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

May 11, 2022

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

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 – NRC INTEGRATED INSPECTION REPORTS 05200025/2022001, 05200026/2022001

Dear Ms. Coleman:

On March 31, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at the Vogtle Electric Generating Plant (VEGP), Units 3 and 4. On April 25, 2022, the NRC 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.

The inspection examined a sample of construction activities conducted under your Combined License (COL) 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 three findings of very low safety significance (Green). The findings involved violations of NRC requirements. The NRC is treating these violations as noncited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these 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 the VEGP Units 3 and 4.

If you disagree with a cross-cutting aspect 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 the VEGP Units 3 and 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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding." Should you have any questions concerning this letter, please contact us.

Sincerely,

Signed by Coovert, Nicole
on 05/11/22

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

Docket Nos.: 5200025, 5200026
License Nos: NPF-91, NPF-92

Enclosure(s):
NRC Inspection Report (IR) 05200025/2022001, 05200026/2022001
w/attachment: Supplemental Information

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SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 – NRC INTEGRATED INSPECTION REPORTS 05200025/2022001, 05200026/2022001 DATED MAY 11, 2022

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200025 5200026
License Numbers:	NPF-91 NPF-92
Report Numbers:	05200025/2022001 05200026/2022001
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Unit 3 Vogtle Unit 4
Location:	Waynesboro, GA
Inspection Dates:	January 1, 2022, through March 31, 2022
Inspectors:	A. Artayet, Senior Construction Inspector, Division of Construction Oversight (DCO) G. Crespo, Senior Construction Inspector, DCO J. Eargle, Senior Resident Inspector – Testing, DCO T. Fredette, Reactor Operations Engineer, Office of Nuclear Reactor Regulation – Vogtle Project Office B. Griman, Resident Inspector, DCO N. Karlovich, Resident Inspector, Division of Reactor Projects B. Kemker, Senior Resident Inspector, DCO J. Kent, Construction Inspector, DCO G. Khouri, Construction Project Manager, DCO J. Lizardi-Barreto, Construction Inspector, DCO R. Mathis, Senior Construction Inspector, DCO J. Parent, Resident Inspector, DCO R. Patel, Senior Construction Inspector, DCO R. Patterson, Physical Security Inspector, Division of Reactor Safety (DRS) A. Ponko, Senior Construction Inspector, DCO M. Riley, Senior Construction Inspector, DCO S. Sanchez, Emergency Preparedness Inspector, DRS W. Schuster, Resident Inspector (Acting), DCO D. Terry-Ward, 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) 05200025/2022001, 05200026/2022001; 01/01/2022 through 03/31/2022; Vogtle Units 3 and 4 Combined License, Integrated Inspection Report.

This report covers a three-month period of inspection by regional and resident inspectors. Two Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) findings of very low safety significance (Green) with associated non-cited violations (NCVs) and one construction finding of very low safety significance (Green) with an associated NCV were identified. 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 of very low safety significance with an associated NCV of Title 10 of the Code of Federal Regulations Part 50 (10 CFR 50), Appendix B, Criterion III, "Design Control." The licensee's failure to assure the Unit 3 Class 1E dc and uninterruptible power supply system (IDS) 24-hour, 72-hour, and spare safety-related battery racks were installed in accordance with ITAAC 2.6.03.02.i (597) and the approved design was a performance deficiency (PD). The licensee entered this finding into its corrective action program (CAP) as condition report (CR) 50130395 for evaluation and identification of corrective actions. As immediate corrective actions, the licensee restored the as-built configuration of the Unit 3 IDS battery racks to match the seismically qualified condition specified by the design.

