UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

July 19, 2023

Jamie Coleman
Regulatory Affairs Director
Southern Nuclear Operating Company
7825 River Road, BIN 63031
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 4 – NRC INTEGRATED INSPECTION REPORT 05200026/2023002

Dear Ms. Coleman:

On June 30, 2023, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at Vogtle Electric Generating Plant (VEGP), Unit 4. The enclosed inspection report documents the inspection results, which the inspectors discussed on July 11, 2023, with Mr. G. Chick, VEGP Units 3 and 4 Executive Vice President, and other members of your staff.

The inspection examined a sample of construction activities conducted under your Combined License as it relates to safety and compliance with the Commission's rules and regulations and with the conditions of these documents. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The NRC inspectors documented two findings of very low safety significance (Green) in this report. Each of the findings involved a violation of NRC requirements. The NRC is treating the violations as noncited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; and the NRC Resident Inspector at VEGP, Units 3 & 4.

If you disagree with a cross-cutting aspects assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; and the NRC Resident Inspector at VEGP, Units 3 & 4.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with Title 10 of the Code of Federal Regulations 2.390, “Public Inspections, Exemptions, Requests for Withholding.” Should you have any questions concerning this letter, please contact me at 404-997-4510.

Sincerely,

Signed by Coovert, Nicole
on 07/19/23

Nicole Coovert, Chief
Construction Inspection Branch 1
Division of Construction Oversight

Docket No.: 5200026
License No: NPF-92

Enclosure:
NRC Inspection Report (IR) 05200026/2023002
w/attachment: Supplemental Information

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SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 4 – NRC INTEGRATED INSPECTION REPORT 05200026/2023002 Dated July xx, 2023

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DATE	7/18/2023	7/18/2023	7/18/2023		

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200026
License Numbers:	NPF-92
Report Numbers:	05200026/2023002
Licensee:	Southern Nuclear Operating Company, Inc
Facility:	Vogtle Unit 4
Location:	Waynesboro, GA
Inspection Dates:	April 1, 2023, through June 30, 2023
Inspectors:	B. Kemker, Senior Resident Inspector, Division of Construction Oversight (DCO) B. Griman, Resident Inspector, DCO J. England, Senior Construction Inspector, DCO T. Fredette, Reactor Operations Engineer, Office of Nuclear Reactor Regulation – Vogtle Project Office R. Mathis, Senior Construction Inspector, DCO R. Patel, Senior Construction Inspector, DCO R. Patterson, Physical Security Inspector, Division of Reactor Safety A. Ponko, Senior Construction Inspector, DCO J. Vasquez, Construction Inspector, DCO
Approved by:	Nicole Coovert, Chief Construction Inspection Branch 1 Division of Construction Oversight

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200026/2023002; 04/01/2023 through 06/30/2023; Vogtle Unit 4, integrated inspection report.

This report covers a three-month period of inspection by resident, regional, and headquarters inspectors. The report documents one Inspections, Tests, Analyses, and Inspection Criteria (ITAAC) finding and one construction finding of very low safety significance (Green), each with an associated noncited violation (NCV). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red), which is determined using Inspection Manual Chapter (IMC) 2519, “Construction Significance Determination Process.” Cross-cutting aspects are determined using IMC 0613, Appendix F, “Construction Cross-Cutting Areas and Aspects.” All violations of NRC requirements are dispositioned in accordance with the NRC’s Enforcement Policy. The NRC’s program for overseeing the safe construction of commercial nuclear power reactors is described in IMC 2506, “Construction Reactor Oversight Process General Guidance and Basis Document.”

A. NRC-Identified and Self Revealed Findings

(Green) The inspectors identified an ITAAC finding, with five examples, of very low safety significance with an associated NCV of Title 10 of the Code of Federal Regulations (10 CFR), Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee’s failure to maintain physical separation between two Class 1E divisions and between Class 1E and non-Class 1E cables, as required by electrical specification APP-G1-V8-001, “AP1000 Electrical Installation Specification.” The licensee entered the issues into its corrective action program (CAP) as condition reports (CRs) 50177188, 50177227, 50177240, 50177297, and 50177336 for evaluation and identification of corrective actions. Corrective actions included rework to restore compliance with the separation requirements and for two examples, the licensee conducted an analysis that supported the as-built configuration being left as-is with no impacts to applicable structures, systems, or components (SSCs).

The performance deficiency (PD) was of more than minor safety significance, and thus a finding, because it represented an adverse condition that rendered the quality of the safety function associated with the Class 1E cable raceway system unacceptable and required substantive corrective action. The finding was Green because it was associated with Class 1E cable raceway system, which is assigned as an intermediate risk importance, and was assigned to Row 1 of the significance determination matrix, and for each of the five examples, if left uncorrected, the finding could reasonably be expected to impair the design function of only one train of a multi-train system. This violation was determined to be an ITAAC finding because it impacted the acceptance criteria of ITAAC 3.3.00.07d.ii.a (800), which states physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables inside the containment. The inspectors determined the proximate cause of the PD was indicative of present licensee performance and was associated with the cross-cutting aspect of Avoid Complacency in the area of Human Performance. [H.12] (Section 1A22)

(Green) The inspectors identified a Construction finding of very low safety significance with an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to have an analysis demonstrating the as-built configuration of support

SV4-1222-SH-E804 would meet design requirements. The licensee entered this finding into its CAP as CR 50177001 for evaluation and identification of corrective actions.

The PD was of more than minor safety significance, and thus a finding, because it represented an adverse condition that rendered the quality of an SSC, unacceptable or indeterminate, and required substantive corrective action. Specifically, the analysis and design of support SV4-1222-SH-E804 documented in calculation APP-1220-SHC-301 did not adequately account for the as-built configuration of the conduits attached to support SV4-1222-SH-E804. The finding was of very low safety significance because it was associated with the Class 1E dc and uninterruptible power supply system, which is assigned as a high system risk importance, and was assigned to Row 1 of the significance determination matrix, and if left uncorrected, the finding could reasonably be expected to impair the design function of only one train of a multi-train system. The finding was indicative of current licensee performance and was associated with the cross-cutting aspect of Design Margins in the area of Human Performance. The proximate cause of the PD was attributed to the failure to maintain equipment within design margins. [H.6] (Section 1P03)

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Construction Status

Unit 4: The licensee completed all major structural, mechanical, and electrical construction and was in the process of finalizing details needed to complete all Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC). Hot functional testing was completed.

1. CONSTRUCTION REACTOR SAFETY

Cornerstones: Design/Engineering, Procurement/Fabrication, Construction/Installation, Inspection/Testing

IMC 2503, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) - Related Work Inspections

1A01 (Unit 4) ITAAC Number 2.1.02.02a (13) / Family 06F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.02a (13). The inspectors used the following NRC inspection procedures (IPs)/sections to perform this inspection:

- 65001.03-02.07 - Review of Records
- 65001.06-02.01 - General Installation
- 65001.06-02.05 - Problem Identification and Resolution

The inspectors reviewed documents associated with Stone & Webster (S&W) work package SV4-RCS-P0W-1051836 for installation of pressurizer safety valves SV4-RCS-PL-V005A and SV4-RCS-PL-V005B that provide overpressure protection of the reactor cooling system (RCS). The inspectors reviewed associated documents to determine if the bolted flange joint connections to the inlet 6-inch and outlet 8-inch diameter pipe flanges were assembled in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Code, Section III, Subsection NB, for Class 1 components.

The inspectors reviewed S&W piping installation data sheets to verify quality control (QC) inspector hold points for identification/marking of these PV62 safety relief valves with respective serial numbers N900028-00-0013 and N900028-00-0014 for material traceability (including bolts, nuts, and gaskets), internal cleanliness, and calibration of torquing tools were deemed satisfactory and signed by QC inspectors in accordance with the requirements of the ASME Code, Section III, Article NCA-3000, with final signatures by the authorized nuclear inspector.

The inspectors reviewed S&W bolted joint data sheets to verify QC inspector hold points for alignment/fit-up with flexitallic gaskets and flanges sequentially torqued in gradual steps to the final values were deemed satisfactory and signed off by QC

inspectors in accordance with the requirements of the ASME Code, Section III, paragraph NB-2128, and Section II, Part D, Subpart 1, Table 4, with final signatures by the authorized nuclear inspector.

b. Findings

No findings were identified.

1A02 (Unit 4) ITAAC Number 2.1.03.13 (88) / Family 05F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.13 (88). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.05 - Inspection of ITAAC-Related Installation of Reactor Pressure Vessel and Internals
- 65001.05-02.01 - Purchase and Receipt of Components
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02 - Fabrication Records Review

The inspectors performed an inspection to verify a report exists and concludes the fuel assemblies and rod cluster control assemblies (RCCA) intended for the initial core load and listed in Table 2.1.3-1 of Appendix C to the Vogtle Unit 4 Combined License (COL), have been designed and constructed in accordance with the principal design requirements.

The inspectors reviewed APP-SSAR-F5-001, “AP1000 Safety Analysis Checklist,” Revision 1, which is specific to the Vogtle Unit 4 first core design and additional changes made to the AP1000 fuel assembly, RCCA, and gray rod control assembly designs. The inspectors reviewed the Safety Analysis Checklist to confirm the first core safety analysis performed by Westinghouse for the first operating cycle (Cycle 1) meets the principal design requirements listed in the VEGP 3&4 Updated Final Safety Analysis Report (UFSAR) Section 4.1.1, and more broadly the UFSAR Chapter 4 requirements.

The inspectors also reviewed the Unit 4 Cycle 1 Core Operating Limits Report (COLR), which is specific to the Vogtle Unit 4 Cycle 1 core design and provides the applicable core operating limits of the safety analysis (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, passive core cooling system (PXS) limits, nuclear limits such as shutdown margin, transient analysis limits, and accident analysis limits). The inspectors reviewed the COLR to confirm the core operating limit results were consistent with those in the Safety Analysis Checklist and the UFSAR Chapter 4 requirements.

The inspectors reviewed selected quality records including the Unit 4 Cycle 1 Core Loading Plan and the letter documenting the verification and certification of the fuel assemblies and RCCA from the vendor to verify the components conformed with the design requirements.

b. Findings

No findings were identified.

1A03 (Unit 4) ITAAC Number 2.2.01.02a (91) / Family 06F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.02a (91). The inspectors used the following NRC IP/section to perform this inspection:

- 65001.03-02.07 - Review of Records

The inspectors reviewed as-built design reports and associated ASME N1 and a sample of the N5 installation data reports for the containment system (CNS), which included the containment vessel (CV) and the penetration assemblies, to verify the components, listed below, were designed, fabricated, constructed, examined, and tested in accordance with the design specifications, engineering drawings, and requirements of the 2001 Edition with Addenda up to and including 2002 of the ASME Section III, Division 1, Subsections NCA for general requirements and NE for Class MC metal containment vessels:

- CV
- Electrical penetration assemblies consisting of canisters, weldment rings, and extension sleeves for penetrations E01 thru E03, E06 thru E07, and E09 thru E32
- Fuel transfer tube penetration P11
- Normal residual heat removal system for reactor coolant system to passive residual heat removal penetration P19
- Steam generator system (SGS) main steam penetrations P23 and P24
- SGS main feedwater penetrations P25 and P26
- SGS steam generator blowdown penetrations P27 and P28
- SGS startup feedwater loops 1 and 2 penetrations P44 and P45
- Guard pipes, extension sleeves, flued heads, attachment rings, and/or bellows expansion joints for penetrations P05, P19, P20, P22 thru P28, P44, and P45
- Instrument penetrations P46 thru P49

The inspectors reviewed as-built design reports SV4-CNS-S3R-001 and SV4-MV50-S3R-100 to verify certification by a registered professional engineer and the contents were in accordance with the requirements of ASME NCA-3260, that include or reference supporting calculations for the design, service, and loading conditions stated in certified design specifications for ASME Code jurisdictional pressure boundaries.

The inspectors also reviewed as-built design reports to verify reconciliation of design output documents for design changes and nonconformances were addressed in accordance with the applicable requirements of ASME NCA-3260 and NCA-3500.

The inspectors reviewed the contents of ASME N-5 installation data report SV4-CNS-MUR-001 (including SV4-CNS-MJR-001, -MJR-002, and -MJR-003-1) for the CNS penetration assemblies welded to the CV pressure boundary to verify data reports were completed and certified with signatures by the certificate holder representative and authorized nuclear inspector in accordance with the requirements of ASME NCA-3350 and NCA-8000.

The inspectors reviewed the contents of quality assurance record package SV4-MV50-VQQ-004P1P36 for the ASME Section III Class MC CV (Serial No. VOGTLE 4) to verify the N-1 data report was completed and certified with signatures by the certificate holder representative and authorized nuclear inspector in accordance with the requirements of ASME NCA-3350 and NCA-8000.

Additionally, the inspectors reviewed preservice inspection reports and data sheets for the following to verify the required attributes for visual examination were completed and signed off by the authorized nuclear inspector:

- CV course 5, outside diameter weld at elevation 155 feet
- CV course 10, inside diameter weld at elevation 218 feet – 9 inches
- Outside diameter weld of electrical penetration number 20

b. Findings

No findings were identified.

1A04 (Unit 4) ITAAC Number 2.2.01.05.i (98) / Family 11A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.05.i (98). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.08 - 02.04 - Inspection of Containment Electrical Penetration Assemblies (EPAs)
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.E-02.06 - Problem Identification and Resolution

The inspectors reviewed the equipment qualification reconciliation reports (EQRRs) for the structures, systems, and components (SSCs) listed below to determine whether the licensee assessed work packages, design changes, and nonconformances to confirm the as-built configuration, including anchorage, was seismically bounded by the analyzed conditions in accordance with the applicable data sheets and design specifications:

- Demineralized water transfer and storage system (DWS) supply containment isolation check valve – SV4-DWS-PL-V245
- Liquid radioactive waste system (WLS) reactor coolant drain tank gas outlet containment isolation air operated valve (AOV) – SV4-WLS-PL-V067
- Central chilled water system (VWS) return containment isolation auxiliary relief valve – SV4-VWS-PL-V080
- CNS instrumentation penetration P47 – SV4-PCS-PY-C02

The inspectors also reviewed EQRRs of the SSCs listed below to verify the as-built equipment satisfies the seismic Category 1 and harsh environment acceptance criteria of ITAAC 2.2.01.05i:

- Class 1E electrical penetration assemblies (EPAs) – IDSA-EY-P11Z, IDSD-EY-P15Y, and IDSB-EY-P32Y
- Non-class 1E EPAs ECS-EY-P01X and DAS-EY-P03Z
- Containment air filtration system (VFS) purge isolation butterfly AOV – SV4-VFS-PL-V009
- WLS sump discharge containment isolation plug AOV – SV4-WLS-PL-V055

The inspectors reviewed the licensee's methodology and selection of applicable work orders, data sheets, and design drawings, to determine whether the inspections and analyses demonstrated the installed components were bounded by the analyzed design characteristics. The inspectors reviewed the equipment qualification summary reports and equipment qualification data packages to determine whether installation restrictions were translated to the drawings and EQRRs. The inspectors performed a review of as-installed electrical connections for the motor-operated valves and pneumatic connections for the AOVs to determine whether the electrical and pneumatic connections were installed as tested so the valves would function during a design basis accident.

The inspectors performed walkdowns of the as-built valves to verify each valve’s make/model/serial number, mounting, orientation, and location. The inspectors verified the mechanical anchorage and electrical connections were bounded by the tested conditions.

The inspectors performed walkdowns of the as-built Class 1E, and non-Class 1E EPAs to verify make/model and associated wiring, cables, and terminations located in harsh environments. The inspectors verified the EPAs and associated wiring, cables, and terminations qualified for harsh environment were bounded by the tested and analyzed conditions. Further, the inspectors reviewed documents for EPAs to verify:

- the licensee used the appropriate limiting design basis parameters as input for the seismic qualification of the SSCs and the necessary design basis documents and calculations were correctly incorporated in the qualification program for the SSCs;
- seismic qualification was adequately completed and controlled in accordance with ASME QME-1-2007, Institute of Electrical and Electronic Engineers (IEEE) Std. 344-1987, and applicable design specifications;

- licensee records established adequate basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded the SSCs can withstand the conditions that would exist before, during, and following a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic qualification documentation was maintained in an auditable manner, was compete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

The inspectors also interviewed licensing personnel to determine how inspection and analyses were performed for applicable nonconformance and disposition reports (N&Ds) and engineering and design coordination reports (E&DCRs) issued during fabrication, handling, installation, and testing to ensure all deviations were bounded by the seismically analyzed conditions.

b. Findings

No findings were identified.

1A05 (Unit 4) ITAAC Number 2.2.01.08 (109) / Family 08F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.08 (109). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.08-02.04 - Inspection of Containment Electrical Penetration Assemblies (EPAs)
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed the as-built protection analysis report for Vogtle Unit 4 containment EPAs to verify the penetrations are protected against currents that are greater than their continuous ratings as required by ITAAC 2.2.01.08 in the Vogtle Unit 4 COL. The inspectors sampled and reviewed the electrical fuse data in the as-built analysis report for the eight (8) control power EPAs associated with the Class 1E dc and uninterruptible power supply system (IDS). The inspectors verified the fuses were sized and rated, for these EPAs, in accordance with the acceptance criteria for this ITAAC.

b. Findings

No findings were identified.

1A06 (Unit 4) ITAAC Number 2.2.02.02a (120) / Family 07F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.02.02a (120). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.03-02.03 – Installation and Welding
- 65001.03-02.06 – Nondestructive Examination
- 65001.07-02.02 – Component Welding
- 65001.B-02.05 – Inspection

The inspectors reviewed the as-built design report and associated ASME N-5 installation data reports for the passive containment cooling system (PCS) to verify the PCS and the following components were designed, fabricated, constructed, examined, and tested in accordance with design specifications, engineering drawings, and the requirements of the 1998 Edition with Addenda up to and including 2000 of the ASME Code Section III, Division 1, Subsections NCA for general requirements, ND for Class 3 components, and NF for supports:

- valves within the PV01, PV02, PV03, PV10, PV11, and PV13 valve commodities;
- instruments and instrument manifolds within the JE22, JE43, and JZ01 commodities;
- piping, tubing, and valve supports, including Class 3 piping supported by concrete embedment;
- standard piping penetrations within portions of the piping system;
- items (process pipe, inline fittings, and flanges) within jurisdictional boundaries of piping-to-piping, and piping-to-supports (attachments), and
- Class 3 spectacle blind flange (installed during operation) within the PY90 commodity.

The inspectors reviewed certified as-built design report SV4-PCS-S3R-001 to verify contents were in accordance with the requirements of ASME NCA-3260 using reference supporting calculations for the design, service, and test loading conditions for jurisdictional pressure boundaries highlighted on piping and instrumentation diagrams (P&IDs) APP-PCS-M6-001 thru -003. The inspectors verified reconciliation of design output and input documents for design changes and nonconformances or deviations requiring modifications (including use of Code Cases) were addressed in accordance with the applicable requirements of ASME NCA-3260 and NCA-3500.

