postulated seismic event without causing impact between adjacent pieces of safety-related equipment. This is done as part of seismic testing by measuring the maximum dynamic relative displacement of the top and bottom of the equipment. EQ Reports (Reference 7) identify the equipment mounting employed for qualification and establish interface requirements for assuring that subsequent in-plant installation does not degrade the established qualification. Interface requirements are defined based on the test configuration and other design requirements.

Attachment A identifies the EQRR (Reference 2) completed to verify that the as-built seismic Category I equipment listed in the Table, including anchorage, are seismically bounded by the tested or analyzed conditions, IEEE Standard 344-1987 (Reference 5) and NRC Regulatory Guide (RG) 1.100 (Reference 8).

i) A report exists and concludes that the Class 1E equipment identified in Table 2.1.2-1 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 harsh environment Class 1E components in the Table are qualified by type testing and/or analyses. Class 1E electrical component type testing is performed in accordance with IEEE Standard 323-1974 (Reference 9) and RG 1.89 (Reference 10) 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 safety-related mechanical or Class 1E electrical component 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 6). EQ Reports (Reference 7) identified in Attachment A contain applicable test reports 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 as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.1.2-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses

An inspection (Reference 1) is conducted of the RCS to confirm the satisfactory installation of the Class 1E components in the Table. The inspection verifies the equipment location, make/model/serial number, as-designed equipment mounting, wiring, cables, and terminations, and confirms that the environmental conditions for the zone (Attachment A) in which the component is mounted are bounded by the tested and/or analyzed conditions. It also documents the installed configuration with photographs or sketches/drawings of equipment mounting and connections. The EQRR (Reference 2) identified in Attachment A document this inspection and conclude that the as-built harsh environment Class 1E equipment and the associated wiring, cables, and terminations are bounded by the qualified configuration and IEEE Standard 323-1974 (Reference 9).

Together, these reports (References 2 and 7) provide evidence that the ITAAC Acceptance Criteria requirements are met:

- The seismic Category I equipment identified in Table 2.1.2-1 is located on the Nuclear Island;
- A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function;
- A report exists and concludes that the as-built 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 2.1.2-1 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; and
- A report exists and concludes that the as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.1.2-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

References 2 and 7 are available for NRC inspection as part of the Unit 3 and Unit 4 ITAAC 2.1.02.05a.i Completion Packages (References 11 and 12, 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 pertaining to the subject ITAAC and associated corrective actions. This finding review, which included now-consolidated ITAAC Indexes 20, 21, 24, and 25, found the following Notices of Nonconformance (NON) associated with this ITAAC:

1) 99901441/2014-201-03 (open)
2) 99900728/I-2017-201-01 (open)

Before submission of the ITAAC Closure Notification (ICN), corrective actions will be completed for relevant ITAAC findings.

**References (available for NRC inspection)**

1. ND-xx-xx-001, "EQ Walkdown ITAAC Guideline"
2. EQ As-Built Reconciliation Reports (EQRR) as identified in Attachment A for Units 3 and 4
3. 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

4. ASME QME-1-2007, "Qualification of Active Mechanical Equipment Used in Nuclear Power Plants," The American Society of Mechanical Engineers, June 2007

5. IEEE Standard 344-1987, "IEEE Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations"

6. Vogtle 3&4 Updated Final Safety Analysis Report Appendix 3D, "Methodology for Qualifying AP1000 Safety-Related Electrical and Mechanical Equipment"

7. Equipment Qualification (EQ) Reports as identified in Attachment A

8. Regulatory Guide 1.100, Rev. 2, "Seismic Qualification of Electric and Mechanical Equipment for Nuclear Power Plants"

9. IEEE Standard 323-1974, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations"

10. Regulatory Guide 1.89, Rev 1, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants"

11. 2.1.02.05a.i-U3-CP-Rev X, "Completion Package for Unit 3 ITAAC 2.1.02.05a.i [Index Number 19]"

12. 2.1.02.05a.i-U4-CP-Rev X, "Completion Package for Unit 4 ITAAC 2.1.02.05a.i [Index Number 19]"

13. NEI 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52"

**Attachment A**

System: Reactor Coolant System (RCS)