This PD was of more than minor safety significance, and thus a finding, because it was material to the acceptance criteria of an ITAAC and invalidated the inspection, test, or analysis described in the ITAAC. Specifically, with the nonconforming conditions the IDS batteries did not meet the acceptance criteria. The finding was of very low (Green) safety significance because the licensee was able to demonstrate with reasonable assurance through additional analyses that the design function of the Class 1E IDS batteries would not be impaired by the PD, and the nonconforming conditions were corrected such that the installation is seismically bounded by the tested or analyzed conditions. The finding was indicative of current licensee performance and was associated with the cross-cutting area of Human Performance and the cross-cutting aspect of Procedure Adherence. The proximate cause of the PD was attributed to a failure to review procedures and instructions before work was performed to validate they were appropriate for the scope of work and required changes were completed before implementation. [H.8] (Section 1A09)

(Green) The inspectors identified an ITAAC finding of very low safety significance with an associated NCV of 10 CFR 52.99(c)(1), "ITAAC Closure Notification," for the licensee's failure to submit an ITAAC closure notification (ICN) for Unit 3 ITAAC 3.3.00.02a.i.b (761) that contained sufficient information to demonstrate the prescribed inspections, tests, and analyses had been performed and the prescribed acceptance criteria were met and was a PD. As immediate

corrective actions, the licensee withdrew the ICN. Subsequently, the licensee completed an engineering evaluation to address areas of the shield building concrete wall with thickness not meeting the requirements of the Vogtle 3 and 4 Updated Final Safety Analysis Report Table 3.3-1 and the as-built summary report for the shield building was updated to reflect the closure of the associated nonconformance and disposition report (N&D). The licensee entered this finding into its CAP for evaluation and identification of corrective actions as CR 50127060.

The PD was of more than minor safety significance and an ITAAC finding because it represented a substantive failure to implement a program, process, procedure, or quality oversight function that was material to the acceptance criteria of an ITAAC. Specifically, the licensee failed to develop an ICN that accurately reflected ITAAC completion as supported by verifiable documents and traceable records. As a result, the ICN would have been rejected by the NRC, if it had not been withdrawn voluntarily. The PD was material to the acceptance criteria of an ITAAC since it was associated with deviations that had not been repaired or reconciled to the approved design as required by the ITAAC. Based on review of N&D SV3-CC01-GNR-000686, the inspectors determined the design function of the affected structure would not have been impaired by the deficiency. As a result, the inspectors concluded the finding was of very low safety significance (Green). The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Conservative Bias in the area of Human Performance. The proximate cause of the PD was attributed to the failure to use conservative decision making when submitting the ICN without having all the determination basis input documents finalized. [H.14] (Section 1A10)

(Green) The inspectors identified a construction finding of very low safety significance with an associated NCV of 10 CFR 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to assure applicable regulatory requirements and the design basis, as defined in § 50.2 and as specified in the license application, for those structures, systems, and components (SSCs) to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee’s failure to evaluate applicable design inputs in the design package (E&DCR APP-GW-GEF-2640) that installed EMC glands in Class 1E plant electrical enclosures was a PD. The licensee entered this finding into its CAP for evaluation and identification of appropriate corrective actions as CR 50125873. As immediate corrective actions, the licensee issued new E&DCRs APP-GW-GEF-519 and APP-GW-GEF-529 that analyzed, and provided seismic testing results, indicating the seismic input for the EMC glands met the as-built seismic Category II, Class D component and would not adversely affect the ability of plant Class 1E electrical enclosures to perform their intended safety function during a seismic event.

The PD was of more than minor safety significance, and thus a finding, because it represented a substantive non-conservative error in a design document that defines the technical requirements for plant Class 1E electrical enclosures and justification was required by the licensee to ensure the as-built seismic Category II, Class D component did not adversely affect the ability of plant Class 1E electrical enclosures to perform their intended safety function during a seismic event. The inspectors determined the finding was not material to an ITAAC and therefore it was a construction finding because the EMC gland seismic qualifications did not impact the seismic qualifications and acceptance criteria of ITAAC related 1E panels in which the glands were installed. The finding was of very low safety significance (Green) because the licensee subsequently revised the design documents to include seismic evaluation and testing results that determined the EMC glands would not affect seismic Category I SSCs during a seismic event. The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Change Management in the

area of Human Performance. The proximate cause of the PD was attributed to the licensee's failure to implement a process where managers maintain a clear focus on nuclear safety when implementing the change management process to ensure significant unintended consequences are avoided. [H.3] (Section 1P02)