The inspectors reviewed preservice inspection program plan SV4-GW-GEI-100 to verify VT-1 visual testing for discontinuity detection and VT-3 visual testing for general mechanical and structural conditions were performed on welded anchor attachments and rigid supports of the PCS.

The inspectors reviewed the contents of ASME N-5 installation data report SV4-PCS-MUR-001 (including SV4-PCS-MJR-003, -004 and -007) for the above components, items, and supports to verify they were completed and certified with signatures by the

certificate holder representative and authorized nuclear inspector in accordance with the applicable requirements of ASME NCA-3350 and NCA-8000.

b. Findings

No findings were identified.

1A07 (Unit 4) ITAAC Number 2.2.02.05a.i (126) / Family 14A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.02.05a.i (126). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.10-02.02.c - As Built Verification
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F-02.04 - General QA Review

The inspectors reviewed the EQRRs for the PCS safety related isolation valve and sensors listed below to determine whether the licensee assessed work packages, design changes, and nonconformances to confirm the as-built configuration, including anchorage, were seismically bounded by as-tested conditions in accordance with the applicable data sheets and design specifications, and satisfy the seismic Category 1 acceptance criteria contained in ITAAC 2.2.02.05a.i:

- Passive containment cooling water storage tank (PCCWST) isolation air operated valve – PCS-PL-V001B
- PCS water delivery flow sensor – PCS-JE-FT001
- PCCWST water level sensor – PCS-JE-LT010

In addition, the inspectors reviewed EQRR for the PCS safety related containment pressure sensors SV4-PCS-JE-PT007 and SV4-PCS-JE-PT008 to determine whether the licensee assessed work packages, design changes, and nonconformances to confirm the as-built configuration, including anchorage, were seismically bounded by as tested conditions in accordance with the applicable data sheets and design specifications, and satisfy the seismic Category 1 and harsh environmental acceptance criteria contained in ITAAC 2.2.02.05a.i.

The inspectors reviewed the licensee's methodology and selection of applicable work orders, data sheets, and design drawings to determine whether the inspections and analyses demonstrated the installed components were bounded by the design characteristics that were contained in the analyses. The inspectors reviewed the equipment qualification summary reports and equipment qualification data packages to determine whether installation restrictions from testing were translated to the drawings

and EQRRs. The inspectors performed a walkdown of the installed components to confirm the satisfactory installation of the Class 1E sensors and associated wiring, cables, and terminations that are qualified for either seismic or seismic and harsh environment was bounded by the type tests, analyses, or combination of type tests and analyses. The inspectors performed a review of as-installed electrical connections to determine whether the electrical connections were installed as tested so the isolation valves would function during a design basis accident. The inspectors also verified the mechanical anchorage was bounded by the tested conditions.

The inspectors verified each sensor and valve manufacturer make/model/serial number, location, and mounting orientation were in accordance with the design drawings. The inspectors reviewed the work packages and confirmed the torque values applied were consistent with the required design drawing and the torque wrenches used were within their calibration cycle.

The inspectors also interviewed licensing personnel to determine how inspection and analyses were performed for applicable nonconformances and E&DCRs issued during fabrication, handling, installation, and testing to ensure all deviations were bounded by the seismically analyzed conditions.

b. Findings

No findings were identified.

1A08 (Unit 4) ITAAC Number 2.2.02.07b.i (138) / Family 06D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.02.07b.i (138). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed SV4-PCS-ITR-801138, "Unit 4 Passive Containment Cooling System (PCS) Inspection Coatings: ITAAC 2.2.02.07b.i (Item 7.b.ii and iii)," Revision 0, to verify the inside and outside surfaces of the containment vessel above the operating deck (elevation 135 feet – 3 inches) were coated with an inorganic zinc (IOZ) material as specified in Table 2.2.2-3 of Appendix C of the Vogtle Unit 4 COL. The inspectors reviewed the inspection test report to determine if coating records concluded the as-applied coatings to the interior surfaces of the containment vessel above the operating deck and the exterior surface of the containment vessel above the operating deck were coated with a safety related IOZ coating. The inspectors also reviewed coating repair records to verify the correct material was used and the dry film thickness of the repaired areas were in accordance with the design specification for protective coatings used in the AP1000 plant. Lastly, the inspectors reviewed the inspection test report to determine if the methyl ethyl ketone test was satisfactorily performed as required for Containment Service Level I (interior) and Service Level III (exterior) surfaces.

b. Findings

No findings were identified.

1A09 (Unit 4) ITAAC Number 2.2.03.01 (158) / Family 14A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.01 (158). The inspectors used the following NRC IP/section to perform this inspection:

- 65001.14-02.01 - General Installation

The inspectors performed an inspection of selected portions of the Unit 4 PXS functional arrangement to verify the as-built system components conform to the system design description of Section 2.2.3 of Appendix C of the Vogtle Unit 4 COL, including Table 2.2.3-5 and Figure 2.2.3-1.

The inspectors performed a walkdown of the passive residual heat removal heat exchanger, core makeup tanks, accumulator tanks, pH adjustment baskets, in-containment refueling water storage tank (IRWST), IRWST and containment recirculation screens, and selected portions of system piping, valves, and instruments to assess whether the as-built piping and components were physically arranged consistent with Figure 2.2.3-1 and located as identified in Table 2.2.3-5 of Appendix C of the Vogtle Unit 4 COL, such that the components will support system functions described in the design description of Section 2.2.3 of Appendix C of the Vogtle Unit 4 COL and Section 6.3 of the VEGP 3&4 UFSAR.

The inspectors also reviewed quality records including the Principal Closure Document (PCD), piping and instrumentation diagrams, and as-built drawings to verify the PXS functional arrangement.

b. Findings

No findings were identified.

1A10 (Unit 4) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.02a (159). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.03-02.05 - Pressure Testing
- 65001.06-02.04 - Testing and Verification
- 65001.06-02.05 - Problem Identification and Resolution
- 65001.C-02.01 - Program and Procedure Reviews
- 65001.C-02.03 - Construction Test Record Review
- 65001.F-02.04 - General QA Review

The inspectors performed inspection of ASME Section III hydrostatic testing activities associated with the PXS. The inspectors reviewed work packages for the piping and components ASME Section III hydrostatic tests. Specifically, the inspectors reviewed the work package instructions and the licensee's procedure for construction pressure testing to determine whether the following test attributes were included:

- the system boundary included all pressure vessels, piping, pumps, and valves that were part of the piping system to be tested;
- the system was vented during the filling operation;
- water quality was specified as required by the latest licensee approved specifications for the temperatures to be present during the test;
- temperature requirements were stated to ensure components were maintained above the nil ductility transition temperature during hydrostatic pressure testing;
- minimum hydrostatic test pressure was as specified in the applicable design and/or fabrication specification;
- maximum hydrostatic test pressure was less than the limits in the applicable design and/or fabrication specification;
- hydrostatic test pressure was maintained for a minimum of 10 minutes before initiation of the examination for leakage; and
- examination for leakage included all joints, connections, and regions of high stress, such as openings, attachments, and thickness transition sections at a pressure equal to the design pressure or three-fourths of the test pressure, whichever was greater.

The inspectors reviewed the results from the ASME Section III hydrostatic test pressure datasheets to determine if the results conformed to the requirements of ASME Section III, Subsection NB-6000. Specifically, the inspectors reviewed the test results to determine if they were adequate to furnish identifiable and retrievable evidence of activities affecting quality and were reviewed and verified to be complete per the licensee procedures.

The test pressure datasheets reviewed confirmed the following:

- the latest revisions of the test procedures were documented;
- pressure test prerequisite checklist was complete;

- valve lineup/system checklists were completed;
- water quality and temperature were as stated in the procedures;
- pressure test did not exceed 1.25 times design pressure;
- properly calibrated pressure gauges of the required range were used where required;
- properly calibrated relief valves of the required set point and capacity were used where required;
- testing was performed as required by the approved procedure;
- testing was independently witnessed by quality control inspector and third-party authorized nuclear inspector;
- hydrostatic test results were reviewed and approved by test director; and
- post test valve lineup/system checklists were completed.

b. Findings

No findings were identified.

1A11 (Unit 4) ITAAC Number 2.2.03.08c.ix (194) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.ix (194). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.06-02.01 - General Installation
- 65001.A - As-Built Attributes for SSCs associated with ITAAC

The inspectors performed an inspection of the insulation installed on the Unit 4 ASME Class 1 piping and components located inside the reactor containment building to verify the type of insulation used is a metal reflective type as specified in Table 2.2.3-4 of Appendix C of the Vogtle Unit 4 COL. In addition, the inspectors performed an inspection of the insulation installed on other piping and components located inside the reactor containment building within the zone of influence (ZOI) and below the maximum flood level of a design basis loss of coolant accident (LOCA) to verify the type of insulation used is a metal reflective type as specified in Table 2.2.3-4 of Appendix C of the Vogtle Unit 4 COL.

The inspectors verified the only non-metal reflective insulation within the ZOI and below the maximum LOCA flood level was the neutron shield blocks that form part of the reactor vessel insulation system and the refueling cavity floor. For this installation, the inspectors verified a report exists that concludes the insulation used is a suitable equivalent as described in Section 6.3 of the VEGP 3&4 UFSAR and as required by the acceptance criteria.

The inspectors performed independent walkdowns of the ASME Class 1 portions of the RCS, PXS, the chemical and volume control system (CVS), and normal residual heat removal system (RNS) piping and performed an independent assessment to verify the as-built insulation installation was consistent with Section 6.3 of the VEGP 3&4 UFSAR, the mechanical equipment and piping insulation design specification, the pipe line designation tables, and the piping and instrumentation diagrams.

The inspectors also performed independent walkdowns of the pressurizer, steam generators, and reactor coolant pumps (RCPs) and performed an independent assessment to verify the as-built insulation installation was consistent with Section 6.3 of the VEGP 3&4 UFSAR, the mechanical equipment and piping insulation design specification, and the piping and instrumentation diagrams.

Additionally, the inspectors performed independent walkdowns of other (i.e., non-ASME Class 1) piping and components located inside the reactor containment building located within the zone of influence and below the maximum LOCA flood level, and performed an independent assessment to verify the as-built insulation installation was consistent with Section 6.3 of the VEGP 3&4 UFSAR, the mechanical equipment and piping insulation design specification, the pipe line designation tables, and the piping and instrumentation diagrams.

b. Findings

No findings were identified.

1A12 (Unit 4) ITAAC Number 2.2.03.08c.vii (192) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.vii (192). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.06 - Inspection of ITAAC-Related Installation of Mechanical Components
- 65001.06-02.01 - General Installation
- 65001.A- As-Built Attributes for SSCs associated with ITAAC

The inspectors performed an inspection to verify the protective plate located above the Unit 4 containment recirculation screen was no more than 1 foot, 3 inches above the top of the face of the screens and extends at least 8 feet, 3 inches perpendicular to the front and at least 7 feet to the side of the face of the screen as specified in Table 2.2.3-4 of Appendix C of the Vogtle Unit 4 COL.

The inspectors performed a walkdown of the Unit 4 containment recirculation screens with the licensee and performed an independent assessment to verify the protective plate was installed consistent with the installation drawings. The inspectors observed the licensee perform field measurements of the protective plate with respect to the screens and took independent measurements to validate the licensee's determination of the minimum dimensions in accordance with ITAAC. The inspectors also reviewed quality records including the Principal Closure Document, licensee field measurement results, and design and as-built drawings to verify the ITAAC.

b. Findings

No findings were identified.

1A13 (Unit 4) ITAAC Number 2.2.03.08c.viii (193) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.viii (193). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.06 - Inspection of ITAAC-Related Installation of Mechanical Components
- 65001.06-02.01 - General Installation
- 65001.A - As-Built Attributes for SSCs associated with ITAAC

The inspectors performed an inspection of the three Unit 4 IRWST screens and the containment recirculation screen to verify the surface areas and number of pockets in the screens were in accordance with the ITAAC.

The inspectors reviewed quality records including PCDs, licensee field measurement results, licensee and vendor calculations, and as-built drawings to verify the following as specified in Table 2.2.3-4 of Appendix C to the Vogtle Unit 4 COL:

- The screens utilize pockets with a frontal face area of greater than or equal to (≥) 6.2 inches^2 and a screen surface area ≥ 140 inches^2 per pocket;
- IRWST Screens A and B each have a sufficient number of pockets to provide a frontal face area ≥ 25 feet^2, a screen surface area ≥ 575 feet^2, and a screen mesh size of less than or equal to (≤) 0.0625 inch;
- IRWST Screen C has a sufficient number of pockets to provide a frontal face area ≥ 50 feet^2, a screen surface area ≥ 1150 feet^2, and a screen mesh size ≤ 0.0625 inch; and
- Each containment recirculation screen has a sufficient number of pockets to provide a frontal face area ≥ 105 feet^2, a screen surface area ≥ 2500 feet^2, and a screen mesh size ≤ 0.0625 inch.

The inspectors observed the licensee perform field measurements and took independent measurements of the screen pockets and counted the number of pockets used in each screen to validate the licensee's determination of the screens' dimensions in accordance with Table 2.2.3-4 of Appendix C to the Vogtle Unit 4 COL.

b. Findings

No findings were identified.

1A14 (Unit 4) ITAAC Number 2.2.03.08c.viii (193) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.viii (193). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.06 - Inspection of ITAAC-Related Installation of Mechanical Components
- 65001.06-02.01 - General Installation
- 65001.A - As-Built Attributes for SSCs associated with ITAAC

The inspectors performed an inspection of the three Unit 4 IRWST screens and the debris curb in front of the containment recirculation screen to verify the height of the IRWST screens and the debris curb are in accordance with the ITAAC.

The inspectors reviewed quality records including the PCD, licensee field survey and measurement results, and as-built drawings to verify the bottoms of the IRWST screens are located ≥ 6 inches above the bottom of the IRWST and a debris curb exists in front of the containment recirculation screens, which is ≥ 2 feet above the loop compartment floor as specified in Table 2.2.3-4 of Appendix C to the Vogtle Unit 4 COL. The inspectors observed the licensee perform field measurements and took independent measurements to validate the licensee's determination of the minimum dimensions in accordance with Table 2.2.3-4 of Appendix C to the Vogtle Unit 4 COL.

b. Findings

No findings were identified.

1A15 (Unit 4) ITAAC Number 2.2.03.08c.x (195) / Family 14F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.x (195). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.14-02.04 - Qualification Criteria
- 65001.14-02.05 - Problem Identification and Resolution
- 65001.F-02.04 - General QA Review

The inspectors reviewed quality records, including the PCDs, associated with this ITAAC to verify the density requirements of coatings and other materials, such as, signs and tags, caulking, and ventilation filters and fire barriers, located inside containment meet the requirements of Appendix C of the COL. This inspection focused on the review of five PCDs and their reference documents for onsite coated SSCs, offsite coated SSCs, signs and tags, caulking, and ventilation filters and fire barriers.

The inspectors reviewed PCD SV4-PXS-ITR-801195 to verify the report concluded protective coatings applied onsite on SSCs located inside containment have a dry film density of ≥100 pounds per cubic feet (lb/ft^3) and IOZ coatings used on these surfaces are Safety-Service Level I (SL1), or otherwise have been quantified and justified in a program for management of unqualified coatings to demonstrate the unqualified coatings are acceptable for use.

The inspectors reviewed Quality Assurance Data Package Inspection Report SV4-GW-ITR-001, to verify the report concluded protective coatings applied offsite (i.e., by a vendor) on SSCs located inside containment have a dry film density of ≥ 100 lb/ft^3 and IOZ coatings used on these surfaces were SL1, or otherwise have been quantified and justified in a program for management of unqualified coatings to demonstrate the unqualified coatings were acceptable for use.

The inspectors reviewed PCD SV4-PXS-ITR-803195 to verify the report concluded the caulking used inside containment below the maximum flood level of a design basis LOCA or located above the maximum flood level and not inside cabinets or enclosures have a dry film density of ≥ 100 lb/ft^3.

The inspectors reviewed PCD SV4-1100-ITR-804195 to verify the report concluded the tags and signs used inside containment below the maximum flood level of a design basis LOCA or located above the maximum flood level and not inside cabinets or enclosures are made of steel with a density of ≥ 100 lb/ft^3 and that coatings used on these signs or tags have a dry film density of ≥ 100 lb/ft^3.

The inspectors reviewed PCD SV4-PXS-ITR-805195 to verify the report concluded the ventilation filters and fire barriers inside containment within the zone of influence or below the maximum flood level of a design basis LOCA have a dry film density of ≥ 100 lb/ft^3.

b. Findings

No findings were identified.

1A16 (Unit 4) ITAAC Number 2.5.02.02.i (522) / Family 10A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.02.i (522). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.02 - Attributes of Electrical Cable installation
- 65001.09-02.03 - Documentation
- 65001.10 - Inspection of ITAAC-Related Installation of Instrument Components and Systems
- 65001.10-02.02.c - As Built Verification
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed the EQRRs for the protection and safety monitoring system (PMS) cabinets, main control room/remote shutdown room (MCR/RSR) transfer panel, and MCR/RSRs play and control panels listed below to determine whether the licensee assessed work packages, design changes, and nonconformances to confirm the as-built configuration, including anchorage, were seismically bounded by the as-tested and/or analyzed conditions in accordance with data sheets and design specification, and satisfy the seismic Category 1 criteria:

- PMS cabinets SV4-PMS-JD-ILCA02, SV4-PMS-JD-NICC01, SV4-PMS-JD-QDPB01, SV4-PMS-JD-BCCD01, and SV4-PMS-JD-SVCD01
- MCR/RSR transfer panel SV4-OCS-JW-001
- MCR/RSR display and control panels SV4-OCS-JC-10 and SV4-OCS-JC-11

The inspectors reviewed the licensee's methodology and selection of applicable work orders, data sheets, and design drawings to determine whether the inspections and analyses demonstrated the installed components were bounded by the as-tested and analyzed design characteristics. The inspectors reviewed the equipment qualification summary reports and equipment qualification data packages to determine whether installation restrictions from testing were translated to the drawings and EQRRs and whether any differences between as-built and as-designed condition were reconciled in accordance with approved modification or change process.

The inspectors performed a walkdown of the installed components to confirm the satisfactory installation of the Class 1E equipment, associated wiring, cables, and terminations that are qualified for room ambient temperature, humidity, pressure, and mechanical vibration. The inspectors verified each equipment’s manufacturer model/serial number, location, and mounting were in accordance with the design drawings. The inspectors verified the cables and raceways had sufficient physical separation between Class 1E cables of different divisions and non-Class 1E cables and were identified by an appropriate color-coding scheme.