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| Steam Generator 1 | RCS-MB-01 | Yes | -/- | N/A | N/A | Analysis | APP-MB01-Z0R-100 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Steam Generator 2 | RCS-MB-02 | Yes | -/- | N/A | N/A | Analysis | APP-MB01-Z0R-100 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1A | RCS-MP-01A | Yes | No/No | N/A | N/A | Analysis | APP-MP01-S2R-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1B | RCS-MP-01B | Yes | No/No | N/A | N/A | Analysis | APP-MP01-S2R-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2A | RCS-MP-02A | Yes | No/No | N/A | N/A | Analysis | APP-MP01-S2R-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2B | RCS-MP-02B | Yes | No/No | N/A | N/A | Analysis | APP-MP01-S2R-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer | RCS-MV-02 | Yes | No/No (heaters) | N/A | N/A | Analysis | APP-MV20-Z0R-101 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Automatic Depressurization System (ADS) Sparger A | PXS-MW-01A | Yes | -/- | N/A | N/A | Analysis | APP-MW01-Z0C-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| ADS Sparger B | PXS-MW-01B | Yes | -/- | N/A | N/A | Analysis | APP-MW01-Z0C-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Safety Valve | RCS-PL-V005A | Yes | -/- | N/A | N/A | Analysis | APP-PV62-VBR-002 / APP-PV62-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Safety Valve | RCS-PL-V005B | Yes | -/- | N/A | N/A | Analysis | APP-PV62-VBR-002 / APP-PV62-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| First-stage ADS Motor-operated Valve (MOV) | RCS-PL-V001A | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-014 / APP-PV01-VBR-013 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| First-stage ADS MOV | RCS-PL-V001B | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-014 / APP-PV01-VBR-013 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Second-stage ADS MOV | RCS-PL-V002A | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-014 / APP-PV01-VBR-013 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Second-stage ADS MOV | RCS-PL-V002B | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-014 / APP-PV01-VBR-013 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Third-stage ADS MOV | RCS-PL-V003A | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-014 / APP-PV01-VBR-013 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Third-stage ADS MOV | RCS-PL-V003B | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-014 / APP-PV01-VBR-013 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Fourth-stage ADS Squib Valve | RCS-PL-V004A | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV70-VBR-005 / APP-PV70-VBR-004 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Fourth-stage ADS Squib Valve | RCS-PL-V004B | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV70-VBR-005 / APP-PV70-VBR-004 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Fourth-stage ADS Squib Valve | RCS-PL-V004C | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV70-VBR-005 / APP-PV70-VBR-004 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Fourth-stage ADS Squib Valve | RCS-PL-V004D | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV70-VBR-005 / APP-PV70-VBR-004 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| ADS Discharge Header A Vacuum Relief Valve | RCS-PL-V010A | Yes | Yes/Yes | 1 | M * S | Type Testing & Analysis | APP-PV18-VBR-002 / APP-PV18-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| ADS Discharge Header B Vacuum Relief Valve | RCS-PL-V010B | Yes | Yes/Yes | 1 | M * S | Type Testing & Analysis | APP-PV18-VBR-002 / APP-PV18-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| First-stage ADS Isolation MOV | RCS-PL-V011A | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| First-stage ADS Isolation MOV | RCS-PL-V011B | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Second-stage ADS Isolation MOV | RCS-PL-V012A | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Second-stage ADS Isolation MOV | RCS-PL-V012B | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Third-stage ADS Isolation MOV | RCS-PL-V013A | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Third-stage ADS Isolation MOV | RCS-PL-V013B | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Fourth-stage ADS MOV | RCS-PL-V014A | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Fourth-stage ADS MOV | RCS-PL-V014B | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Fourth-stage ADS MOV | RCS-PL-V014C | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+3 | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| Fourth-stage ADS MOV | RCS-PL-V014D | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV01-VBR-012 / APP-PV01-VBR-011 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Reactor Vessel Head Vent Valve | RCS-PL-V150A | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV13-VBR-002 / APP-PV13-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Reactor Vessel Head Vent Valve | RCS-PL-V150B | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV13-VBR-002 / APP-PV13-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Reactor Vessel Head Vent Valve | RCS-PL-V150C | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV13-VBR-002 / APP-PV13-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Reactor Vessel Head Vent Valve | RCS-PL-V150D | Yes | Yes/Yes | 1 | M E * S | Type Testing & Analysis | APP-PV13-VBR-002 / APP-PV13-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Flow Sensor | RCS-101A | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Flow Sensor | RCS-101B | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Flow Sensor | RCS-101C | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Flow Sensor | RCS-101D | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Flow Sensor | RCS-102A | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| RCS Hot Leg 2 Flow Sensor | RCS-102B | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Flow Sensor | RCS-102C | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Flow Sensor | RCS-102D | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 1A Narrow Range Temperature Sensor | RCS-121A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 1B Narrow Range Temperature Sensor | RCS-121B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 1B Narrow Range Temperature Sensor | RCS-121C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 1A Narrow Range Temperature Sensor | RCS-121D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 2B Narrow Range Temperature Sensor | RCS-122A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 2A Narrow Range Temperature Sensor | RCS-122B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 2A Narrow Range Temperature Sensor | RCS-122C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| RCS Cold Leg 2B Narrow Range Temperature Sensor | RCS-122D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 1A Dual Range Temperature Sensor | RCS-125A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 2A Dual Range Temperature Sensor | RCS-125B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 1B Dual Range Temperature Sensor | RCS-125C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Cold Leg 2B Dual Range Temperature Sensor | RCS-125D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Narrow Range Temperature Sensor | RCS-131A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Narrow Range Temperature Sensor | RCS-131B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Narrow Range Temperature Sensor | RCS-131C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Narrow Range Temperature Sensor | RCS-131D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Narrow Range Temperature Sensor | RCS-132A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| RCS Hot Leg 2 Narrow Range Temperature Sensor | RCS-132B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Narrow Range Temperature Sensor | RCS-132C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Narrow Range Temperature Sensor | RCS-132D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Narrow Range Temperature Sensor | RCS-133A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Narrow Range Temperature Sensor | RCS-133B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Narrow Range Temperature Sensor | RCS-133C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Narrow Range Temperature Sensor | RCS-133D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Wide Range Temperature Sensor | RCS-135A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Wide Range Temperature Sensor | RCS-135B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Wide Range Pressure Sensor | RCS-140A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| RCS Wide Range Pressure Sensor | RCS-140B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Wide Range Pressure Sensor | RCS-140C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Wide Range Pressure Sensor | RCS-140D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 1 Level Sensor | RCS-160A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCS Hot Leg 2 Level Sensor | RCS-160B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Passive Residual Heat Removal (PRHR) Return Line Temperature Sensor | RCS-161 | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Pressure Sensor | RCS-191A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Pressure Sensor | RCS-191B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Pressure Sensor | RCS-191C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Pressure Sensor | RCS-191D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| Pressurizer Level Reference Leg Temperature Sensor | RCS-193A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Level Reference Leg Temperature Sensor | RCS-193B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Level Reference Leg Temperature Sensor | RCS-193C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Level Reference Leg Temperature Sensor | RCS-193D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE53-VBR-002 / APP-JE53-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Level Sensor | RCS-195A | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Level Sensor | RCS-195B | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Level Sensor | RCS-195C | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| Pressurizer Level Sensor | RCS-195D | Yes | Yes/Yes | 1 | E * S | Type Testing & Analysis | APP-JE52-VBR-002 / APP-JE52-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1A Bearing Water Temperature Sensor | RCS-211A | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1A Bearing Water Temperature Sensor | RCS-211B | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| RCP 1A Bearing Water Temperature Sensor | RCS-211C | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1A Bearing Water Temperature Sensor | RCS-211D | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1B Bearing Water Temperature Sensor | RCS-212A | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1B Bearing Water Temperature Sensor | RCS-212B | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1B Bearing Water Temperature Sensor | RCS-212C | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1B Bearing Water Temperature Sensor | RCS-212D | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2A Bearing Water Temperature Sensor | RCS-213A | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2A Bearing Water Temperature Sensor | RCS-213B | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2A Bearing Water Temperature Sensor | RCS-213C | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2A Bearing Water Temperature Sensor | RCS-213D | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