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Construction Status

Unit 3: The licensee has completed the majority of plant construction and was finalizing the as-built design. The licensee performed post work verification on safety-related (SR) and nonsafety-related (NSR) structures, systems, and components (SSCs) as it completes repair and remediation of electrical systems. Class 1E dc and uninterruptible power supply system (IDS), main alternating current electrical distribution system, and standby onsite power system testing was performed to verify the functional capability of those systems to support electrical loads during normal and off-normal conditions. Additionally, preoperational testing of the protection and safety monitoring system (PMS) and IDS was in progress after component testing to demonstrate the equipment and systems performed in accordance with the design criteria.

Unit 4: The licensee completed the majority of civil and mechanical construction for the nuclear island and continued installation of small-bore piping in plant fluid systems. The licensee continued installation of plant electrical cabinets, raceways, conduits, and cables. The licensee continued integrated flush activities by flushing portions of chemical volume and control (CVS), spent fuel pool cooling, reactor coolant (RCS), residual heat removal (RNS), and passive core cooling (PXS) systems. The licensee continued open vessel testing activities, which included taking a suction from the spent fuel pool and cask loading pit and discharging to the reactor vessel through the direct vessel injection line. The American Society of Mechanical Engineers (ASME) pneumatic pressure test and the integrated leak rate test were completed to verify the ability of the containment system to perform its SR function of providing containment integrity as a barrier against the release of fission products to the atmosphere.

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 3) 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 - Inspection of ITAAC-Related Installation of Piping
- 65001.03-02.08 - Problem Identification and Resolution
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review

The inspectors reviewed the RCS and reactor system (RXS) as-built design report and associated ASME N-5 installation code data reports to verify the RCS and the components (listed below) were designed, fabricated, constructed, examined, and tested in accordance with design specifications, engineering drawings, and code requirements of the 1998 Edition with Addenda up to and including 2000 Edition of the ASME Code Section III, Division 1, Subsections NCA for general requirements, NB for Class 1 components, and NF for supports.

- Major RCS components within the RCS pressure boundary included, but were not limited to:
    - reactor pressure vessel (RPV) and four reactor coolant pumps (RCPs);
    - hot leg and cold leg pipes;
    - two vertical steam generators (SGs) with primary side U-shaped tube bundles with tubesheet and divider plate;
    - pressurizer with interconnecting piping, surge line, safety and depressurization valves, and heaters;
    - safety relief and squib (pyrotechnic actuated) valves with interconnecting piping; and
    - valves and instrumentation for operational control.
- valves within the PV01, PV02, PV13, PV14, PV62, PV63, and PV70 valve commodities;
- Q601 RCS piping module with automatic depressurization system (ADS) valves;
- thermowells for resistance temperature detectors;
- miscellaneous items include rupture disks, single stage orifices, and spectacle blinds;
- pressure-retaining piping (including tubing) with subassemblies and supports;
- instrument and valve manifolds; and
- items, components, and attachments within code jurisdictional boundaries of piping-to-piping and piping-to-supports (in-line fittings, flanges, valves, nozzles, branch connections, and fasteners).

The inspectors reviewed as-built design report SV3-RCS-S3R-001 to verify certification by a registered professional engineer and contents were in accordance with the requirements of ASME NCA-3260 that include or reference supporting calculations for the design, service, and test loading conditions stated in the certified design specifications for ASME Code jurisdictional pressure boundaries highlighted on piping and instrumentation diagrams (P&IDs) APP-RCS-M6-001 and -002.