The inspectors reviewed the work packages and confirmed the torque values applied were consistent with the required design drawing and the torque wrenches used were within their calibration cycle.

The inspectors also interviewed licensing personnel to determine how inspection and analyses were performed for applicable nonconformances and E&DCRs issued during fabrication, handling, installation, and testing to verify deviations were bounded by the seismically analyzed conditions.

b. Findings

No findings were identified.

1A17 (Unit 4) ITAAC Number 2.6.03.02.i (597) / Family 08A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.6.03.02.i (Index 597). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.01 - Physical Separation of Cables
- 65001.09-02.02 - Attributes of Electrical Cable installation
- 65001.09-02.03 – Documentation

The inspectors reviewed the EQRRs for the IDS components listed below to determine whether the licensee assessed work packages, design changes, and nonconformances to confirm the as-built configuration, including anchorage, were seismically bounded by the analyzed conditions in accordance with data sheets and design specifications, and satisfy the seismic Category 1 criteria:

- IDS 24-hour battery chargers IDSD-DC-1 and IDSA-DC-1
- IDS 72-hour battery charger IDSC-DC-2
- IDS 250 Vdc 24-hour battery bank 1 IDSA-DB-1
- IDS 250 Vdc 72- hour battery bank 2 IDSB-DB-2
- IDS 250 Vdc distribution panels IDSB-DD-1 and IDSD-DD-1
- IDS 120 Vac distribution panel IDSB-EA-1
- IDS fuse panel IDSA-EA-5
- IDS fused transfer switch boxes IDSA-DF-1 and IDSB-DF-1,
- IDS regulation transformer IDSC-DT-1
- IDS 24-hour inverters IDSC-DU-1 and IDSB-DU-1
- IDS 250 Vdc switchboards IDSA-DS-1 and IDSB-DS-1
- IDS 250 Vdc motor control centers IDSC-DK-1 and IDSB-DK-1

The inspectors reviewed the licensee's methodology and selection of applicable work orders, data sheets, and design drawings to determine whether the inspections and analyses demonstrated the installed components were bounded by the as-tested and analyzed design characteristics. The inspectors reviewed the equipment qualification summary reports and equipment qualification data packages to determine whether installation restrictions from testing were translated to the drawings and EQRRs and that any differences between as-built and as-designed condition were reconciled in accordance with approved modification or change processes.

The inspectors performed a walkdown of the selected Unit 4 IDS installed components to confirm satisfactory installation of associated cable raceways and conduit, cable/wiring, and terminations at component penetrations. Additionally, the inspectors assessed penetrations that included Roxtec electromagnetic compatibility hardware to verify correct installation and configuration to ensure free-air cable physical separation.

The inspectors verified the cables and raceways had sufficient physical separation between Class 1E cables of different divisions and non-Class 1E cables and are identified by an appropriate color-coding scheme per design basis requirements. The

inspectors reviewed the work packages and confirmed the torque values applied were consistent with per the required design specification.

The inspectors also interviewed licensing personnel to determine how inspection and analyses were performed for applicable nonconformances and E&DCRs issued during fabrication, handling, installation, and testing to ensure all deviations were bounded by the seismically analyzed conditions.

b. Findings

No findings were identified.

1A18 (Unit 4) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.a (760). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed the as-built summary report for the containment internal structures to verify the report reconciled deviations during construction, including Table 3.3-1 wall and floor thicknesses, and concluded the as-built containment internal structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the design description without loss of structural integrity or the safety related functions, and without impacting compliance with the radiation protection licensing basis. Specifically,

- The inspectors verified the as-built summary report addressed deviations that were reconciled after the effective date of the as-designed summary report.
- The inspectors reviewed Table 3-2.1 and Table 3-2.2 of the as-built summary report to verify the as-built strength of the structural components and connections, after reconciliation of deviations to the standard plant issued after the effective date of the as-designed summary report and site specific N&Ds and E&DCRs, were equal to or greater than the required strength. The inspectors also reviewed the design summary of critical sections provided in the as-built summary report to verify they were consistent with VEGP 3&4 UFSAR Tables 3.3.8-4, 3.3.8-5, 3.3.8-6, and 3.3.8-7.
- The inspectors noted design changes were reviewed in the report to identify significant changes to structural configuration (mass, thickness, etc.) and

equipment layout (mass and location) and the report concluded the as-built design changes reviewed within the report do not impact the AP1000 seismic analysis model or had already been incorporated.
- Additionally, the inspectors reviewed Table 4-2 of the as-built summary report to determine if the as-built construction met the concrete wall thicknesses and radiation shielding requirements of VEGP 3&4 UFSAR Table 3.3-1, and any localized deviations from Table 3.3-1 were appropriately evaluated and reconciled to the approved design.

b. Findings

No findings were identified.

1A19 (Unit 4) ITAAC Number 3.3.00.05b (785) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.05b (785). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.F-02.04 - General QA Review

The inspectors reviewed SV4-1000-ITR-800785, “Unit 4 Inspections of Auxiliary Building Safety Related Equipment Flood Prevention: ITAAC 3.3.00.05b, NRC Index Number 785,” Revision 0, to determine whether the licensee assessed work packages, design changes, and nonconformances to confirm the as-built configuration was in accordance with the applicable drawings and design specifications to satisfy the ITAAC requirements for flooding.

The inspectors performed a walkdown to inspect the sealing of doorway, cable tray, piping, tubing, electrical embedded conduit, and heating, ventilation, and air conditioning (HVAC) penetrations at the following locations to determine whether the boundaries between mechanical equipment rooms and the electrical and instrumentation control equipment rooms of the auxiliary building were constructed as-designed to prevent flooding of rooms that contain safety related equipment up to the maximum flood level for each room:

- the floor between room 12306 with flooding source (36-inch) and adjacent room 12211 (12306-ML-E02–Electrical, 12306-ML-E06–Electrical, and 12306-ML-I01-Piping)
- the floor between room 12313 with flooding source (3-inch) and adjacent rooms 12203/12207 (12313-ML-E12-Electrical, 12313-ML-H01-HVAC, and 12313-ML-H02-HVAC)
- the floor between room 12312 with flooding source (3-inch) and adjacent room 12212 (12312-ML-E01 Electrical,12312-ML-E35 Electrical, 12312-ML-E45 Electrical, 12312-ML-E82 Electrical)

- the wall between room 12401 with flooding source within 1-inch of the floor and adjacent room 12411/12412 (12401-AD-D01-Door) the floor between room 12406 with flooding source (36-inch) and adjacent room 12306 (12406-ML-E03-Cable Tray, 12406-ML-E10-Conduit, and 12406-ML-P20-Piping)
- the floor between room 12501 with flooding source (3-inch) and adjacent rooms 12401/12411/12412 (12501-ML-H05-HVAC, 12501-ML-P19-Piping, and 12501-ML-P37-Piping)

The inspectors also interviewed licensing personnel to determine how inspection and analysis were performed for nonconformances and E&DCRs issued during fabrication, handling, and installation to ensure all deviations were bounded by the analyzed conditions.

b. Findings

No findings were identified.

1A20 (Unit 4) ITAAC Number 3.3.00.05c (786) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.05c (786). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements

The inspectors reviewed SV4-1100-ITR-800786, “Unit 4 Inspections of Accumulator Rooms and CVS Room Flood Prevention: ITAAC 3.3.00.05c NRC Index Number: 786,” Revision 0, to determine whether the licensee assessed work packages, design changes, and nonconformances to confirm the as-built configuration was in accordance with the applicable drawings and design specifications to satisfy the ITAAC requirements for flooding.

At elevation 107 feet – 2 inches, the inspectors performed a walkdown of the watertight hatches to the PXS “A” compartment (room 11206), PXS “B” compartment (room 11207), the entrance to CVS valve room (room 11209), and hatches located in room 11300 (SV4-11300-AD-H03, SV4-11300-AD-H05, and SV4-11300-AD-H11) to determine whether the boundaries between these rooms containing safety related equipment were constructed as designed to prevent flooding between these rooms. The inspectors also performed a walkdown of the SL32 instrumentation tubing penetrations and electrical A6-2 embedded conduit sleeve penetrations listed below to determine whether the penetrations (i.e., embedded, sealed, welded, or blocked by a weir or hatch) were constructed as designed to prevent flood water up to the maximum elevation from flowing across the barrier separating the rooms:

- 11202-ML-I06
- 11209-ML-I18
- 11300-ML-E28
- 11300-ML-E90

The inspectors also interviewed licensing personnel to determine how inspection and analysis were performed for applicable nonconformances and E&DCRs issued during fabrication, handling, and installation to ensure all deviations were bounded by the analyzed conditions.

b. Findings

No findings were identified.

1A21 (Unit 4) ITAAC Number 3.3.00.07c.i.a (795) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07c.i.a (795). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.01 - Physical Separation of Cables
- 65001.09-02.03 - Documentation
- 65001.09-02.04 - Problem Identification and Resolution
- 65001.A.02.02 - Installation Records Review

The inspectors inspected cable pulls, terminations, and raceways in rooms located inside the non-radiologically controlled area of the auxiliary building. The rooms inspected include the following:

- 12101 - Division A battery room (Fire Area 1202 AF 04)
- 12204 - Division B battery room 2 (Fire Area 1201 AF 02)
- 12207 - Division B DC equipment room (Fire Area 1201 AF 02)
- 12306 - Valve/piping penetration room (Fire Area 1201 AF 05)
- 12312 - Division C RCP trip switchgear room (Fire Area 1202 AF 03)
- 12423 - Reactor trip switchgear 1 (Fire Area 1243 AF 01)
- 12501 - Nuclear island nonradioactive ventilation system (VBS) MCR Divisions A and C equipment room (Fire Area 1250 AF 01)
- 12207 - Division B DC equipment room (Fire Area 1201 AF 02)
- 12312 - Division C RCP trip switchgear room (Fire Area 1202 AF 03)
- 12201 - Division A DC equipment room (Fire Area 1202 AF 04)
- 12205 - Division D DC equipment room (Fire Area 1201 AF 03)
- 12301 - Division A instrumentation and control (I&C) room (Fire Area 1202 AF 04)
- 12302 - Division C I&C room (Fire Area 1202 AF 03)

The inspectors conducted walkdowns of the cable pulls, terminations, and raceways inside the rooms to verify 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. During the walkdown, the inspectors verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors also walked down cables installed in trays to verify cable fill design requirements were met, as applicable.

The inspectors reviewed applicable construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify raceways that route Class 1E cables were installed in accordance with design requirements. The inspectors reviewed work packages, test and inspection records, and cable pull tickets to confirm the non-Class 1E cables needed to meet the ITAAC requirements of Appendix C of the COL were installed at the time of ITAAC verification.

For the raceways installed in these rooms, the inspectors verified the size, material, and style were as specified in design documents and work procedures. The inspectors verified raceway supports were located at points specified in approved instructions and that maximum distance between supports were not exceeded. The inspectors also verified fittings and clamps were installed according to work procedures. Additionally, the inspectors reviewed the licensee's corrective actions for issues entered into the CAP to verify issues were identified, evaluated, and corrected.

The inspectors reviewed ITAAC Technical Report SV4-1200-ITR-800801, Revision 0 and supporting documentation to determine, within the non-radiologically controlled area of the auxiliary building, whether the licensee's inspection results confirmed 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 met separation requirements; Class 1E electrical and communication cables associated with only one division, and the raceways that route these cables were identified by the appropriate color code; and Class 1E electrical and communication cables associated with only one division were routed in raceways assigned to the same division.

b. Findings

No findings were identified.

1A22 (Unit 4) ITAAC Number 3.3.00.07d.ii.a (800) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07d.ii.a (800). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.01 - Physical Separation of Cables
- 65001.09-02.03 - Documentation
- 65001.09-02.04 - Problem Identification and Resolution
- 65001.A.02.02 - Installation Records Review

Electrical raceway supports were inspected in the following Unit 4 containment rooms:

- 11206 - PXS valve/accumulator room A
- 11301 - Steam generator 1 lower manway area
- 11402 - Steam generator 2 tubesheet area
- 11703 - Upper automatic depressurization system (ADS) valve area at elevation 176 feet – 10.5 inches

The inspectors conducted walkdowns of the raceways inside the rooms. At least two samples were gathered from each room to verify structural supports were properly installed and design requirements were met.

The inspectors reviewed applicable construction specifications, installation procedures, written instructions, drawings, work packages, condition reports (CRs), E&DCRs, and quality control inspection reports to verify they were installed in accordance with design requirements.

For the raceways installed in these rooms, the inspectors verified the size, material, welding, and style were as specified in design documents and work procedures. The inspectors verified raceway supports were located at points specified in approved instructions and maximum distance between supports were not exceeded. Inspectors also verified fittings and clamps were installed according to work procedures.

The inspectors walked down and verified cable pulls, terminations, and raceways in rooms located inside the Unit 4 containment, including the following:

- 11206 - PXS valve/accumulator room A
- 11301 - Steam generator 1 lower manway area
- 11402 - Steam generator 2 tubesheet area
- 11703 - Upper ADS valve area
- 11201 - Steam generator compartment 1
- 11306 – Electrical penetration room
- 11400 - Maintenance floor/mezzanine
- 11500 - Operating deck
- 11202 - Steam generator compartment 2
- 11603 - ADS valve area lower tier

- 11403 - Pressurizer spray valve room
- 11208 - RNS valve room

The inspectors conducted walkdowns of the cable pulls, terminations, and raceways inside the rooms to verify 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. During the walkdown, the inspectors verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors also walked down cables installed in trays to verify cable fill design requirements were met, as applicable.

The inspectors reviewed applicable construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify raceways that route Class 1E cables were installed in accordance with design requirements. The inspectors reviewed work packages, test and inspection records, and cable pull tickets to confirm the non-Class 1E cables needed to meet the ITAAC requirements of Appendix C of the COL were installed at the time of ITAAC verification.

For the raceways installed in these rooms, the inspectors verified the size, material, and style were as specified in design documents and work procedures. The inspectors verified raceway supports were located at points specified in approved instructions and maximum distances between supports were not exceeded. The inspectors also verified fittings and clamps were installed according to work procedures. Additionally, the inspectors reviewed the licensee's corrective actions for issues entered into the CAP to verify issues were identified, evaluated, and corrected.

The inspectors reviewed ITAAC Technical Report SV4-1100-ITR-800800, Revision 0 supporting documentation to determine, within the containment building, whether the licensee's inspection results confirmed 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 met separation requirements; Class 1E electrical and communication cables associated with only one division, and the raceways that route these cables were identified by the appropriate color code; and Class 1E electrical and communication cables associated with only one division were routed in raceways assigned to the same division.

Unit 4 License Amendment 187, which was issued on November 22, 2022, authorized the consolidation of the containment electrical separation ITAACs into a single ITAAC. The requirements of ITAAC 789, 792, 803, 806, and 809 have been consolidated in ITAAC 800.

b. Findings

Introduction

The inspectors identified an ITAAC finding, with five examples, of very low safety significance (Green) with an associated noncited violation (NCV) of Title 10 of the Code

of Federal Regulations (10 CFR), Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to maintain adequate physical separation between divisions of safety-related (SR) cables and between SR and nonsafety-related (NSR) cables as required by ITAAC 3.3.00.07d.ii.a and in accordance with electrical installation specification APP-G1-V8-001, “AP1000 Electrical Installation Specification,” Revision 12.

Description

During cable separation inspections on June 14 and 15, 2023, the inspectors identified five cable separation nonconformances in the Unit 4 containment building, in which the separation between divisions of SR cable trays/conduits and SR conduits/NSR cables did not maintain required separation as specified in electrical installation specification APP-G1-V8-001, Appendix I, detailed as follows:

1) Division B safety related conduit SV4-1133-ER-BZC05 crossing over and approximately ½ inch from the top of Division D enclosed power cable tray SV4-1133-ER-DXT02AB. The ‘B’ SR cables provide the “arm” signal for PMS to the fourth stage of the ADS squib valve and squib valve position indication for:

   a. containment recirculation squib valve PXS-PLV118A;
   b. IRWST injection squib valve PXS-PLV123A; and
   c. the fourth stage ADS squib valve RCS-EJ-PLV004D.

   The ‘D’ 250 VDC power cabling provides power to:
   a. RCS to RNS inner hot leg suction isolation valve SV4-RNS-EJ-PLV001;
   b. RCS to RNS inner hot leg suction isolation valve SV4-RNS-EJ-PLV001B; and
   c. RCS to RNS inner hot leg suction isolation valve SV4-RNS-EJ-PLV001A.

2) RCS hot leg narrow range temperature element SV4-RCS-EJ-132C conduit was within 5 feet of 1B RCP 6.9kV power cables, SV4-ER-NWT01D. The temperature element is one of the six RCS loop 1 hot leg temperature elements and provides a signal to PMS for a two-out-of-four logic for core makeup tank actuation on high hot leg temperature coincident with low steam generator level. The temperature element also provides input for the various PMS functions including Tavg calculation, overtemperature delta-T reactor trip, and overpower delta-T reactor trip.

3) The licensee performed an additional inspection of the NRC selected rooms and identified conduit SV4-1120-ER-AZC3 for Division A safety related instrumentation for 2A and 2B RCP bearing temperature element cables within three horizontal feet of 2A and 2B RCP 6.9 kV power cables in open cable trays SV4-1120-ER-NWT03A and SV4-1120-1120-ER-NWT04A. These temperature elements provide input signals to the PMS. These temperature signals provide a temperature indication and input to a high temperature alarm in the main control room. The signal is also an input into a two-out-of-four coincidence per pump that will trip all RCPs following a trip of the reactor.

4 & 5) The inspectors identified the 2A and 2B RCP bearing temperature elements SV4-RCS-JE-TE213B and SV4-RCS-JE-TE214B were less than five feet from their respective RCP power cables. These temperature elements provide input signals

to the PMS. These temperature signals provide a temperature indication and input to a high temperature alarm in the main control room. The signal is also an input into a two-out-of-four coincidence per pump that will trip all RCPs following a trip of the reactor.

The inspectors determined the electrical physical separation issues discussed above rendered the quality of the affected Class 1E SSCs unacceptable. The licensee initiated CRs 50177188, 50177227, 50177240, 50177297, and 50177336 to address these issues.

The licensee dispositioned the issues identified in 4 and 5 above through analysis as allowed by IEEE-384. The inspectors reviewed the analysis documented in E&DCR SV4-1120-GEF-000024, "IEEE 384 Lesser Separation Distance for RCS-JE-TE213B/TE214B," Revision 0. The inspectors verified PMS protocols for temperature element signals that could be impacted by reduced spatial separation from medium voltage (6.9kV power cables) were conservative, and the functionality of the RCP bearing temperature elements would not be impacted.