| Equipment Name+ | Tag No.+ | Seismic Cat. I+ | Class 1E/ Qual. For Harsh Envir.+ [3] | Envir. Zone[1] | Envir Qual Program[2] | Type of Qual. | EQ Reports (Reference 7) | As-Built EQRR (Reference 2)[4] |
|---|---|---|---|---|---|---|---|---|
| RCP 2B Bearing Water Temperature Sensor | RCS-214A | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2B Bearing Water Temperature Sensor | RCS-214B | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2B Bearing Water Temperature Sensor | RCS-214C | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2B Bearing Water Temperature Sensor | RCS-214D | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-MP01-VBR-002 / APP-MP01-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1A Pump Speed Sensor | RCS-281 | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE62-VBR-002 / APP-JE62-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 1B Pump Speed Sensor | RCS-282 | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE62-VBR-002 / APP-JE62-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2A Pump Speed Sensor | RCS-283 | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE62-VBR-002 / APP-JE62-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |
| RCP 2B Pump Speed Sensor | RCS-284 | Yes | Yes/Yes | 1 | E * | Type Testing & Analysis | APP-JE62-VBR-002 / APP-JE62-VBR-001 | 2.1.02.05a.i-U3-EQRR-PCDXXX-Rev 0 |

Notes:

[+] Excerpt from COL Appendix C Table 2.1.2-1

1. See Table 3D.5-1 of UFSAR
2. E = Electrical Equipment Program (limit switch and the motor operator, squib operator, solenoid operator)
   M = Mechanical Equipment Program (valve)
   S = Qualified for submergence or operation with spray
   * = Harsh Environment
3. Dash (-) indicates not applicable
4. The Unit 4 As-Built EQRR are numbered "2.1.02.05a.i-U4-EQRR-PCDXXX-Rev 0"