The inspectors verified the reconciliation of design output documents for design changes and design input documents for 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 the preservice inspection required by program plan SV3-GW-GEI-100 to verify the following examinations were completed prior to initial plant startup for a selected number of items and components of the RCS:

- VT-1 visual examinations for detection of surface discontinuities and imperfections were performed on:
    - rigid supports and bolting;

    - nozzle-to-safe ends;
    - globe and gate valve flange bolting, nuts, washers, and bonnet flange surfaces;
    - RPV inlet/outlet nozzle inner radius sections;
    - direct vessel injection (DVI)-A and -B inner radius sections;
    - closure head nuts and washers, and internal surface under the closure head;
    - RCP main flange nuts and vent assembly cap screws;
    - RCP heat exchanger channel head nuts and upper/lower flange piping bolting;
    - pressurizer safety valve bolting; and
    - squib valve piping flange surface, nuts, and washers.

- VT-2 visual examination was performed to detect evidence of leakage on the entire bare metal external surfaces of the RPV and closure head, including the junction of the closure head nozzles to closure head base metal surfaces of the closure head.
- VT-3 visual examinations for general mechanical and structural conditions were performed on:
    - RPV nozzle supports, vortex suppression plate, and secondary core support;
    - RPV interior surface, flow skirt support pads, lower guide tube, radial support keyways;
    - RPV core barrel, upper core barrel, core shroud, neutron panel, specimen capsule holders;
    - RPV lower and upper core support plate, and upper support column;
    - RPV outer periphery control rod drive mechanism (CRDM) supports and cable connections;
    - RPV outer periphery CRDM seismic bumpers and cable support attachments;
    - piping and component support conditions (including valve supports);
    - hydraulic snubbers, restraints, rigid struts, and welded attachments;
    - rigid, constant load, and variable spring supports; and
    - Q601 piping module frames, platforms, fire barriers, and grading supports.
- Surface liquid penetration examinations (PT) were performed on:
    - shop and field welds joining pipes, fittings, valves, flanges, nozzles (and weld buildups), nozzle-to-safe ends, branch connections, and thermowells;
    - squib valve piping flange surfaces;
    - squib valve bonnet bolt closure head studs, nuts, and washers;
    - CRDM latch housing welds at hole peripheral;
    - RPV head QuickLoc instrument nozzle to housing welds;
    - RCP pipe-to-flange, elbow-to-elbow, and pipe-to-elbow welds;
    - RCP pipe-to-stator closure and cap; and
    - RCP heat exchanger primary water inlet/outlet nozzle to tubesheet.
- Surface magnetic particle examinations (MT) were performed on the RPV upper assembly primary integrated head package (IHP) support lugs.
- Volumetric manual or remote ultrasonic examinations (UT) were performed on:
    - shop and field welds joining pipes, fittings, valves, flanges, nozzles (and

weld buildups); and nozzle-to-safe ends;
    - squib valve bonnet bolting, and piping flange surface and bolting;
    - RPV inlet/outlet nozzle-to-safe end welds, and nozzle inner radius sections;
    - RPV inlet/outlet nozzle-to-vessel welds;
    - RPV DVI-A and B nozzle-to-safe end welds and nozzle inner radius sections;
    - RPV upper shell-to-lower shell weld and transition ring lower head-to-lower shell welds;
    - RPV transition ring-to-lower head dome weld;
    - RPV studs, and internal and external surface of closure head penetrations;
    - RPV threads in the flange;
    - RPV head QuickLoc instrument nozzle to housing welds and weld buildups;
    - RCP end closure bolts and main flange studs;
    - CRDM latch housing welds at hole peripheral; and
    - pipe safe-end welds-to-SG1A and B inlet nozzles.
- Eddy current examinations were performed on:
    - RPV closure head studs;
    - RPV head J-groove weld wetted surfaces; and
    - RPV internal and external surface of closure head penetrations.

The inspectors reviewed the contents of the final system SV3-RCS-MUR-001 and supporting ASME N-5 code data reports that included components, items, and supports to verify entries were completed with certification signatures by the certificate holder representative and authorized nuclear inspector (ANI) in accordance with the applicable requirements of ASME NCA-3350 and NCA-8000.