Analysis

Per the guidance in IMC 0613, "Power Reactor Construction Inspection Reports," Appendix B, "Issue Screening," dated November 4, 2020, the inspectors determined the licensee's failure to maintain physical separation between two Class 1E divisions and between Class 1E and non-Class 1E cables, as stated in electrical specification APP-G1-V8-001, was a performance deficiency (PD) warranting a significance evaluation because it was reasonably within the licensee's ability to foresee and correct and it was contrary to the requirements of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings."

Per the guidance in IMC 0613, Appendix E, "Examples of Minor Construction Issues," dated November 4, 2020, the inspectors determined the PD was a finding of more than minor significance because it represented an adverse condition that rendered the quality of the Class 1E structures unacceptable and required substantive corrective action. Specifically, it impacted the structures' design function to maintain physical separation between Class 1E divisions and between Class 1E and non-Class 1E cables. The inspectors also reviewed the Appendix E examples of minor issues and noted Example 1 described an as-built SSC that did not meet the applicable design or construction specification and the PD would not be of minor significance if the as-built SSC required substantial rework to meet the design or construction requirements.

This finding, with five examples, was associated with the Construction/Installation cornerstone of the Construction Reactor Safety strategic performance area. The inspectors assessed this finding using IMC 2519, Appendix A, "AP1000 Significance Determination Process," dated October 26, 2020. This finding was not associated with a security program; it was not associated with an IMC 2504 operational/construction program; and it was not associated with a repetitive, NRC identified omission of a program critical attribute. The finding was Green because it was associated with Class 1E cable raceway system, which is assigned as an intermediate risk importance, and was assigned to Row 1 of the significance determination matrix, and for each of the five examples, if left uncorrected, the finding could reasonably be expected to impair the design function of only one train of a multi-train system. This violation was

determined to be an ITAAC finding because it impacted the acceptance criteria of ITAAC 3.3.00.07d.ii.a (800), which states physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables inside the containment.

The inspectors determined the proximate cause of the PD was indicative of present licensee performance and was associated with the cross-cutting aspect of Avoid Complacency [H.12], in the area of Human Performance in accordance with IMC 0613, Appendix F, Construction "Cross- Cutting Areas and Aspects," dated November 4, 2020.

Enforcement

10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.

Appendix H of APP-G1-V8-001 "AP1000 Electrical Installation Specification," Revision 12, requires 1-inch physical separation between divisions of SR cable trays, and requires 5-feet vertical separation and 3-feet horizontal separation between SR and NSR cables.

Contrary to the above, on or before June 14 and 15, 2023, the licensee failed to ensure activities affecting quality were accomplished in accordance with the instructions, procedures, or drawings. Specifically, the licensee failed to meet electrical separation requirements as documented in APP-G1-V8-001 "AP1000 Electrical Installation Specification," Appendix H, for five cable separation configurations in Unit 4 containment rooms. Because this violation was not repetitive or willful, was of very low safety significance, and was entered into the licensee's CAP, this violation is being treated as an NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy (**NCV 05200026/2023002-01, Failure to Maintain Cable Separation Requirements in Containment**).

The licensee entered this issue into its CAP as CR 50177188, 50177227, 50177240, 50177297, and 50177336. Immediate corrective actions for this issue included rework to restore compliance with the separation requirements, and in two examples, the licensee conducted an analysis that supported the as-built configuration being left as-is with no impacts to applicable SSCs. Based on the review described above, the inspectors determined the licensee took acceptable corrective actions to address the ITAAC finding, and the nonconforming conditions were appropriately addressed such that the acceptance criteria of ITAAC 3.3.00.07d.ii.a (800) was no longer impacted. As a result of the licensee's corrective actions to restore compliance, this ITAAC finding is opened and closed in this report.

1A23 (Unit 4) ITAAC Number 3.3.00.07d.ii.b (801) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07d.ii.b (801). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.01 - Physical Separation of Cables
- 65001.09-02.03 - Documentation
- 65001.09-02.04 - Problem Identification and Resolution
- 65001.A.02.02 - Installation Records Review

The inspectors inspected cable pulls, terminations, and raceways in rooms located inside the non-radiologically controlled area of the auxiliary building. The rooms inspected include the following:

- 12101 - Division A battery room (Fire Area 1202 AF 04)
- 12204 - Division B battery room 2 (Fire Area 1201 AF 02)
- 12207 - Division B DC equipment room (Fire Area 1201 AF 02)
- 12306 - Valve/piping penetration room (Fire Area 1201 AF 05)12312 - Division C RCP trip switchgear room (Fire Area 1202 AF 03)
- 12423 - Reactor trip switchgear 1 (Fire Area 1243 AF 01)
- 12501 - Nuclear island VBS MCR Divisions A and C equipment room (Fire Area 1250 AF 01)
- 12207 - Division B DC equipment room (Fire Area 1201 AF 02)
- 12312 - Division C RCP trip switchgear room (Fire Area 1202 AF 03)
- 12201 - Division A DC equipment room (Fire Area 1202 AF 04)
- 12205 - Division D DC equipment room (Fire Area 1201 AF 03)
- 12301 - Division A I&C room (Fire Area 1202 AF 04)
- 12302 - Division C I&C room (Fire Area 1202 AF 03)

The inspectors conducted walkdowns of the cable pulls, terminations, and raceways inside the rooms to verify 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. During the walkdown, the inspectors verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors also walked down cables installed in trays to verify cable fill design requirements were met, as applicable.

The inspectors reviewed applicable construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify raceways that route Class 1E cables were installed in accordance with design requirements. The inspectors reviewed work packages, test and inspection records, and cable pull tickets to confirm the non-Class 1E cables needed to meet the ITAAC requirements of Appendix C of the COL were installed at the time of ITAAC verification.

For the raceways installed in these rooms, the inspectors verified the size, material, and style were as specified in design documents and work procedures. The inspectors verified raceway supports were located at points specified in approved instructions and maximum distance between supports were not exceeded. The inspectors also verified fittings and clamps were installed according to work procedures. Additionally, the inspectors reviewed the licensee’s corrective actions for issues entered into the CAP to verify issues were identified, evaluated, and corrected.

The inspectors reviewed ITAAC Technical Report SV4-1200-ITR-800801, Revision 0 and supporting documentation to determine, within the non-radiologically controlled area

of the auxiliary building, whether the licensee's inspection results confirmed 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 met separation requirements; Class 1E electrical and communication cables associated with only one division, and the raceways that route these cables were identified by the appropriate color code; and Class 1E electrical and communication cables associated with only one division were routed in raceways assigned to the same division.

Unit 4 License Amendment 187, which was issued on November 22, 2022, authorized the consolidation of the electrical separation ITAACs for the non-radiologically controlled area of the auxiliary building into a single ITAAC. The requirements of ITAAC 790, 793, 804, 807, and 810 have been consolidated in ITAAC 801.

b. Findings

No findings were identified.

1A24 (Unit 4) ITAAC Number 3.3.00.16 (821) / Family 17A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.16 (821). The inspectors used the following NRC IP/section to perform this inspection:

- 65001.17-02.13 - Secondary Power Supplies for Alarm Annunciation and Communication Equipment

The inspectors reviewed acceptance testing documents to determine if the secondary security power supply equipment for alarm annunciator equipment and non-portable communication equipment met the requirements as specified in Table 3.3-6 of Unit 4 COL. The inspectors conducted a walkdown of the Vogtle Unit 4 vital area to verify the secondary security power supply equipment for alarm annunciator equipment and non-portable communication equipment was located within a vital area in accordance with the site design specifications, Vogtle Unit 4 security plan, and the ITAAC.

b. Findings

No findings were identified.

1A25 (Unit 4) ITAAC Number 3.3.00.17 (822) / Family 17A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.17 (822). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.17-02.05 - Protected Area Perimeter Intrusion Detection Systems
- 65001.17-02.11 - Vital Area Access Controls

The inspectors reviewed the acceptance testing documents to determine if vital areas were locked and alarmed with active intrusion detection systems as specified in Table 3.3-6 of Appendix C of the Vogtle Unit 4 COL. The inspectors observed the alarm testing and reviewed the test records for the Vogtle Unit 4 vital area doors to verify vital areas were locked and alarmed with active intrusion detection systems and intrusion was detected and annunciated in both the central and secondary alarm stations in accordance with the manufacturer's specifications, Vogtle Unit 4 security plan, and the ITAAC.

b. Findings

No findings were identified.

1A26 (Unit 4) ITAAC Number 3.5.00.01.i (823) / Family 19A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.5.00.01.i (823). The inspectors used the following NRC IP/section to perform this inspection:

- 65001.19-02.02c-Completed Work/As-Built

The inspectors reviewed as-built documentation of Unit 4 containment high range radiation monitor assembly (PXS-JE-RE163) to verify the panels that are located in the non-radiological portion of the auxiliary building have been qualified as seismic Category I components, and the detector which is located inside containment has been qualified as a seismic Category I component and for harsh environment conditions.

The inspectors also reviewed as-built documentation for the containment atmosphere gaseous and particulate radiation monitoring skid (PSS-JS-26/PSS-JE-027) which is located in the radiological portion of the auxiliary building to verify the skid has been qualified for its environment and as a seismic Category I component.

The inspectors reviewed the EQRRs for these components and conducted a walkdown to verify the as-built configuration, such as equipment make, model, serial number, location, and anchorage were bounded by the as-tested conditions in the equipment

qualification data package, as specified in Section 3.5 of Appendix C of the Vogtle Unit 4 COL.

b. Findings

No findings were identified.

IMC 2504, Construction Inspection Program – Inspection of Construction and Operational Programs

1P01 Construction QA Criterion 16

- 35007-A16 - Appendix 16. Inspection of Criterion XVI – Corrective Action
- 35007-A16.04 - Inspection Requirements and Guidance
- 35007-A16.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed a sample of two CRs that had been initiated in February 2023 for Vogtle Unit 4 associated with safety related electrical cable routing in the non-radiological portion of the auxiliary building.

The inspectors reviewed the CRs to verify issues related to cable routing and terminations in PMS equipment room 12305 (Division D) were properly identified, appropriately characterized, and dispositioned.

b. Findings

No findings were identified.

1P02 Construction QA Criterion 16

- 35007-A16.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed one sample to assess implementation of the CAP associated with ITAAC 2.3.11.03b (454) and ITAAC 2.2.04.12a.iii (250) for failures of Flowserve PV44 valves. The inspectors reviewed CR 10968674, “3-HDS-V012B has a broken stem;” CR 10958192, “MFP ‘C’ miniflow potential stem/actuator separation;” CR 10963631, “Stem broke/separated from Plug;” CR 1095154, “3-HDS-V012B potential stem/disk separation;” and corrective action record (CAR) 417576, “Stem Broke/Separated from Plug.” This CAR documented the causal analysis completed by the licensee to determine and prescribe corrective actions to address the chronic nonconformances of these valves. The inspectors reviewed the causes that were identified for the event to determine if the causes were consistent with the objective evidence and the extent of condition review. In addition, the inspectors reviewed the

corrective actions that were developed to address the causes to determine if the corrective actions were adequate to address the issue. The inspectors also reviewed the extent of condition to determine if any of the types of issues identified by the licensee affected ITAAC.

b. Findings

No findings were identified.

1P03 Construction QA Criterion 3

- 35007-A3 - Appendix 3. Inspection of Criterion III – Design Control

a. Inspection Scope

The inspectors performed a walkdown of the non-radiologically controlled area of the auxiliary building to evaluate the as-built condition of electrical raceway supports as well as to sample the structural assessment performed on these supports by the licensee. Specifically, the inspectors reviewed drawings, E&DCRs, engineering specifications, calculations, and CRs associated with electrical raceway supports located between elevations 66 feet – 6 inches and 100 feet of the non-radiologically controlled area of the auxiliary building. In addition, the inspectors performed field measurements of sampled raceway supports to verify the requirements from design basis were translated from structural calculations, engineering specifications, and construction drawings to the final as-built condition.

b. Findings

Introduction

The inspectors identified a construction finding of very low safety significance (Green) with an associated NCV of 10 CFR 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to adequately implement measures to assure the design basis was correctly translated into specifications, drawings, procedures, and instructions, which called into question the ability of support SV4-1222-SH-E804 to perform its’ safety related function.

Description

During the week of January 30, 2023, the inspectors observed 4-inch diameter safety related rigid conduits SV4-1222-ER-BXC03 and SV4-1222-ER-BXC04 supported by seismic category I support SV4-1222-SH-E804 in Unit 4 room 12207. These conduits carry cables associated with safety related electrical equipment. Specifically, AP1000 Tag No. IDSB-SB-2A is a 125-volt 60 cell battery in IDS Division B and is part of the second battery bank in Division B, which is designated as the 72-hour battery bank. The second battery bank is used for those loads requiring power for 72 hours following an event of loss of all ac power sources concurrent with a design basis accident (DBA). The IDS provides reliable power for the safety related equipment required for the plant instrumentation, control, monitoring, and other vital functions needed for shutdown of the plant. In addition, the IDS provides power to the normal and emergency lighting in the main control room and at the remote shutdown workstation. IDSB-DB-2A supplies

inverter IDSB-DU-2, which supplies panel IDSB-EA-3. This panel supplies power to the post-accident monitoring instrumentation system (PAMS), which provides the capability to monitor plant variables and systems operating status during and following an accident. PAMS also includes those instruments provided to indicate system operating status and furnish information regarding the release of radioactive materials.

Support SV4-1222-SH-E804 is specified on drawing SV4-1222-ER-619 and consists of two Unistrut conduit clamps attached to a single Unistrut channel welded to a steel filler plate, which is, in turn, welded to another steel plate attached to a primary structural wall. The configuration at the support consists of a rigid conduit section supported approximately at its midpoint with flexible conduits attached to each cantilevered end of the rigid conduit section. Given the as-built teeter-totter configuration of the support, which could result in rotational forces at the support from seismic loads, the inspectors questioned the use of a single support for the rigid conduit section at this location.

The structural design of support SV4-1222-SH-E804 is documented in calculation APP-1220-SHC-301. However, the licensee determined, during development of responses to the inspectors' questions, that the existing analysis did not adequately address the as-built configuration of the conduits and the associated support. As a result, the inspectors concluded the calculation did not adequately demonstrate support SV4-1222-SH-E804 would be able to withstand the design basis loads without loss of structural adequacy or any safety related functions.

The licensee initiated E&DCRs APP-1220-GEF-501, APP-1220-GEF-502, and APP-1220-GEF-503 to evaluate the as-built configuration and address the inspectors' questions. In all the E&DCRs, the licensee completed both an initial calculation and an analysis using the GT STRUDL structural analysis and design software program and compared the results between the two methods.

The inspectors reviewed APP-GW-S1-006, "Design Guide for Raceway Systems," Revision 4 and noted in Section 4 it is stated that the basic stress allowables for conduit supports utilizing light gage cold rolled channel type sections are based on the manufacturer's published catalog values and the basic stress allowables for conduit supports utilizing structural shapes are in accordance with ANSI/AISC N-690. The inspectors further determined the basic stress allowables for Unistrut components are summarized in Annex C, "Guidance for Structural Acceptance Criteria for Elastic Design Method," of calculation APP-SH25-S3C-002, "AP1000 Seismic Category I Standard Conduit Supports." The inspectors also noted supports are evaluated in APP-SH25-S3C-002 to verify compliance with IEEE 628-2001 (R2006), "IEEE Standard Criteria for the Design, Installation, and Qualification of Raceway Systems for Class 1E Circuits for Nuclear Power Generating Stations." Similarly, E&DCR APP-1220-GEF-503 states seismic Category I raceway systems for Class 1E cables shall comply with IEEE 628.

The inspectors reviewed manufacturer's catalog information and E&DCRs APP-1220-GEF-501, APP-1220-GEF-502, and APP-1220-GEF-503. The inspectors determined adequate technical justification was not provided in the E&DCRs for some of the assumptions used to evaluate the as-built configuration of the conduits. Specifically, the dimensions of the conduit clamp, the seismic forces, and structural acceptance criteria appeared to be nonconservative and inconsistent with the manufacturer's catalog information, design guide APP-GW-S1-006, calculations APP-1220-SHC-301 and APP-SH25-S3C-002, and IEEE 628.

In E&DCR APP-1220-GEF-503, which was the most current analysis and design of support SV4-1222-SH-E804, the licensee assumed the in-plane rotational forces at the support would be resisted by a force couple developed by shear in the conduit clamp bolts. The licensee also assumed the distance between the bolts to be equal from the end-to-end length of the conduit clamp. Based on the manufacturer's catalog information, however, the bolts are located 11/16 of an inch from each end of the conduit clamp, which would decrease the distance between the bolts by approximately 20%. Accounting for the reduction in distance between the bolts would lead to a corresponding increase in the in-plane rotational forces.

In E&DCR APP-1120-GEF-503, the licensee calculated the seismic forces using the equivalent static load method of analysis. This method is typically used for simple systems with a factor of 1.5 conservatively applied to the peak acceleration to account for multi-mode effects. The licensee assumed this method was appropriate for calculating the seismic forces without providing justification demonstrating it is applicable or conservative for this specific case. Given the teeter-totter configuration of the support, however, this method of accounting for seismic forces potentially underestimates the rotational forces due to seismic loads, which could control the design of the support. Along these lines, the inspectors noted IEEE-628, Subclause 4.10.3, Structural Analysis," allows both dynamic and equivalent static load analysis for calculating the effects of dynamic loads on raceway systems, but also states the selection of the analysis method shall take into account the complexity of the system and the adequacy of the analytical technique to properly predict the response of the system while under dynamic excitation and other dynamic loads.

In many instances, the structural acceptance criteria assumed in E&DCR APP-1120-GEF-503 deviated from those provided in design guide APP-GW-S1-006, calculations APP-1220-SHC-301 and APP-SH25-S3C-002 and recommended in IEEE Standard 628. Some examples are as follows:

1. In the interaction equations of E&DCR APP-1120-GEF-503, a limit of 1.6 is assumed for load combinations, which include earthquake loads. However, the allowable stresses for the P1000 Unistrut channel provided in APP-1220-SHC-301, Appendix A.2 and assumed in the E&DCR incorporate a factor of 1.6 to account for seismic loading. As a result, the appropriate limit for the interaction equations associated with the Unistrut channel should be 1.0.

2. The allowable stresses provided for the P2558 conduit clamps in APP-SH25-S3C-002, Annex C are based on 50% of the average ultimate load capacity. Accounting for the 1.6 limit, the allowable stresses assumed in E&DCR APP-1120-GEF-503, however, are approximately 28% higher.

3. The allowable stresses for the Unistrut bolting hardware provided in APP-SH25-S3C-002, Annex C, are 53% of the ultimate capacity of the fastener and include a 1.6 increase factor to account for seismic loads. However, the allowable stresses assumed in E&DCR APP-1120-GEF-503 are based on the full ultimate capacity of the fastener and are compared to a limit of 1.6 in the interaction equations. In effect, the allowable stresses assumed for the bolts in E&DCR APP-1120-GEF-503 exceed the ultimate capacities of the fasteners. As a result, the allowable stresses assumed for the bolts in E&DCR APP-1120-GEF-503 are nonconservative and do not comply with APP-GW-S1-006 since they exceed the manufacturer's published values. Additionally, the allowable stresses assumed for the bolts in E&DCR APP-1120-GEF-503 are inconsistent with IEEE-628, which recommends in Annex C, "Guidance for structural acceptance criteria for elastic design method," that the maximum allowable stresses should not exceed 0.9 time the yield strength of the material and the allowable load should be two-thirds of the ultimate load or a load corresponding to one-half of the displacement at the ultimate load, whichever is smaller.

The licensee did not provide adequate technical justification in E&DCR APP-1120-GEF-503 for these examples where the structural acceptance criteria used to evaluate the as-built configuration of support SV4-1222-SH-E804 deviated from those provided in design guide APP-GW-S1-006, calculations APP-1220-SHC-301 and APP-SH25-S3C-002 and recommended in IEEE 628. The inspectors also noted that the cumulative impacts from inconsistencies in the spacing of the bolts, the potential underestimation of the rotational forces on the support due to seismic loads, and inadequately justified deviations in the structural acceptance criteria could result in stress ratios exceeding the allowable limits. As a result, the inspectors concluded that the ability of Support SV4-1222-SH-E804 to withstand the design basis loads without loss of structural integrity or any safety-related functions was indeterminate.

The licensee entered this issue into their CAP as CRs 50168340, 50171703, and 50174047 to evaluate the cause and to identify appropriate corrective actions.

Analysis

The inspectors determined that the licensee's failure to have an analysis demonstrating that the as-built configuration of support SV4-1222-SH-E804 would meet design requirements was a PD and violation of 10 CFR 50, Appendix B, Criterion III, warranting a significance evaluation.

Per the guidance in IMC 0613, "Power Reactor Construction Inspection Reports," Appendix B, "Issue Screening," dated November 4, 2020, the inspectors determined the PD was of more-than-minor safety significance, and therefore a finding because it represented an adverse condition that rendered the quality of an SSC unacceptable or indeterminate and required substantive corrective action. The inspectors evaluated the finding in accordance with IMC 2519, "Construction Significance Determination Process," Appendix A. The inspectors determined the finding was not associated with a security program, or an operational program listed in IMC 2504; however, it involved the requirements of a construction program listed in IMC 2504 (i.e., the Quality Assurance (QA) Construction Program, which requires compliance with 10 CFR 50, Appendix B). The inspectors determined the finding could be associated with a system (IDS) but was not material to the acceptance criteria of a specific ITAAC. The inspectors determined the finding affected the Design/Engineering cornerstone and was a construction finding since it could not be associated with a specific ITAAC. The finding was associated with IDS, which is assigned as a high system risk importance, and was assigned to Row 1 of the significance determination matrix because, if left uncorrected, the finding could reasonably be expected to impair the design function of only one train of a multi-train system. As a result, the inspectors concluded the finding was of very low safety significance (Green).

The inspectors determined this finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Design Margins, in the area of human performance in accordance with IMC 0613, appendix F "Construction Cross-Cutting Areas and Aspects," dated November 4, 2020. The proximate cause of the PD was attributed to the failure to maintain equipment within design margins. [H.6]

Enforcement

Violation: 10 CFR 50, Appendix B, Criterion III, "Design Control," states, in part, that measures shall be established to assure that the design basis is correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled.

APP-GW-S1-006, "AP1000 Design Guide for Raceway Systems," Section 4.0, states, in part, that the basic stress allowables for conduit supports utilizing light gage cold rolled channel type sections are based on the manufacturer's published catalog values. These allowable stresses are summarized in Annex C, "Guidance for structural acceptance criteria for elastic design method," of calculation APP-SH25-S3C-002, "AP1000 Seismic Category I Standard Conduit Supports." The design of conduit

conduit support SV4-1222-SH-E804 is documented in calculation APP-1220-SHC-301, “Structural Analysis of Cable Conduit Supports in Auxiliary Building, Areas 1 and 2, El. 82’-6”.”

Contrary to the above, on or before April 20, 2023, the licensee failed to adequately implement measures to assure that the design basis was correctly translated into specifications, drawings, procedures, and instructions and to control deviations from quality standards. Specifically, the analysis and design of support SV4-1222-SH-E804 documented in calculation APP-1220-SHC-301 did not adequately account for the as-built configuration of the conduits attached to support SV4-1222-SH-E804. E&DCRs APP-1220-GEF-501, APP-1220-GEF-502, and APP-1220-GEF-503 completed to evaluate the as-built configuration used nonconservative dimensions for the conduit clamps and did not provide adequate technical justification for the revised assumptions used to determine the seismic loads and deviations from the structural acceptance criteria provided in design guide APP-GW-S1-006, calculations APP-1220-SHC-301 and APP-SH25-S3C-002, and recommended in IEEE Standard 628.

Because this violation was not repetitive or willful, was of very low safety significance, and was entered into the licensee’s CAP as CR 50177001, this violation is being treated as an NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy (**NCV 05200026/2023002-02, Failure to Adequately Implement Design Control Measurements Resulting in Lack of Technical Justification for Support SV4-1222-SH-E804).** This construction finding is opened and closed in this report.

1P04 Construction QA Criterion 16

- 35007-A16.04 - Inspection Requirements and Guidance
- 35007-A16.04.01 - Inspection of QA Implementing Documents
- 35007-A16.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed issues entered into the licensee's CAP daily to assess issues that might warrant additional follow-up inspection, to assess repetitive or long term issues, to assess adverse performance trends, and to ensure the CAP appropriately included regulatory required non-safety related SSCs. The inspectors periodically attended the licensee's CAP review meetings, held discussions with licensee and contractor personnel, and performed reviews of CAP activities during the conduct of other baseline inspection procedures. The inspectors reviewed conditions entered into the licensee's CAP to determine whether the issues were classified in accordance with the licensee's quality assurance program and CAP implementing procedures. The inspectors reviewed corrective actions associated with conditions entered into the CAP to determine whether appropriate actions to correct the issues were identified and implemented effectively, including immediate or short-term corrective actions, in accordance with the applicable quality assurance program requirements and 10 CFR 50, Appendix B, Criterion XVI. Additionally, the inspectors reviewed the corrective

taken to determine whether they were commensurate with the significance of the associated conditions in accordance with the licensee's CAP implementing procedures. The inspectors completed reviews of CAP entry logs to verify issues from all aspects of the project, including equipment, human performance, and program issues, were being identified by the licensee and its contractors at an appropriate threshold and entered into the CAP as required by licensee's CAP implementing procedures.

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4OA6 Meetings, Including Exit

.1 Exit Meeting.

On July 11, 2023, the inspectors discussed the results of this inspection with Mr. G. Chick, VEGP Units 3 and 4 Executive Vice President, and other members of your staff. Proprietary information was reviewed during the inspection period but was not included in the inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensees and Contractor Personnel
C. Castell, WEC Licensing Engineer
N. Chapman, SNC Licensing Engineer
K. Durrwachter, SNC Licensing Engineer
W. Garrett, SNC Licensing Manager
D. Kettering; SNC Engineering
G. Koucheravy, Construction Project Director
S. Leighty, SNC Licensing Manager
B. Macioce, WEC Engineering
J. Mackiewicz, SNC Electrical ITAAC Field Engineer
T. Mattson, SNC PI/CAP Project Director
K. Roberts, SNC ITAAC Manager
G. Scott, SNC Licensing Engineer
C. Smith, SNC Electrical ITAAC Project Manager
S. Sorn, SNC Engineering
S. Stimac, Unit 4 Plant Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
05200026/2023002-01	NCV	Open/Close	Failure to Maintain Cable Separation Requirements in Containment
05200026/2023002-02	NCV	Open/Close	Failure to Adequately Implement Design Control Measurements Resulting in Lack of Technical Justification for Support SV4-1222-SH-E804

LIST OF DOCUMENTS REVIEWED

Section 1A01
Westinghouse Electric Company (WEC) SV4-RCS-PLW-014, “Reactor Coolant System Containment Building Room,” Revision 1
WEC SV4-PV62-V2-100001, “Pressurizer Safety Valve General Assembly,” Revision 1
WEC SV4-PV62-V2-100002, “Pressurizer Safety Valve General Assembly,” Revision 1
SV4-PV62-VMM-001, “Instructional Manual for Pressurizer Safety Valve,” Revision 2
S&W Piping and Installation Data Sheet SV4-RCS-PLW-01K, “Reactor Coolant System Containment Building Room 11603 Upper Tier ADS Piping to Relief Valve,” Revision 0
S&W Piping and Installation Data Sheet SV4-RCS-PLW-01D, “Reactor Coolant System Containment Building Room 11603 & 11703 Lower Tier ADS Piping to Relief Valve,” Revision 1
S&W Piping and Installation Data Sheet SV4-RCS-PLW-01L, “Reactor Coolant System Containment Building Room 11603 Lower Tier ADS Piping to Relief Valve,” Revision 1

WEC Nonconformance and Disposition (N&D) Report, SV4-PV62-GNR-000001, “N&D SV0-PV62-GNR-000001 Closed Before All Actions Complete (ESR 50126969),” Revision 0
WEC N&D Report SV4-PV62-GNR-000004, “Damaged Outlet Flange Stud on SV4-RCS-PL-V005A (ESR 50154298),” Revision 0
S&W Work Package SV4-RCS-P0W-1051836, “ASME Section III, Install Relief Valves SV4-RCS-PL-V005A & SV4-RCS-PL-V005B Upon Completion of Hydro and Flushing,” Revision 0

Section 1A02
APP-SSAR-F5-001, “AP1000 Safety Analysis Checklist,” Revision 1
VEGP 3&4 UFSAR, Chapter 4, “Reactor,” Revision 10
Core Operating Limits Report (COLR) for the Vogtle Electric Generating Plant, Unit 4 Cycle 1, Version 1, April 2021
2.1.03.13-U4-PRF, “ITAAC 88 Core Design Principal Closure Document,” Revision 0
NF-GP-23-038, from Westinghouse to Mr. Rob Szollosy, "SOUTHERN NUCLEAR OPERATING COMPANY VOGTLE ELECTRIC GENERATING PLANT UNIT 4, Notification of Fabrication of Fuel and RCCAs," 5/18/2023
NF-GP-21-033, VEGP Unit 4 Cycle 1 Core Loading Plan, 6/23/2021

Section 1A03
Westinghouse Electric Company (WEC) SV4-CNS-MUR-001, “AP1000 Vogtle Unit 4 Section III System Code Data Report for the Containment System Penetration Assemblies (CNS),” Revision 0
WEC SV4-CNS-S3R-001, “Vogtle Unit 4 Containment System Penetration Assemblies (CNS) ASME Section III As-Built Design Report,” Revision 0
WEC SV4-MV50-VQQ-004P1P36 “Chicago Bridge and Iron Services Quality Assurance Record Package for the AP1000 Containment Vessel,” Serial No. Vogtle Unit 4, Revision 1
Chicago Bridge & Iron Services “Form N-1 Certificate Holder’s Data Report for Nuclear Vessels, as Required by the Provisions of the ASME Code, Section III, Division 1," for the Vogtle Unit 4 Advanced Passive Light Water Reactor Containment Vessel (AP1000) for WEC, 05/12/2022
WEC "Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, as Required by the Provisions of the ASME Code, Section III, Division 1," for the Containment System (CNS) Penetration Assemblies Certificate Holder's Serial No. SV4-CNS-MUR-001 installed for the Southern Nuclear Operating Company, 04/19/2023
WEC SV4-MV50-S3R-100, “Vogtle Unit 4 Containment Vessel ASME Section III As-Built Design Report,” Revision 0
PCI Energy Services SV0-RCS-VQQ-800062, “Vogtle Unit 4 AP1000 Electrical Penetration Assembly Retaining Ring Fabrication and Installation for Containment Penetrations E01-E03, E06, E07, and E09-E32,” Revision 0
PCI Energy Services SV4-RCS-VQQ-800074, “Vogtle Unit 4 AP1000 Fuel Transfer Tube Assembly Penetration 11 Installation (SV4-CNS-MJR-002),” Revision 1
Stone & Webster (S&W) "Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, as Required by the Provisions of the ASME Code, Section III, Division 1," for the Containment System (CNS) Certificate Holder's Serial No. SV4-CNS-MJR-001 installed for WEC, 04/14/2023
PCI Energy Services, “Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, as Required by the Provisions of the ASME Code, Section III, Division 1," for the (CNS) Fuel Transfer Tube Assembly Penetration 11 Installation Certificate Holder's Serial No. SV4-CNS-MJR-002 installed for S&W 012/30/2021

PCI Energy Services, “Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, as Required by the Provisions of the ASME Code, Section III, Division 1," for the (CNS) Fuel Transfer Tube Assembly Penetration 11 Installation Certificate Holder's Serial No. SV4-CNS-MJR-003-1 installed for S&W 11/04/2022
S&W Work Package (WP) SV4-CNS-THW-1138153, “ASME III- CNS Pneumatic Tests SV4-CNS-TH-P9001A-P90015A For Penetrations SV4-CNS-ML-E01/E02/E03/E06/E07/E09/E11/E12/E13/E14/E15/E16/E17/E18,” Revision 0
S&W WP SV4-CNS-THW-1138156, “ASME III- CNS Pneumatic Tests SV4-CNS-TH-P90016A-P90029A For Penetrations SV4-CNS-ML-E19 Through E32,” Revision 0
S&W WP SV4-VUS-THW-1128839, “ASME III – Perform Pneumatic Test SV4-VUS-TH-P9002A, SV4-VUS-TH-P9003A, SV4-VUS-TH-P9004A, SV4-VUS-TH-P9005A,” Revision 0;
WEC SV4-CNS-VQQ-001, “Vogtle Unit 4 ASME Section III Certificate of Conformance for Containment Penetration Assemblies (CNS) Welds,” Revision 1
S&W WP SV4-FT01-THW-1174934, “ASME III – Perform Hydrostatic Test of Fuel Transfer Tube Caps in Accordance With E&DCR SV4-FT01-GEF-000002,” Revision 0;
S&W WP SV4-FHS-THW-1098548, “ASME III- FHS Hydrotest SV4-FHS-TH-H9001A, Perform Fuel Transfer Tube SV4-FHS-FT-01 Pressure Test,” Revision 0
WEC Report No. SV4-IWE-23-012, “IWE Class MC Containment Components Visual Examination Data Sheet for SV4-CV-03-Course S10 – Carbon Steel with IOZ Coating,” 2/1/2023
WEC Report No. SV4-IWE-23-223, “IWE Class MC Containment Components Visual Examination Data Sheet for SV4-P20 – Carbon Steel with IOZ Coating,” 5/03/2023
WEC Report No. SV4-IWE-23-019, “IWE Class MC Containment Components Visual Examination Data Sheet for SV4-CV-06-Course S5 – Carbon Steel with IOZ Coating,” 3/9/2023

Section 1A04
2.2.01.05.i-U4-EQRR-PCD001, “Containment System EQ Reconciliation Report,” Revision 0
2.2.01.05.i-U4-EQRR-PCD002, “Containment System EQ Reconciliation Report,” Revision 0
2.2.01.05.i-U4-EQRR-PCD003, “Containment System EQ Reconciliation Report,” Revision 0
2.2.01.05.i-U4-EQRR-PCD004, “Containment System EQ Reconciliation Report,” Revision 0
SV4-PV02-VBR-016, “Equipment Qualification Data Package for Samshin Limited Nozzle Check Valves for Use in the AP1000 Plant,” Revision 0
SV4-PV16-VBR-002, “Equipment Qualification Data Package for Auxiliary Relief Valves for Use in the AP1000 Plant,” Revision 1
SV4-PV14-VBR-002, “Equipment Qualification Data Package for Fisher HPNS Control Valves for Use in the AP1000 Plant,” Revision 2
SV4-PV11-VBR-004, “Equipment Qualification Data Package for Air-Operated TRICENTRIC Butterfly Valves for Use in the AP1000 Plant,” Revision 2
SV4-PV10-VBR-006, “Equipment Qualification Data Package for Air-Operated Plug Valves for Use in the AP1000 Plant,” Revision 1
SV4-EY01-VBR-004, “Equipment Qualification Data Package for Low Voltage Power, Control, and I&C Electrical Penetration Assemblies (EPAs) for Use in the AP1000 Plant,” Revision 3
Engineering and Design Coordination Report (E&DCR) SV0-FSAR-GEF-003, “Implementation of AP1000 Electrical Penetration Assembly Retaining Ring for Vogtle 3 and 4 (NL-1421),” Revision 0
E&DCR SV0-CNS-GEF-001, “Modification to Containment Vessel Electrical Penetrations (ESR 50051794),” Revision 0
Nonconformance and Disposition Report (N&D) SV4-PV00-GNR-000001, “ESR 50137791 – ASCO Solenoid Valves – Unsupported Flex Length,” Revision 0