The inspectors reviewed the as-built design reports for a sample of RCS piping to verify the reports addressed functional capability and leak before break (LBB) requirements. Specifically, the review was performed to determine if the reports concluded the as-built lines met the requirements for functional capability; and the LBB acceptance criteria were met by the as-built piping and piping materials, or a pipe break evaluation report existed and concluded protection from the dynamic effects of a line break was provided. Portions of the following piping lines were considered in the review: ADS inlet headers, pressurizer surge line, and RCS hot legs.

The inspectors reviewed appropriate sections of the piping analysis reports for portions of the lines listed above to verify the functional capability and LBB requirements were met, and the evaluations were consistent with the Vogtle 3 and 4 Updated Final Safety Analysis Report (UFSAR) Section 3.9.3.1.5 and Appendix 3B, respectively. Specifically, the inspectors reviewed the following tables to verify the functional capability requirements of the Vogtle 3 and 4 UFSAR Table 3.9-11 were met: Tables 2.1-9, 2.1-6, and 2-3 of the piping analysis for the ADS inlet headers, pressurizer surge line, and RCS hot legs, respectively. The inspectors also reviewed the following figures to verify the points corresponding to the actual normal and maximum stresses for the governing load combinations at the critical locations for the LBB evaluations were enveloped by the bounding analysis curves: Figure A.21-3 of the piping analysis for the ADS inlet headers, Figures A.20-1 and A.20-2 of the piping analysis for the pressurizer surge line, and Figure 5-3 of the piping analysis for the RCS hot legs.

Additionally, the inspectors verified the as-built design reports, for the piping lines listed above, reconciled deviations between the documents used for construction and the corresponding documents used for the design analysis, as required by ASME Section III NCA-3554. Specifically, the inspectors verified any impacts to the functional capability or LBB analyses were appropriately evaluated and reconciled.

b. Findings

No findings were identified.

1A02 (Unit 3) ITAAC Number 2.1.03.03 (72) / Family 05F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.03 (72). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.03 - Inspection of ITAAC-Related Installation of Piping
- 65001.03-02.08 - Problem Identification and Resolution
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01 - Design Document Review

The inspectors reviewed the as-built design reports for the RCS and RXS with associated ASME N-1, N-2, and N-5 code data reports to verify the RXS and the applicable components (listed below) were designed, fabricated, constructed, examined, and tested in accordance with design specifications, engineering drawings, and code requirements of the 1998 Edition with Addenda up to and including 2000 Edition of the ASME Code Section III, Division 1, Subsections NCA for general requirements, NB for Class 1 components, and NF for supports.

- Major items reviewed for the RXS included, but were not limited to:
  - reactor internals;
  - flow skirt;
  - attachment of latch housing assembly to reactor vessel head;
  - CRDM with bi-metallic weld of the latch housing to latch housing nozzle;
  - CRDM power cables, cooling system, and control system;
  - rod travel housing and latch assembly;
  - incore instrument QuickLoc assemblies;
  - IHP; and
  - RPV supports.

The inspectors reviewed as-built design report SV3-RCS-S3R-001 to verify its certification by a registered professional engineer and its contents were in accordance with the requirements of ASME NCA-3260 that included or referenced supporting calculations for the design, service, and test loading conditions stated in the certified design specifications for ASME Code jurisdictional pressure boundaries.

The inspectors verified the reconciliation of design output documents for design changes

and design input documents for 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 the preservice inspection required by program plan SV3-GW-GEI-100 to verify the following examinations were completed prior to initial plant startup for a selected number of items and components:

- VT-1 visual examinations for detection of surface discontinuities and imperfections were performed on:
    - rigid supports with applicable bolts, nuts, and washers; and
    - closure head nuts and washers.
- VT-3 visual examinations for general mechanical and structural conditions were performed on:
    - RPV nozzle supports, vortex suppression plate, and secondary core support;
    - RPV interior surface, flow skirt support pads, lower guide tube, radial support keyways;
    - RPV core barrel, upper core barrel, core shroud, neutron panel, specimen capsule holders;
    - RPV lower and upper core support plate, and upper support column;
    - RPV outer periphery CRDM supports and cable connections;
    - RPV outer periphery CRDM seismic bumpers and cable support attachments;
    - restraints, rigid struts, and welded attachments; and
    - rigid and constant load supports.
- Surface PT were performed on:
    - shop and field welds joining tubes, fittings, and weld buildups;
    - CRDM latch housing welds at hole peripheral; and
    - RPV head QuickLoc instrument nozzle-to-housing welds.
- Surface MT were performed on the RPV upper assembly primary IHP support lugs.
- Volumetric manual or remote UT examinations were performed on:
    - shop and field welds joining tubes, fittings, and nozzles (and weld buildups);
    - RPV studs, and internal and external surface of closure head penetrations;
    - RPV threads in flange;
    - RPV head QuickLoc instrument nozzle to housing welds and weld buildups;
    - CRDM bi-metallic weld of the latch housing to latch housing nozzle; and
    - CRDM latch housing welds at hole peripherals of the RPV head.
- Eddy current examinations were performed on:
    - RPV closure head studs;
    - RPV head J-groove weld wetted surfaces; and
    - RPV internal and external surface of closure head penetrations.

The inspectors reviewed the contents of ASME N-1, N-2, and N-5 code data reports that include components, items, parts, appurtenances, and supports to verify entries were completed with certification signatures by the certificate holder representative and ANI in

accordance with the applicable requirements of ASME NCA-3350 and NCA-8000.

b. Findings

No findings were identified.

1A03 (Unit 3) ITAAC Number 2.1.03.06.i (75) / Family 05A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.06.i (75). 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.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.E-Inspection of the ITAAC-Related Qualification Program
- 65001.F-02.04-General QA Review

The inspectors reviewed the equipment qualification reconciliation reports (EQRR) for the RXS instruments listed below to confirm the as-built configuration, including anchorage, was seismically bounded by the tested conditions in accordance with the applicable data sheets and design specifications, and to verify the seismic Category 1 and harsh environment criteria were satisfied:

- RXS-JE-NE001A, source range detector;
- RXS-JE-NE002D, intermediate range detector; and
- RXS-JE-NE004D, power range detector.

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 documented 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 detectors, associated wiring, cables, and terminations that were qualified for a harsh environment was bounded by the type tests, analyses, or combination of type tests and analyses. The inspectors verified each detector’s manufacturer make/model/serial number, location, and mounting orientation were per the design drawings. The inspectors reviewed the work packages and confirmed the torque values applied were per 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 engineering and design coordination reports (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.

1A04 (Unit 3) ITAAC Number 2.1.03.06.i (75) / Family 05A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.06.i (75). 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
- 65001.05-02.07 - Records Review
- 65001.05-02.08 - Problem Identification and Resolution
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed the EQRR for the reactor upper internal assembly (tag number RXS-MI-01) of the RXS to determine whether the licensee assessed the associated 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 sheet SV3-MI01-Z0-101 and design specification SV3-MI01-Z0-101.

The inspectors reviewed the licensee's methodology and selection of applicable data sheets, as-built design drawings, and design reports to determine whether the inspections and analyses demonstrated the as-built installed reactor upper internal assembly including anchorage are seismically bounded by the tested or analyzed conditions.

The inspectors also interviewed licensing personnel to determine how inspection and analysis 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.

1A05 (Unit 3) 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.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.E-02.04-Documentation
- 65001.E-02.06-Problem Identification and Resolution

The inspectors reviewed the EQRR for the passive containment cooling system (PCS) SR isolation valves, water distribution system, 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:

- PCS-PL-V002C; passive containment cooling water storage tank (PCCWST) isolation block motor operated valve;
- PCS-PL-V005; PCCWST supply to fire protection system isolation valve;
- PCS-MT-03; water distribution bucket;
- PCS-MT-04water distribution weirs;
- PCS-JE-FT001PCS water delivery flow sensor; and
- PCS-JE-LT010PCCWST water level sensor.

In addition, the inspectors reviewed EQRR for the PCS SR containment pressure sensors SV3-PCS-07 and SV3-PCS-013 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 environment 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 documented 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 were 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 per the design drawings. The inspectors reviewed the work packages and confirmed the torque values applied were per 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.

1A06 (Unit 3) 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 IP/section to perform this inspection:

- 65001.06-02.01 - General Installation

The inspectors reviewed SV3-PCS-ITR-801138, "Unit 3 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 (135 feet (') -3 inches (")) were coated with an inorganic zinc material as specified in Table 2.2.2-3 of Appendix C of the Vogtle Unit 3 Combined License (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 elevation 135'-3" were coated with a SR inorganic zinc 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. 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.

1A07 (Unit 3) 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 - Inspection of ITAAC-Related Installation of Piping
- 65001.03-02.08 - Problem Identification and Resolution
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review

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

- Major components within the PXS pressure boundary included, but were not limited to:
    - PXS-ME-01, passive residual heat removal heat exchanger;
    - PXS-MT-01A and B, accumulator tanks;
    - PXS-MT-02A and B, core makeup tanks; and
    - PXS-MW-01A and B, ADS spargers.

- valves within the PV01, PV02, PV03, PV13, PV20, and PV70 valve commodities;
- thermowells for resistance temperature detectors;
- pressure-retaining piping and tubing subassemblies;
- instruments and instrument manifolds;
- standard piping penetrations within portions of the piping system; and
- items, components, and attachments within code jurisdictional boundaries of piping-to-piping and piping-to-supports (in-line fittings, flanges, valves, nozzle and branch connections, and fasteners).

The inspectors reviewed certified as-built design report SV3-PXS-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-PXS-M6-001 and -002.

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 the preservice inspection program plan SV3-GW-GEI-100 to verify the following examinations were completed prior to initial plant startup for a selected number of items and components of the PXS:

- VT-1 visual examinations for detection of surface discontinuities and VT-3 visual examinations for general mechanical and structural conditions were performed on welded anchor attachments, rigid supports, flange bolting, valve flanges surfaces, nozzle-to-safe ends, and manway studs, nuts, and washers;
- VT-3 visual examinations for general mechanical and structural conditions were performed on supports for piping and components, valve supports, rigid supports, hydraulic snubbers, and penetration anchors;
- weld surface PT and volumetric UT were performed on shop and field welds for joining pipes, fittings, valves, flanges, nozzles, branch connections (PT only), and instruments to socket welds (PT only); and
- augmented volumetric UT were performed on the following field and shop welds

to establish a reference baseline of selected circumferential pipe welds to protect against postulated degradation mechanism for LBB analyzed piping:

- SV3-PXS-PLW-013-FW-1 for accumulator tank PXS-MT-01A nozzle N02-to-elbow fitting of 8" diameter;
- SV3-PXS-PLW-014-FW-10 for 8" diameter pipe-to-check valve V028A;
- SV3-PXS-PLW-023-FW-1 for 8" diameter pipe-to-valve V027B; and
- SV3-PXS-PLW-024-SW-5 for 8" diameter pipe-to-swing check valve V028B.

The inspectors reviewed the contents of the final system SV3-PXS-MUR-001 and supporting ASME N-5 code data reports that included components, items, and supports along with system physical nameplate code symbol stampings to verify entries were completed with certification signatures by the certificate holder representative and ANI in accordance with the applicable requirements of ASME NCA-3350 and NCA-8000.

The inspectors reviewed the as-built design reports for a sample of PXS piping to verify the reports addressed functional capability and LBB requirements. Specifically, the review was performed to determine if the reports concluded the as-built lines met the requirements for functional capability; and the LBB acceptance criteria were met by the as-built piping and piping materials, or a pipe break evaluation report existed and concluded protection from the dynamic effects of a line break was provided. Portions of the following piping lines were considered in the review: PRHR inlet line from hot leg, RNS A discharge line to PXS from RNS check valve RNS-PL-V017A to DVI line A, and in-containment refueling water storage tank (IRWST) injection line A to DVI line A.