N&D SV0-PV00-GNR-000001, “Safety-Related Valve Cable (Pigtail) Traceability (ESR 50086742),” Revision 0
N&D SV0-PV00-GNR-000003, “Acceptability of ASCO Solenoid Valves Qualified to ATR-35115, Rev. D (ESR 50106156),” Revision 0
N&D SV4-CNS-GNR-000007, “Arc Strikes on Upper Personnel Airlock (ESR 50158093),” Revision 0
N&D SV4-CNS-GNR-000008, “Vogtle Unit 4- U4 Personnel Arc Strike Removal (ESR 50164942),” Revision 0
N&D SV4-MV50-GNR-000005, “SV4-SGS-PY-C03B(P28) Guard Pipe Damage (ESR 50117703),” Revision 0
Design Report SV4-MV50-S3R-100A, “Vogtle Unit 4 Containment Vessel ASME Section III As-Built Design Report Addendum 01,” Revision 0, 5/25/2023
Condition Report (CR) 50106159, “Follow-up on ESR 50041852,” Manual Update, 9/2/2021
PCI NCR-919841-002, “CV Personnel Air Lock Arc Strikes/Vogtle Unit 4,” 1/4/2023
PCI Liquid Penetrant Examination Report NDE-919841-004, “Containment Vessel Personnel Air Lock Outer Shell H3, Arc Strike# 1,” 1/3/2023
PCI Ultrasound Calibration/Technique Record NDE-919841-005, “Containment Vessel Personnel Air Lock Outer Shell H4, Arc Strike# 1,” 1/3/2023
CR 50176454, “4-CNS-ITPP-502 missed procedure opportunity,” 5/31/2023
E&DCR APP-PV10-GEF-028, “PV10-Z0D-100 Stem orientation rotation (ESR 50067690),” Revision 0
E&DCR APP-PV10-GEF-031, “Drawing Gasket Dimensions Revision,” Revision 0
E&DCR APP-PV03-GEF-058, “Incorporation of Revised Application Reports into PV03 Nozzle Check Valve EQ Documentation,” Revision 0
E&DCR APP-GW-GEF-1628, “Implementation of Updated Zone 1 Abnormal Group 1 Pressure per AGW-GEE-5226,” Revision 0
E&DCR APP-FSAR-GEF-035, “Updating EQ Accident Temperatures for Rooms 12156 and 12244,” Revision 0
E&DCR APP-PV14-GEF-850004, “PV14 Valve Packages – Effects of Carbon Steel on TopWorx Switches (ESR 50066427),” Revision 0
E&DCR APP-PV02-GEF-063, “Updates to PV03 Equipment Qualification Documents to Address Outstanding Design Change Proposals,” Revision 0
SV4-PV02-VMM-001, “PV02 2” & Smaller Manually Operated Globe and Check Valves Installation, Operating and Maintenance Manual,” Revision 5
Work Package (WP) SV4-SFS-P0W-1133786, “ASME III – Install SFS Relief Valve SV4-SFS-PL-V067 After Completing of Testing and Flushing,” Revision 0
WP SV4-VFS-P0W-1014299, “Install ASME III LB Pipe & Supports Per ISO SV4-VFS-PLW-045/SV4-VFS-PLW-043,” Revision 0
WP SV4-VWS-PVW-1150183, “ASME III – Remove and Install Valve SV4-VWS-PL-V080 To Support Testing,” Revision 0
WP SV4-SFS-P0W-1107341, “ASME III, Remove/Reinstall SFS Valves SV4-SFS-PL-V032, V039, & V067 To Support Hydro Test, Replace Gasket for Valve SV4-SFS-PL-V035 Reference CR 50075679,” Revision 1
WP SV4-P11Z-EYW-1124275, “U4 NI – Perform Feedthrough Conductor Electrical Testing and Label Verification For EPA SV4-IDSA-EY-P11Z,” Revision 0
WP SV4-CNS-MLW-1007362, “ASME III – Fabrication/Installation of Electrical Containment Vessel Penetrations SV4-CNS-ML-E01, E02, & E03,” Revision 0
WP SV4-CNS-MLW-1007359, “ASME III – Fabrication/Installation of Electrical Containment Vessel Penetrations SV4-CNS-ML-E11, E12, E13,” Revision 0
WP SV4-CNS-MLW-1007368, “ASME III – Fabrication/Installation of Electrical Containment Vessel Penetrations SV4-CNS-ML-E14, E15, E16, E27, & E28,” Revision 0

WP SV4-CNS-MLW-1007369, “ASME – Fabrication/Installation of Electrical Containment Vessel Penetrations SV4-CNS-ML-E29, E30, E31, & E32,” Revision 0
WP SV4-EY-EYW-800003, “EPA32 SV4-IDSB-EY-P32Y Installation – Electrical Scope,” Revision 0
WP SV4-EY-EYW-800027, “Installation of EPA SV4-ECS-EY-P01X,” Revision 0
WP SV4-EY-EYW-800028, “EPA03 SV4-ECS-EY-P03Z Installation – Electrical Scope,” Revision 0
SV4-EY01-E0R-132, “Electrical Penetration Assembly SV4-IDSB-EY-P32Y – Weight Calculation Report,” Revision 1
SV4-EY01-EYW-1175288, “U4 Aux- Remove EPA Covers, Reinspect Cables, and Reinstall EPA Covers for All EPAs ORC,” Revision 0
SV4-EY01-E0R-132, “Electrical Penetration Assembly (EPA) SV4-IDSB-EY-P32Y-Weight Calculation Report,” Revision 1
SV4-EY01-E0R-111, “Electrical Penetration Assembly (EPA) SV4-IDSA-EY-P11Z-Weight Calculation Report,” Revision 1
SV4-EY01-E0R-115, “Electrical Penetration Assembly (EPA) SV4-IDSD-EY-P15Y-Weight Calculation Report,” Revision 2

Section 1A05
ND-RA-001-008-F01, “ITAAC Principal Closure Document Review Form,” Version 9.0
SV4-CNS-Z0R-001, “Unit 4 Containment Electrical Penetration Assembly ITAAC 109 As-Built Analysis Report,” Revision 0
APP-IDS-E0C-014, “Verification of IDS Low-Voltage Class 1E Safety Related Electrical Penetration Assemblies,” Revision 4
Closure Package (ITAAC 109), 2.2.01.08-U4-CP, Revision 0

Section 1A06
2.2.02.02a-U4-PRF-Rev 0, “ITAAC Principal Closure Document Review Form,” for ITAAC 2.2.02.02a, NRC Index # 120, Unit 4, 3/31/23
SV4-PCS-S3R-001, “Vogtle Unit 4 Passive Containment Cooling System ASME Section III As-Built Piping System Design Report,” Revision 0
SV4-PCS-MUR-001, “AP1000 Vogtle Unit 4 ASME Section III System Code Data Report for the Passive Containment Cooling System (PCS),” 3/31/23
SV4-GW-GEI-100, “AP1000 Preservice Inspection Program Plan for Vogtle Unit 4,” Revision 2
APP-PCS-M6-001, “Piping & Instrumentation Diagram (P&ID) Passive Containment Cooling System Class 3,” Revision 12
APP-PCS-M6-002, “Piping & Instrumentation Diagram (P&ID) Passive Containment Cooling System Class 3,” Revision 14
APP-PCS-M6-003, “Piping & Instrumentation Diagram (P&ID) Passive Containment Cooling System Class 4,” Revision 10
Stone & Webster (S&W) Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, As Required by the Provisions of the ASME Code, Section III, Division 1, for Passive Containment Cooling System by Certificate Holder's Serial No. SV4-PCS-MJR-001, 3/30/23
S&W Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, As Required by the Provisions of the ASME Code, Section III, Division 1, for Passive Containment Cooling System by Certificate Holder's Serial No. SV4-PCS-MJR-002, 7/27/22
S&W Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, As Required by the Provisions

of the ASME Code, Section III, Division 1, for Passive Containment Cooling System by Certificate Holder's Serial No. SV4-PCS-MJR-003, 9/15/22
S&W Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, As Required by the Provisions of the ASME Code, Section III, Division 1, for Passive Containment Cooling System by Certificate Holder's Serial No. SV4-PCS-MJR-004, 3/16/23
S&W Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, As Required by the Provisions of the ASME Code, Section III, Division 1, for Passive Containment Cooling System by Certificate Holder's Serial No. SV4-PCS-MJR-005, 3/29/23
S&W Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, As Required by the Provisions of the ASME Code, Section III, Division 1, for Passive Containment Cooling System by Certificate Holder's Serial No. SV4-PCS-MJR-006, 2/2/23
S&W Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, As Required by the Provisions of the ASME Code, Section III, Division 1, for Passive Containment Cooling System by Certificate Holder's Serial No. SV4-PCS-MJR-007, 2/1/23
S&W Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, As Required by the Provisions of the ASME Code, Section III, Division 1, for Passive Containment Cooling System by Certificate Holder's Serial No. SV4-PCS-MJR-008, 1/31/23
S&W Form N-5 Certificate Holder's Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Parts, Supports, and Appurtenances, As Required by the Provisions of the ASME Code, Section III, Division 1, for Passive Containment Cooling System by Certificate Holder's Serial No. SV4-PCS-MJR-099, 3/29/23

Section 1A07
2.2.02.05a.i-U4-EQRR-PCD001, “Passive Containment Cooling System EQ Reconciliation Report,” Revision 0
2.2.02.05a.i-U4-EQRR-PCD002, “Passive Containment Cooling System EQ Reconciliation Report,” Revision 0
2.2.02.05a.i-U4-EQRR-PCD003, “Passive Containment Cooling System EQ Reconciliation Report,” Revision 0
SV4-PV11-VBR-003, “Equipment Qualification Summary Report for Air-Operated Tricentric Butterfly Valves for Use in the AP1000 Plant,” Revision 2
SV4-PV11-VBR-004, “Equipment Qualification Data Package for Air-Operated Tricentric Butterfly Valves for Use in the AP1000 Plant,” Revision 2
SV4-JE52-VBR-005, “Equipment Qualification Summary Report for NLI Differential Transmitters for Use in the AP1000 Plant,” Revision 1
SV4-JE52-VBR-006, “Equipment Qualification Data Package for NLI Differential Transmitters for Use in the AP1000 Plant,” Revision 1
SV4-GW-VBR-006, “Equipment Qualification Summary Report for TopWorx DXN Position Indication Switch for Use In the AP1000 Plant,” Revision 0
SV4-GW-VBR-007, “Equipment Qualification Data Package for TopWorx DXN Position Indication Switch for Use In the AP1000 Plant,” Revision 0
SV4-GW-VPR-014, “Environment Qualification Summary Report for EGS Generation 3 QDC Connectors for use in AP1000 Nuclear Power Plants,” Revision 0
EQ Verification Checklist for Valve Actuator Tag No. PCS-PL-V001B
EQ Verification Checklist for Solenoid AOV Butterfly Valve Tag No. PCS-PL-V001B
EQ Verification Checklist for Valve Proximity Switch Tag No. PCS-PL-V001B

EQ Verification Checklist for Transmitter Harsh Cable for Tag No. PCS-JE-PT008
SV4-PCS-PLW-010, “Passive Containment Cooling System Auxiliary Building RMS 12541/12701 Supply Line B To Distribution Bucket,” Revision 0
SV4-PCS-PLW-01C, “PCS Auxiliary Building Rm 12701 Supply Line to Distribution Bucket,” Revision 0
SV4-PCS-PLK-802, “PCS Containment Building 11400 Sensor to Transmitter PT007 & PT014,” Revision 0
SV4-PCS-PLK-805, “PCS Auxiliary Building Room 12341 Sensor to Transmitter PT008,” Revision 0
SV4-PCS-JTW-104, “PCS Auxiliary Building 12701 Instrumentation Line for LT010,” Revision 1

Section 1A08
Report Number SV4-PCS-ITR-801138, “Unit 4 Passive Containment Cooling (PCS) Inspection – Coatings: ITAAC 2.2.02.07b.i, Item 7.b.ii) and iii) NRC Number 138,” Revision 0
FD Thomas’ (FDT) Process Control Record (PCR) SV4-AX01-VXQ-811996, “Prep and Coat affected areas of interior containment vessel 11500 and above,” Revision 0
FDT PCR SV4-AX01-VXQ-812011, “Prep and Coat affected areas of interior area 4 above stiffener ring to HVAC – TAC# FDT-SR-00047-026,” Revision 0
FDT PCR SV4-AX01-VXQ-802273, “Prep and Coat Carbon Steel Unit 4 for containment vessel top head (interior),” Revision 0
FDT PCR SV4-AX01-VXQ-811999, “Prep and Coat affected areas of interior containment vessel 11700,” Revision 0
FDT PCR SV4-AX01-VXQ-800631, “Prep and Coat/Touch-up affected areas from component installation - Unit 4 Interior Containment Vessel – Coating Task Authorization SV4-1000-SXY-851229,” Revision 0
FDT PCR SV4-AX01-VXQ-800632, “Prep and Coat Unit 4 Containment Vessel Middle Ring SPL-25 & 26 – Coating Task Authorization SV4-1000-SXY-851229,” Revision 1
William Specialty Services (WSS) PCR SV4-AX01-VXQ-800633, “Prep and Coat Unit 4 Containment Vessel Middle Ring – ITR 3090-331-001,” Revision 0
WSS PCR SV4-AX01-VXQ-812056, “Prep and Repair coatings above upper hatch and Personnel Air Lock to Baffles – TAC# FDT-SR-0046-009,” Revision 0
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SV4-1222-ER-604, “Auxiliary Building Area 2 EL 82’-6” Conduit Supports Plan View (Sheet 4),” Revision 3
SV4-1222-SH-248, “Auxiliary Building Area 2 El 82’-6” Raceway Supports Details (Sheet 29),” Revision 1
SV4-1232-ER-602, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Plan View (Sheet 2),”

Revision 6
SV4-1232-ER-668, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Details (Sheet 58),” Revision 0
SV4-1232-ER-614, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Details (Sheet 4),” Revision 3
SV4-1232-ER-664, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Details (Sheet 54),” Revision 0
SV4-1232-ER-604, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Plan View (Sheet 4),” Revision 5
SV4-1232-ER-608, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Plan View (Sheet 8),” Revision 4

Work Packages:
SV4-IDS-EWW-1135425, “U4 - AUX BULK CABLE PULL SV4-ORC-0926, SV4-ORC-0927, SV4-ORC-0935, SV4-ORC-0936 FOR SYSTEM IDS-1 IN ROOMS 12113, 12203, 12204, 12207,” Revision 0
SV4-1212-ERW-1124137, “U4 - AUX – Install / Rework 1E Scheduled Conduit - EL 66’6’’ – RM 12101, 12102, 12103 - AREA 2,” Revision 0
SV4-PMS-EWW-1135118, “U4 - AUX BULK CABLE PULLS FOR PMS - 1 in ROOMS 12304, 12341, 12400, 12401, 12422, 12423,” Revision 0
SV4-CVS-EJW-1052314 U4 - AUX - Fab Support / Install 1E CVS Junction Boxes & Support - EL 100' 0" - Area 1 - Room 12306,” Revision 0
SV4-1252-ERW-1118366, “U4 AUX INSTALL AND LABEL IE CONDUITS AND PULL BOXES, ELEVATION 135' 3", AREA 2.,” Revision 0
SV4-1222-ERW-1165930, “U4 AUX- FABRICATE/INSTALL/LABEL RACEWAY BARRIERS, AREA 1 & 2, ELEV. 82’-6”/100’-0”, ROOMS 12207, 12201 & 12306.,” Revision 0
SV4-1222-ERW-1006098, “U4 Install and Label Class 1E Conduits, Aux Room 12207, Elev., 82’-6”, Area 2,” Revision 1
SV4-1222-SHW-1004495, “U4 Fabricate and Install Conduit Supports for Auxiliary Building, Elev. 82’-6”, Area 2, Room 12207,” Revision 1

General Notes:
SV4-ECS-E9-030, “Conduit Notes and Supports Details General Notes Sheet 1”
SV4-ECS-E9-100, “Conduit Notes and Supports Details General Notes Sheet 2A”
SV4-ECS-E9-011, “Conduit Notes and Supports Details General Notes Sheet 2”
SV4-ECS-E9-101, “Conduit Notes and Supports Details Conduit Cables”
SV4-ECS-E9-062, “Cale Tray Notes and Details Sheet 1”
SV4-ECS-E9-062, “Cale Tray Notes and Details Sheet 12”

Pull Tickets:
SV4-VBS-EW-MDD236AXN[PT], “600V 2/C-12 AWG W/GROUND,” Revision 2
Condition Reports:
CR 50174652, “NRC identified misaligned channel nut (spring nut) for battery rack in Division A Battery Room 12101,” 5/3/2023
CR 50174701, “NRC Observation of loose nut in Unit 4 Room 12207 for cable tray cover,” 5/4/2023

Misc.:
E&DCR No. APP-1220-GEF-850090, “Barrier design required in 1222-ER-NXT02AB(AA) (ESR 50041982),” Revision 0
SV4-1222-GNR-000007, “Removal of SV4-1222-ER-BXT01JB and SV4-1222-ER-CXT01GB

from Cable Routes (ESR 50115231)," Revision 0
SV4-1200-ITR-800801, "ITAAC Technical Report Unit 4 Electrical Report for ITAAC 795 and ITAAC 801, Non-Radiologically Controlled Area of the Auxiliary Building," Revision 0
SV4-GW-E1-001, "Electrical Systems Design Criteria," Revision 4
SV4-G1-V8-001, "AP1000 Electrical Installation Specification," Revision 12
SV4-GW-EOR-006, "IEEE384 Design Compliance Description," Revision 3
APP-FSAR-GEF-234, "Update IEEE 384-1981 Exceptions for Revised Cable and Raceway Separation Distances (NL-1491)," Revision 0

Section 1A22
Documents Reviewed:
Rooms: 11206 (PXS Valve/Accumulator Room A), 11301 (Steam Generator 1 Lower Manway Area), 11402 (Steam Generator 2 Tubesheet Area), 11703 (Upper ADS Valve Area 176'-10 1/2"), 11201 (Steam Generator Compartment 1), 11306 (Electrical Penetration Room), 11400 (Maintenance Floor/Mezzanine), 11500 (Operating Deck), 11202 (Steam Generator compartment 2), 11603 (ADS Valve Area Lower Tier), 11403 (Pressurizer Spray Valve Room), and 11208 (RNS Valve Room)

Design Documents:
Engineering & Design Coordination Report (E&DCR) SV4-1120-GEF-000024 "IEEE 384 Lesser Separation Distance for RCS-JE-TE213B/TE214B," Revision 0E&DCR APP-GW-GEF-2121 "Reductions in Cable and Raceway Separation Distances," Revision 0
SV4-1100-ITR-800800 "Unit 4 Containment Electrical Report for ITAAC 800," Revision 0
APP-GW-E0R-006 "IEEE-384 Design Compliance Description," Revision 3
SV4-PMS-J4-020 "PMS System Design Specification," Revision 11
APP-GW-E1R-004 "AP1000 Cable and Raceway Separation Analysis Report," Revision 0

Work Packages:
SV4-1100-SHW-1004336, "4 - CT - Fabricate Scheduled Conduit Supports - ELEV. 107'2" - Room 11301 - Area 1," Revision 0
SV4-1131-SHW-1013875, "4 - CT - Install Designed Conduit Supports - EL 107'-2"- Room 11301 - Area 1," Revision 2
SV4-1152-SHW-1054865, "U4 - CT - Install Scheduled Conduit Supports, EL 135'3" to 153'0"- Rm 11500 - Area 2," Revision 1
SV4-1160-SHW-1122557, "U4 Cont Bldg, Fab & Install unscheduled Welded Lighting Supports, Room 11600, EL 166' 1-1/2" & 176' 10-1/2", Area 1 & 2," Revision 0
SV4-1133-ERW-1118268 REV 0 SV4 Containment – Install Class 1E Conduits and Pull Boxes Area 3 Elev. 107'2"-118'6" Room 11300
SV4-1120-E0W-1172068 REV 0 U4 CT – Determ/Reterm Cable and Rework Conduit IAW SV4-1100-GNR-000008
SV4-RMS-EWW-1097999 REV 0 U4 – CT Bulk Cable Pulls Safety Class C Cables for RMS-1 (IRC-0063, IRC-0064, IRC-0065 & IRC-0066) in rooms 11306/11500 Area 1-4
SV4-1124-ERW-1058788 REV 0 U4 – CT – Install and Label Class 1E Conduits and Pull Boxes in PXS-A Room 11206, El. 84'-6" to 107'-2"
SV4-RCS-EWW-1116566 REV 1 U4 CT to Aux Sys RCS-1A Terminate Cables/Test Thru EPA/Install Vendor Supplied Pigtail and Raceway Related to SV4-RCS-PL-V001B, SV4-RCS-PL-V002B and Associated Equipment Rooms 11603, 11306, 12304, 12305
SV4-1142-EJW-1052983 REV 0 U4 – CT – Install Safety Class 1E Junction Boxes El 118'6" – Area 2 – Rm 11403
SV4-1120-ERW-1166080 REV 0 U4 Cont. Raceway Labeling/Stenciling El.82'6", Conduit(s) 1120

SV4-1120-ERW-1008370 REV 1 U4 – CT – Install Class 1E Designed Conduit – El 84’6” Rm 11202 – Area 4 (Book 1)

Drawings:
APP-1152-ER-601, “Containment Building Area 2 EL 135’-3” Conduit Supports Plan View (Sheet 1),” Revision 5
APP-1150-ER-466, “Conduit Support Fabrication Drawing,” Revision 2
APP-1150-ER-153, “Conduit Support Fabrication Drawing,” Revision 1
APP-1140-ER-510, “Containment Building Room 11402 SG2 EL 118’-6” Conduit Supports Plan View (Sheet 1),” Revision 3
APP-1140-ER-111, “Conduit Support Fabrication Drawing,” Revision 0
APP-1140-ER-888, “Conduit Support Fabrication Drawing,” Revision 1
APP-1130-ER-520, “Containment Building Room 11301 SG1 EL 107’-2” Conduit Supports Plan View (Sheet 1),” Revision 2
APP-1130-ER-462, “Conduit Support Fabrication Drawing,” Revision 1
APP-1140-ER-931, “Conduit Support Fabrication Drawing,” Revision 1
APP-1120-ER-501, “Containment Building 11208 RNS Valve Room EL 94’-0” Conduit Supports Plan View (Sheet 1),” Revision 7
APP-1120-ER-960, “Conduit Support Fabrication Drawing,” Revision 1
APP-1120-ER-707, “Conduit Support Fabrication Drawing,” Revision 0
APP-1120-ER-715, “Conduit Support Fabrication Drawing,” Revision 1
APP-ECS-E9-030, “Conduit Notes and Support Details General Notes Sheet 1”, Revision 20
APP-1140-GEF-850033, “Conduit Relocation Requested from Secondary Manway access (ESR 50056771),” Revision 0
APP-PMS-J1-105 “Functional Diagram Core Heat Removal Protection & RCP Trips,” Revision 9

Specification:
APP-G1-V8-001 “Electrical Installation Specification,” Revision 12

Condition Reports:
CR 50176848 “Two Labelling issues identified in Unit 4 Containment During NRC Inspection.”
CR 50177583, “NRC identified 4 supports without tags inside containment during inspection.”
CR 50177240 During NRC inspection of i800 an IEEE 384 barrier violation was found in 11201 (Steam Generator Compartment 1).
CR 50177188 NRC Identified: i800_IEEE 384 Violation (conduit SV4-1133-ER-BZC05 crossing over and approximately 1/2" from the top of SV4-1133-ER-DXT02AB.)
CR 50177227 NRC Identified: i800_IEEE 384 Violation (Flex conduit from SV4-RCS-EJ-TE132C to TE132C was within 5' of SV4-1120-ER-NWT01D)
CR 50176848 Two Labelling issues identified in Unit 4 Containment During NRC Inspection (In Room 11402, Support SV4-1140-SH-E058 above SV4-RCS-EJ-PLV004D-1 is missing the identification tag. In Room 11301, SV4-RCS-EJ-TE161 is mislabeled as VS3-RCS-EJ-TE161.)
CR 50177336 NRC identified violation Room 11202
CR 50177337 NRC Identified _ Conduit bend radius
CR 50177297 IEEE issue identified in the 11202.
CR 50177585 NRC-Identified Green Non-Cited Violation due to Cable/Raceway Separation Nonconformances in the Containment associated with ITAAC 800
CR 50177596 NRC identified conduit segregation nonconformance during inspection inside Containment
CR 50177940 NRC Identified SV4-RCS-EWW-11165666 in ATV D2 missing 7.2 ITAAC Screening Checklist
CR 50177386 NRC Identified – Conduit bend radius

Section 1A23
Rooms: 12101 (Division A Battery Room), 12204 (Division B Battery Room 2), 12207 (Division B DC Equipment Room), 12306 (Valve/Piping Penetration Room), 12312 (Division C RCP Trip Switchgear Room), 12423 (Reactor Trip Switchgear 1), 12501 (VBS MCR/A&C Equipment Room), 12207 (Division B DC Equipment Room), 12312 (Division C RCP Trip Switchgear Room), 12201 (Division A DC Equipment Room), 12205 (Division D DC Equipment Room), 12301 (Division A I&C Room), 12302 (Division C I&C Room)

Drawings:
APP-1212-ER-001, “CABLE TRAY ARRANGEMENT AUXILIARY BUILDING AREA 2 PLAN AT ELEVATION 66' – 6”,” Revision 16
APP-1212-ER-101, “AUXILIARY BUILDING AREA 2 CLASS 1E CONDUIT ARRANGEMENT PLAN AT ELEVATION 66' – 6”,” Revision 16
APP-1212-ER-103, “AUXILIARY BUILDING AREA 2 BATTERY MONITORING CONDUIT ARRANGEMENT ROOM 12101,” Revision 4
APP-1221-ER-001, “AUXILIARY BUILDING AREA 1 CABLE TRAY ARRANGEMENT PLAN AT ELEVATION 82' – 6”,” Revision 13
APP-1221-ER-101, “AUXILIARY BUILDING AREA 1 CLASS 1E CONDUIT ARRANGEMENT PLAN AT ELEVATION 82' – 6”,” Revision 17
APP-1222-ER-001, “AUXILIARY BUILDING AREA 2 CABLE TRAY ARRANGEMENT PLAN AT ELEVATION 82' – 6”,” Revision 14
APP-1222-ER-101, “AUXILIARY BUILDING AREA 2 CLASS 1E CONDUIT ARRANGEMENT PLAN AT ELEVATION 82' – 6”,” Revision 20
APP-1222-ER-102, “AUXILIARY BUILDING AREA 2 CONDUIT ARRANGEMENT PLAN AT ELEVATION 82' – 6” SECTIONS AND DETAILS (SHEET 1),” Revision 7
APP-1231-ER-001, “AUXILIARY BUILDING AREA 1 CLASS 1E CABLE TRAY ARRANGEMENT PLAN AT ELEVATION 100' – 0”,” Revision 13
APP-1231-ER-102, “AUXILIARY BUILDING AREA 1 CLASS 1E CONDUIT ARRANGEMENT AT ELEVATION 100' – 0” ROOM 12306,” Revision 7
APP-1232-ER-001, “AUXILIARY BUILDING AREA 2 CABLE TRAY ARRANGEMENT PLAN AT ELEVATION 100' – 0”,” Revision 16
APP-1232-ER-106, “AUXILIARY BUILDING AREA 2 CLASS 1E CONDUIT ARRANGEMENT AT ELEVATION 100' – 0” ROOM 12311 & 12312,” Revision 6
APP-1243-ER-002, “AUXILIARY BUILDING AREA 3 CLASS 1E CABLE TRAY ARRANGEMENT PLAN AT ELEVATION 117' – 6”,” Revision 8
APP-1243-ER-103, “AUXILIARY BUILDING AREA 3 CLASS 1E CONDUIT ARRANGEMENT PLAN AT ELEVATION 117' – 6”,” Revision 4
APP-1252-ER-101, “AUXILIARY BUILDING AREA 2 CLASS 1E CONDUIT ARRANGEMENT PLAN AT ELEVATION 135' – 3”,” Revision 9
SV4-ECS-E9-069, “IEEE 384 SEPARATION BARRIERS BARRIER AND SUPPORTS DETAILS SHEET 1,” Revision 3
SV4-1222-ER-601, “Auxiliary Building Area 2 EL 82’-6” Conduit Supports Plan View (Sheet 1),” Revision 4
SV4-1222-ER-611, “Auxiliary Building Area 2 EL 82’-6” Conduit Supports Details (Sheet 1),” Revision 5
SV4-1222-ER-627, “Auxiliary Building Area 2 EL 82’-6” Conduit Supports Details (Sheet 17),” Revision 0
SV4-1222-ER-602, “Auxiliary Building Area 2 EL 82’-6” Conduit Supports Plan View (Sheet 2),” Revision 5
SV4-1222-ER-604, “Auxiliary Building Area 2 EL 82’-6” Conduit Supports Plan View (Sheet 4),”

Revision 3
SV4-1222-SH-248, “Auxiliary Building Area 2 El 82’-6” Raceway Supports Details (Sheet 29),” Revision 1
SV4-1232-ER-602, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Plan View (Sheet 2),” Revision 6
SV4-1232-ER-668, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Details (Sheet 58),” Revision 0
SV4-1232-ER-614, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Details (Sheet 4),” Revision 3
SV4-1232-ER-664, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Details (Sheet 54),” Revision 0
SV4-1232-ER-604, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Plan View (Sheet 4),” Revision 5
SV4-1232-ER-608, “Auxiliary Building Area 2 EL 100’-0” Conduit Supports Plan View (Sheet 8),” Revision 4

Work Packages:
SV4-IDS-EWW-1135425, “U4 - AUX BULK CABLE PULL SV4-ORC-0926, SV4-ORC-0927, SV4-ORC-0935, SV4-ORC-0936 FOR SYSTEM IDS-1 IN ROOMS 12113, 12203, 12204, 12207,” Revision 0
SV4-1212-ERW-1124137, “U4 - AUX – Install / Rework 1E Scheduled Conduit - EL 66’6’’ – RM 12101, 12102, 12103 - AREA 2,” Revision 0
SV4-PMS-EWW-1135118, “U4 - AUX BULK CABLE PULLS FOR PMS - 1 in ROOMS 12304, 12341, 12400, 12401, 12422, 12423,” Revision 0
SV4-CVS-EJW-1052314 U4 - AUX - Fab Support / Install 1E CVS Junction Boxes & Support - EL 100' 0" - Area 1 - Room 12306,” Revision 0
SV4-1252-ERW-1118366, “U4 AUX INSTALL AND LABEL IE CONDUITS AND PULL BOXES, ELEVATION 135' 3", AREA 2.,” Revision 0
SV4-1222-ERW-1165930, “U4 AUX- FABRICATE/INSTALL/LABEL RACEWAY BARRIERS, AREA 1 & 2, ELEV. 82’-6”/100’-0”, ROOMS 12207, 12201 & 12306.,” Revision 0
SV4-1222-ERW-1006098, “U4 Install and Label Class 1E Conduits, Aux Room 12207, Elev., 82’-6”, Area 2,” Revision 1
SV4-1222-SHW-1004495, “U4 Fabricate and Install Conduit Supports for Auxiliary Building, Elev. 82’-6”, Area 2, Room 12207,” Revision 1
General Notes:
SV4-ECS-E9-030, “Conduit Notes and Supports Details General Notes Sheet 1”
SV4-ECS-E9-100, “Conduit Notes and Supports Details General Notes Sheet 2A”
SV4-ECS-E9-011, “Conduit Notes and Supports Details General Notes Sheet 2”
SV4-ECS-E9-101, “Conduit Notes and Supports Details Conduit Cables”
SV4-ECS-E9-062, “Cale Tray Notes and Details Sheet 1”
SV4-ECS-E9-062, “Cale Tray Notes and Details Sheet 12”

Pull Tickets:
SV4-VBS-EW-MDD236AXN[PT], “600V 2/C-12 AWG W/GROUND,” Revision 2

Condition Reports:
CR 50174652, “NRC identified misaligned channel nut (spring nut) for battery rack in Division A Battery Room 12101,” 5/3/2023
CR 50174701, “NRC Observation of loose nut in Unit 4 Room 12207 for cable tray cover,” 5/4/2023

Misc.:
E&DCR No. APP-1220-GEF-850090, “Barrier design required in 1222-ER-NXT02AB(AA) (ESR 50041982),” Revision 0
SV4-1222-GNR-000007, “Removal of SV4-1222-ER-BXT01JB and SV4-1222-ER-CXT01GB from Cable Routes (ESR 50115231),” Revision 0
SV4-1200-ITR-800801, “ITAAC Technical Report Unit 4 Electrical Report for ITAAC 795 and ITAAC 801, Non-Radiologically Controlled Area of the Auxiliary Building,” Revision 0
SV4-GW-E1-001, "Electrical Systems Design Criteria," Revision 4
SV4-G1-V8-001, "AP1000 Electrical Installation Specification," Revision 12
SV4-GW-EOR-006, "IEEE384 Design Compliance Description," Revision 3
APP-FSAR-GEF-234, "Update IEEE 384-1981 Exceptions for Revised Cable and Raceway Separation Distances (NL-1491)," Revision 0

Section 1A24
SV4-SES-ITR-800821 Walkdown Inspection for Secondary Security Power Supply Location: ITAAC 3.3.00.16- Revision 0
SV4-SES-ITRp802661 Uninterruptable Power Supply Testing: ITAAC C.2.6.09.03b- R-0
SV4-SES-E3-001 Vogtle Electric Generating Plant- Plant Security System (SES) Security Power Distribution One Line Diagram- Revision 3
VEGP Physical Security Plan-R-18-VEGP-2

Section 1A25
SV4-SES-ITR-800822 Vital Area Portal Inspection- Revision 0
4-SES-ITAAC 670 VA INTR01 WO: SNC 1476416- VA Emergency Exit Alarm Test-Version 1.0
4-SES-ITAAC 655- 4SCP03 WO: SNC1473459- 4SCP03 Alarm & Circuit Supervision Test-Version 1.1
4-SES-ITAAC 655- 4SCP02 WO: SNC 1473013- 4SCP02 Alarm & Circuit Supervision Test-Version 1.0
VEGP Physical Security Plan-R-18-VEGP-2

Section 1A26
3.5.00.01.i-U4-EQRR-PCD001, “Radiation Monitoring System (RMS) EQ Reconciliation Report,” Revision 0
APP-RMS-VBR-002, “Equipment Qualification Data Package for the Radiation Monitoring System (RMS) Containment High Range Monitor (CHRM) and Field Cable Connections at the EPA Feedthroughs for Use in the AP1000 Plant,” Revision 0
APP-RMS-VBR-004, "Equipment Qualification Data Package for General Atomics Class 1E and Seismic Category I Radiation Monitoring System Skids for Use in the AP1000 Plant,” Revision 0

Section 1P01
CR 50169074 – Incorrect Cable Routing and Termination in PMS Room 12305 (Cable Tray)
CR 50169086 – Incorrect Cable Routing and Termination in PMS Room 12305 (Free Air)

Section 1P02
CR 10968674 “3-HDS-V012B has a broken stem”
CR 10958192 “MFP ‘C’ miniflow potential stem/actuator separation”
CR 10963631 “Stem broke/separated from Plug”
CR 1095154 “3-HDS-V012B potential stem/disk separation”
CAR 417576, “Stem Broke/Separated from Plug”

Section 1P03

Calculations:
APP-SH25-S3C-002, “AP1000 Seismic Category I Standard Conduit Supports,” Revision 3
APP-1220-SHC-301, “Structural Analysis of Cable Conduit Supports in Auxiliary Building, Areas and 2, El. 82’-6”,” Revision 2

E&DCRs:
APP-1220-GEF-501, “Single Support on Rigid 4” Conduit Lines APP-1222-ER-BXC03 and APP-1222-ER-BXC04,” Revision 0
APP-1220-GEF-502, “Single Support on Rigid 4” Conduit Lines APP-1222-ER-BXC03 and APP-1222-ER-BXC04,” Revision 0
APP-1220-GEF-503, “Single Support on Rigid 4” Conduit Lines APP-1222-ER-BXC03 and APP-1222-ER-BXC04,” Revision 0

Miscellaneous:
APP-G1-V8-001, “AP1000 Electrical Installation Specification,” Revision 12
APP-GW-C1-001, “AP1000 Civil/Structural Design Criteria,” Revision 5
APP-GW-S1-006, “AP1000 Design Guide for Raceway Systems,” Revision 4
IEEE Std 628-2001 (R2006), “IEEE Standard Criteria for the Design, Installation, and Qualification of Raceway Systems for Class 1E Circuits for Nuclear Power Generating Stations”

Section 1P04
APP-GW-GAP-420, "Engineering and Design Coordination Reports," Revision 22
APP-GW-GAP-428, "Nonconformance and Disposition Report," Revision 24
ND-AD-002-027, "Nonconforming Items," Version 12.0
ND-AD-002-028, "Corrective Action Program Instructions," Version 7.0

LIST OF ACRONYMS

ADS	Automatic Depressurization System
AOV	Air Operated Valve
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CNS	Containment System
COL	Combined License
COLR	Core Operating Limits Report
CR	Condition Report
CV	Containment Vessel
CVS	Chemical and Volume Control System
DWS	Water Transfer and Storage System
E&DCR	Engineering & Design Coordination Report
EQRR	Equipment Qualification Reconciliation Report
EPA	Electrical Penetration Assemblies
ICN	ITAAC Closure Notice
I&C	Instrumentation and Control
IDS	Class 1E dc and Uninterruptible Power Supply System
IEEE	Institute of Electrical and Electronic Engineers
IOZ	Inorganic Zinc
IMC	Inspection Manual Chapter
IP	Inspection Procedures
IR	Inspection Report
IRWST	In-Containment Refueling Water Storage Tank
ITAAC	Inspections, Tests, Analysis, and Inspection Criteria
LOCA	Loss of Coolant Accident
M&TE	Measuring and Test Equipment Control
NCV	Noncited Violation
N&D	Nonconformance and Disposition Report
NRC	Nuclear Regulatory Commission
PAMS	Post-Accident Monitoring Instrumentation System
P&ID	Piping and Instrumentation Diagrams
PCCWST	Passive Containment Cooling Water Storage Tank
PCD	Principal Closure Document
PCS	Passive Containment Cooling System
PMS	Protection and Safety Monitoring System
PT	Liquid Penetrant Examination
PXS	Passive Core Cooling System
QA	Quality Assurance
QC	Quality Control
RCCA	Rod Cluster Control Assemblies

RCP	Reactor Coolant Pumps
RCS	Reactor Cooling System
RSR	Remote Shutdown Room
RNS	Normal Residual Heat Removal System
SGS	Steam Generator System
SNC	Southern Nuclear Company
SSC	Structure, System, and Component
S&W	Stone & Webster
UFSAR	Updated Final Safety Analysis Report
VBS	Nuclear Island Nonradioactive Ventilation System
VEGP	Vogtle Electric Generating Plant
VFS	Containment Air Filtration System
VT	Visual Examination
VWS	Central Chilled Water System
WEC	Westinghouse Electric Company
WLS	Liquid Radioactive Waste System
WP	Work Package
ZOI	Zone of Influence

ITAAC INSPECTED

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
13	2.1.02.02a	2.a) The components identified in Table 2.1.2-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The piping identified in Table 2.1.2-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements. 3.a) Pressure boundary welds in components identified in Table 2.1.2-1 as ASME Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in piping identified in Table 2.1.2-2 as ASME Code Section III meet ASME Code Section III requirements. 4.a) The components identified in Table 2.1.2-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure. 4.b) The piping identified in Table 2.1.2-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure. 5.b) Each of the lines identified in Table 2.1.2-2 for which functional capability is required is designed to	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested. Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability. Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.	The ASME Code Section III design reports exist for the as-built components and piping identified in Tables 2.1.2-1 and 2.1.2-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Table 2.1.2-1 and Table 2.1.2-2 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that each of the as-built lines identified in Table 2.1.2-2 for which functional capability is required meets the requirements for functional capability. An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the dynamic effects of

		withstand combined normal and seismic design basis loads without a loss of its functional capability. 6. Each of the as-built lines identified in Table 2.1.2-2 as designed for LBB meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.		a line break is provided.
88	2.1.03.13	13. The fuel assemblies and rod cluster control assemblies intended for initial core load and listed in Table 2.1.3-1 have been designed and constructed in accordance with the established design requirements.	An analysis is performed of the reactor core design.	A report exists and concludes that the fuel assemblies and rod cluster control assemblies intended for the initial core load and listed in Table 2.1.3-1 have been designed and constructed in accordance with the principal design requirements.
91	2.2.01.02a	2.a) The components identified in Table 2.2.1-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The piping identified in Table 2.2.1-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements. 3.a) Pressure boundary welds in components identified in Table 2.2.1-1 as ASME	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. i) A hydrostatic or pressure test will be performed on the components required by the ASME Code Section III to be tested. A hydrostatic or pressure test will be performed on the piping required by the ASME Code Section	The ASME Code Section III design reports exist for the as-built components and piping identified in Table 2.2.1-1 and 2.2.1-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. i) A report exists and concludes that the results of the pressure test of the components identified in Table 2.2.1-1 as

		Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in piping identified in Table 2.2.1-2 as ASME Code Section III meet ASME Code Section III requirements. 4.a) The components identified in Table 2.2.1-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure. 4.b) The piping identified in Table 2.2.1-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure.	III to be pressure tested.	ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that the results of the pressure test of the piping identified in Table 2.2.1-2 as ASME Code Section III conform with the requirements of the ASME Code Section III.
98	2.2.01.05.i	5. The seismic Category I equipment identified in Table 2.2.1-1 can withstand seismic design basis loads without loss of structural integrity and safety function. 6.a) The Class 1E equipment identified in Table 2.2.1-1 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. 6.d) The non-Class 1E electrical penetrations identified in Table 2.2.1-1 as being qualified for a harsh environment can	i) Inspection will be performed to verify that the seismic Category I equipment and valves identified in Table 2.2.1-1 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	i) The seismic Category I equipment identified in Table 2.2.1-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of structural integrity and safety function. iii) 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 2.2.1-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design

		withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of containment pressure boundary integrity.	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. i) Type tests, analyses, or a combination of type tests and analyses will be performed on non-Class 1E electrical penetrations located in a harsh environment. ii) Inspection will be performed of the as-built non-Class 1E electrical penetrations located in a harsh environment.	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 2.2.1-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses. i) A report exists and concludes that the non-Class 1E electrical penetrations identified in Table 2.2.1-1 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 containment pressure boundary integrity. ii) A report exists and concludes that the as-built non-Class 1E electrical penetrations identified in Table 2.2.1-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

120	2.2.02.02a	8. Containment electrical penetration assemblies are protected against currents that are greater than the continuous ratings.	An analysis for the as-built containment electrical penetration assemblies will be performed to demonstrate (1) that the maximum current of the circuits does not exceed the continuous rating of the containment electrical penetration assembly, or (2) that the circuits have redundant protection devices in series and that the redundant current protection devices are coordinated with the containment electrical penetration assembly's rated short circuit thermal capacity data and prevent current from exceeding the continuous current rating of the containment electrical penetration assembly	Analysis exists for the as-built containment electrical penetration assemblies and concludes that the penetrations are protected against currents which are greater than their continuous ratings.
120	2.2.02.02a	2.a) The components identified in Table 2.2.2-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The pipelines identified in Table 2.2.2-2 as ASME Code Section III are designed and constructed in accordance with ASME Code Section	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested. Inspection	The ASME Code Section III design reports exist for the as-built components and piping identified in Table 2.2.2-1 and 2.2.2-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report

126	2.2.02.05a.i	III requirements. 3.a) Pressure boundary welds in components identified in Table 2.2.2-1 as ASME Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in the pipelines identified in Table 2.2.2-2 as ASME Code Section III meet ASME Code Section III requirements. 4.a) The components identified in Table 2.2.2-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure. 4.b) The pipelines identified in Table 2.2.2-2 as ASME Code Section III retain their pressure boundary integrity at their design pressure. 5.b) Each of the pipelines identified in Table 2.2.2-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability.	will be performed for the existence of a report concluding that the as-built pipelines meet the requirements for functional capability.	exists and concludes that the results of the hydrostatic test of the components and piping identified in Table 2.2.2-1 and 2.2.2-2 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that each of the as-built pipelines identified in Table 2.2.2-2 for which functional capability is required meets the requirements for functional capability.
126	2.2.02.05a.i	5.a) The seismic Category I components identified in Table 2.2.2-1 can withstand seismic design basis loads without loss of safety function. 6.a) The Class 1E components identified in Table	i) Inspection will be performed to verify that the seismic Category I components and valves identified in Table 2.2.2-1 are located on the Nuclear Island. ii) Type tests, analyses, or a combination of	i) The seismic Category I components identified in Table 2.2.2-1 are located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I components can withstand seismic

		2.2.2-1 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.	type tests and analyses of seismic Category I components will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built components including anchorage are seismically bounded by the tested or analyzed conditions. i) Type tests or a combination of type tests and analyses will be performed on Class 1E components located in a harsh environment. ii) Inspection will be performed of the as-built Class 1E components and the associated wiring, cables, and terminations located in a harsh environment.	withstand seismic design basis loads without loss of safety function. iii) The report exists and concludes that the as-built components including anchorage are seismically bounded by the tested or analyzed conditions. i) A report exists and concludes that the Class 1E components identified in Table 2.2.2-1 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 components and the associated wiring, cables, and terminations identified in Table 2.2.2-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.
138	2.2.02.07b.i	7.a) The PCS delivers water from the PCCWST to the outside, top of the containment vessel. 7.b) The PCS wets the outside surface of the containment	i) Testing will be performed to measure the PCCWST delivery rate from each one of the three parallel flow paths. ii) Testing and or analysis will be performed to	i) When tested, each one of the three flow paths delivers water at greater than or equal to: – 469.1 gpm at a PCCWST water level of 27.4 ft + 0.2, - 0.0 ft above the tank

		vessel. The inside and the outside of the containment vessel above the operating deck are coated with an inorganic zinc material. 7.c) The PCS provides air flow over the outside of the containment vessel by a natural circulation air flow path from the air inlets to the air discharge structure. 7.d) The PCS drains the excess water from the outside of the containment vessel through the two upper annulus drains. 7.e) The PCS provides a flow path for long-term water makeup to the PCCWST. 9. Safety-related displays identified in Table 2.2.2-1 can be retrieved in the MCR. 10.a) Controls exist in the MCR to cause the remotely operated valves identified in Table 2.2.2-1 to perform active functions. 10.b) The valves identified in Table 2.2.2-1 as having PMS control perform an active safety function after receiving a signal from the PMS. 11.a) The motor-operated valves identified in Table 2.2.2-1 perform an active safety-related function to change position as indicated in the table. 11.b) After loss of motive power, the remotely operated valves identified in Table 2.2.2-1 assume	demonstrate the PCCWST inventory provides 72 hours of adequate water flow. i) Testing will be performed to measure the outside wetted surface of the containment vessel with one of the three parallel flow paths delivering water to the top of the containment vessel. ii) Inspection of the containment vessel exterior coating will be conducted. iii) Inspection of the containment vessel interior coating will be conducted. Inspections of the air flow path segments will be performed. Testing will be performed to verify the upper annulus drain flow performance. ii) Testing will be performed to measure the delivery rate from the long-term makeup connection to the PCCWST. Inspection will be performed for retrievability of the safety-related displays in the MCR. Stroke testing will be performed on the remotely operated valves identified in Table 2.2.2-1 using the controls in the MCR. Testing will be performed on the remotely operated valves in Table 2.2.2-1 using real or simulated signals into the PMS. iii) Tests of the motor-	floor – 226.6 gpm when the PCCWST water level uncovers the first (i.e. tallest) standpipe – 176.3 gpm when the PCCWST water level uncovers the second tallest standpipe – 144.2 gpm when the PCCWST water level uncovers the third tallest standpipe – or a report exists and concludes that the as-measured flow rates delivered by the PCCWST to the containment vessel provides sufficient heat removal capability such that the limiting containment pressure and temperature values are not affected and the PCS is able to perform its safety function to remove heat from containment to maintain plant safety. ii) When tested and/or analyzed with all flow paths delivering and an initial water level at 27.4 + 0.2, - 0.00 ft, the PCCWST water inventory provides greater than or equal to 72 hours of flow, and the flow rate at 72 hours is greater than or equal to 100.7 gpm or a report exists and concludes that the as-measured flow rates delivered by the PCCWST to the containment vessel

		the indicated loss of motive power position.	operated valves will be performed under preoperational flow, differential pressure, and temperature conditions. Testing of the remotely operated valves will be performed under the conditions of loss of motive power.	provides sufficient heat removal capability such that the limiting containment pressure and temperature values are not affected and the PCS is able to perform its safety function to remove heat from containment to maintain plant safety. i) A report exists and concludes that when the water in the PCCWST uncovers the standpipes at the following levels, the water delivered by one of the three parallel flow paths to the containment shell provides coverage measured at the spring line that is equal to or greater than the stated coverages. - 24.1 ± 0.2 ft above the tank floor; at least 90% of the perimeter is wetted. - 20.3 ± 0.2 ft above the tank floor; at least 72.9% of the perimeter is wetted. - 16.8 ± 0.2 ft above the tank floor; at least 59.6% of the perimeter is wetted. ii) A report exists and concludes that the containment vessel exterior surface is coated with an inorganic zinc coating above elevation

				135'-3". iii) A report exists and concludes that the containment vessel interior surface each PCS recirculation pump delivers greater than or equal to 100 gpm when tested separately. Safety-related displays identified in Table 2.2.2-1 can be retrieved in the MCR. Controls in the MCR operate to cause remotely operated valves identified in Table 2.2.2-1 to perform active functions. The remotely operated valves identified in Table 2.2.2-1 as having PMS control perform the active function identified in the table after receiving a signal from the PMS. iii) Each motor-operated valve changes position as indicated in Table 2.2.2-1 under preoperational test conditions. After loss of motive power, each remotely operated valve identified in Table 2.2.2-1 assumes the indicated loss of motive power position.
158	2.2.03.01	1. The functional arrangement of the PXS is as described in the Design Description of this Section 2.2.3.	Inspection of the as-built system will be performed.	The as-built PXS conforms with the functional arrangement as described in the Design Description of this Section 2.2.3.

159	2.2.03.02a	2.a) The components identified in Table 2.2.3-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The piping identified in Table 2.2.3-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements. 3.a) Pressure boundary welds in components identified in Table 2.2.3-1 as ASME Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in piping identified in Table 2.2.3-2 as ASME Code Section III meet ASME Code Section III requirements. 4.a) The components identified in Table 2.2.3-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure. 4.b) The piping identified in Table 2.2.3-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure.	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested. Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability. Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.	The ASME Code Section III design reports exist for the as-built components and piping identified in Table 2.2.3-1 and 2.2.3-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Table 2.2.3-1 and 2.2.3-2 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that each of the as-built lines identified in Table 2.2.3-2 for which functional capability is required meets the requirements for functional capability. An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the dynamic effects of

		5.b) Each of the lines identified in Table 2.2.3-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability. 6. Each of the as-built lines identified in Table 2.2.3-2 as designed for LBB meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.		a line break is provided.
192	2.2.03.08c.vii	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	vii) Inspection of the as-built components will be conducted for plates located above the containment recirculation screens.	vii) The plate located above the containment recirculation screen is no more than 1 ft, 3in above the top of the face of the screens and extends at least 8 ft, 3 in perpendicular to the front and at least 7 ft to the side of the face of the screens.
193	2.2.03.08c.viii	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	viii) Inspections of the IRWST and containment recirculation screens will be conducted. The inspections will include measurements of the pockets and the number of pockets used in each screen. The pocket frontal face area is based on a width times a height.	viii) Inspections of the IRWST and containment recirculation screens will be conducted. The inspections will include measurements of the pockets and the number of pockets used in each screen. The pocket frontal face area is based on a width times a height

194	2.2.03.08c.ix	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	The width is the distance between pocket centerlines for pockets located beside each other. The height is the distance between pocket centerlines for pockets located above each other. The pocket screen area is the total area of perforated plate inside each pocket; this area will be determined by inspection of the screen manufacturing drawings.	mesh size of ≤ 0.0625 inch. IRWST Screen C has a sufficient number of pockets to provide a frontal face area ≥ 50 ft2, a screen surface area ≥ 1150 ft2, and a screen mesh size ≤ 0.0625 inch. Each containment recirculation screen has a sufficient number of pockets to provide a frontal face area ≥ 105 ft2, a screen surface area ≥ 2500 ft2, and a screen mesh size ≤ 0.0625 inch. A debris curb exists in front of the containment recirculation screens which is ≥ 2 ft above the loop compartment floor. The bottoms of the IRWST screens are located ≥ 6 in above the bottom of the IRWST.
194	2.2.03.08c.ix	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	ix) Inspections will be conducted of the insulation used inside the containment on the ASME Class 1 lines, reactor vessel, reactor coolant pumps, pressurizer and steam generators. Inspections will be conducted of other insulation used inside the containment within the zone of influence (ZOI). Inspection will be conducted of other insulation below the maximum flood level of a design basis loss-of-coolant accident (LOCA).	ix) The type of insulation used on these lines and equipment is a metal reflective type or a suitable equivalent. If an insulation other than metal reflective insulation is used, a report must exist and conclude that the insulation is a suitable equivalent. The type of insulation used on these lines and equipment is a metal reflective type or a suitable equivalent. If an insulation other than metal reflective insulation is used, a report must exist and conclude that the

				insulation is a suitable equivalent. The type of insulation used on these lines is metal reflective insulation, jacketed fiberglass, or a suitable equivalent. If an insulation other than metal reflective or jacketed fiberglass insulation is used, a report must exist and conclude that the insulation is a suitable equivalent.
195	2.2.03.08c.x	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	x) Inspections will be conducted of the as-built nonsafety-related coatings or of plant records of the nonsafety-related coatings used inside containment on walls, floors, ceilings, and structural steel except in the CVS room. Inspections will be conducted of the as-built non-safety-related coatings or of plant records of the non-safety-related coatings used on components below the maximum flood level of a design basis LOCA or located above the maximum flood level and not inside cabinets or enclosures. Inspections will be conducted on caulking, tags, and signs used inside	x) A report exists and concludes that the coatings used on these surfaces have a dry film density of ≥ 100 lb/ft3. If a coating is used that has a lower dry film density, a report must exist and conclude that the coating will not transport. A report exists and concludes that inorganic zinc coatings used on these surfaces are Safety – Service Level I or have been quantified and justified in a program for management of unqualified coatings to demonstrate the unqualified coatings are acceptable for use. A report exists and concludes that tags and signs used in these locations are made of steel or another metal with a density ≥ 100

			containment below the maximum flood level of a design basis LOCA or located above the maximum flood level and not inside cabinets or enclosures. Inspections will be conducted of ventilation filters and fiber-producing fire barriers used inside containment within the ZOI or below the maximum flood level of a design basis LOCA.	lb/ft3. In addition, a report exists and concludes that caulking used in these locations or coatings used on these signs or tags have a dry film density of ≥ 100 lb/ft3. If a material is used that has a lower density, a report must exist and conclude that there is insufficient water flow to transport lightweight caulking, signs, or tags. A report exists and concludes that the ventilation filters and fire barriers in these locations have a density of ≥ 100 lb/ft3.
522	2.5.02.02.i	2. The seismic Category I equipment, identified in Table 2.5.2-1, can withstand seismic design basis loads without loss of safety function. 3. The Class 1E equipment, identified in Table 2.5.2-1, has electrical surge withstand capability (SWC), and can withstand the electromagnetic interference (EMI), radio frequency interference (RFI), and electrostatic discharge (ESD) 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. 4. The Class 1E	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 2.5.2-1 is 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. Type tests, analyses, or a	i) The seismic Category I equipment identified in Table 2.5.2-1 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. A report exists and concludes that the Class 1E equipment identified in Table 2.5.2-1 can withstand the SWC, EMI, RFI,

		equipment, identified in Table 2.5.2-1, can withstand the room ambient temperature, humidity, pressure, and mechanical vibration 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.	combination of type tests and analyses will be performed on the equipment. Type tests, analyses, or a combination of type tests and analyses will be performed on the Class 1E equipment identified in Table 2.5.2-1.	and ESD 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 identified in Table 2.5.2-1 can withstand the room ambient temperature, humidity, pressure, and mechanical vibration 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.

801	3.3.00.07d.ii.b	7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.	Refer to Unit 4 COL for electrical separation ITAAC consolidation	Refer to Unit 4 COL for electrical separation ITAAC consolidation
821	3.3.00.16	16. Secondary security power supply system for alarm annunciator equipment and non-portable communications equipment is located within a vital area.	An inspection will be performed to ensure that the location of the secondary security power supply equipment for alarm annunciator equipment and non-portable communications equipment is within a vital area.	Secondary security power supply equipment for alarm annunciator equipment and non-portable communication equipment is located within a vital area.
822	3.3.00.17	17. Vital areas are locked and alarmed with active intrusion detection systems that annunciate in the central and secondary alarm stations upon intrusion into a vital area. 18. Deleted	An inspection of the as-built vital areas, and central and secondary alarm stations are performed.	Vital areas are locked and alarmed with active intrusion detection systems and intrusion is detected and annunciated in both the central and secondary alarm stations.
823	3.5.00.01.i	1. The seismic Category I equipment identified in Table 3.5-1 can withstand seismic design basis loads without loss of safety function. 2. The Class 1E equipment identified in Table 3.5-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 3.5-1 is 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	i) The seismic Category I equipment identified in Table 3.5-1 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

		loss of safety function for the time required to perform the safety function.	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.	conditions. i) A report exists and concludes that Class 1E equipment identified in Table 3.5-1 as being located in 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 3.5-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.