The inspectors reviewed appropriate sections of the piping analysis reports for portions of the lines listed above to verify the functional capability and LBB requirements were met, and the evaluations were consistent with the Vogtle 3 and 4 UFSAR Section 3.9.3.1.5 and Appendix 3B, respectively. Specifically, the inspectors reviewed the following tables to verify the functional capability requirements of the Vogtle 3 and 4 UFSAR Table 3.9-11 were met: Table 2.1-9 of the piping analysis for portions of the PRHR inlet line from hot leg, and Tables 2.1-2 and 2.1-3 of the piping analyses for portions of the RNS A discharge line to PXS from RNS check valve RNS-PL-V017A to DVI line A, and IRWST injection line A to DVI line A. The inspectors also reviewed the following figures to verify the points corresponding to the actual normal and maximum stresses, for the governing load combinations at the critical locations for the LBB evaluations, were enveloped by the bounding analysis curves: Figure A.27-1 of the piping analysis for the PRHR inlet header from hot leg, Figure A.23.4-3 of the piping analysis for the RNS A discharge line to PXS from RNS check valve RNS-PL-V017A to DVI line A, and Figures A.23-4.1 and A.23.4-2 of the piping analysis for the IRWST injection line A to DVI line A.

Additionally, the inspectors verified the as-built design reports for the piping lines listed above reconciled deviations between the documents used for construction and the corresponding documents used for the design analysis, as required by ASME Section III NCA-3554. Specifically, the inspectors verified any impacts to the functional capability or LBB analyses were appropriately evaluated and reconciled.

b. Findings

No findings were identified.

1A08 (Unit 3) 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

The inspectors reviewed the EQRR for the PMS cabinets, main control room/remote shutdown room (MCR/RSR) transfer panel, and MCR/RSR display 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: SV3-PMS-JW-005A, SV3-PMS-JW-005D, SV3-PMS-JD-RTS02 and SV3-PMS-JW-006A, SV3-PMS-JD-SVCB01, SV3-PMS-JD-BCCC01, SV3-PMS-JD-NICC01, SV3-PMS-JD-ILCC01, SV3-PMS-JD-NICD01, SV3-PMS-JD-ILCD01, SV3-PMS-JD-ILCA02;
- MCR/RSR transfer panel: SV3-OCS-JW-001; and
- MCR/RSR display and control panels: SV3-OCS-JC-10, SV3-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 that 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 was bounded by the type tests, analyses, or combination of type tests and analyses. The inspectors verified each equipment’s manufacturer model/serial number, location, and mounting were per 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 are identified by an appropriate color-coding scheme.

The inspectors reviewed the work packages and confirmed the torque values applied

were per 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.

1A09 (Unit 3) 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 (597). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09 - Inspection of ITAAC-Related Installation of Electric and Fiber Optic Cable
- 65001.09-02.03 - Documentation
- 65001.09-02.04 - Problem Identification and Resolution
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed the design and construction of battery racks for the Unit 3 IDS for the 24-hour, 72-hour, and spare batteries to determine whether the installation was in accordance with the ITAAC requirements. The inspectors reviewed quality records, including the design documents, work packages, inspection records, condition reports (CRs), procedures, vendor manuals, and drawings to verify:

- the design was implemented in accordance with regulatory requirements, including applicable sections of the UFSAR and the Institute of Electrical and Electronic Engineers (IEEE) standards;
- differences between the as-built configuration and the design were reconciled in the design report;
- the design drawings were revised to reflect the as-built configuration by qualified personnel;
- issues identified during the inspection were entered into the corrective action program (CAP) in accordance with the CAP requirements;
- design changes were evaluated and implemented in accordance with established site procedures; and
- design deviations or nonconforming conditions were identified, documented, and dispositioned in accordance with site procedures.

The inspectors reviewed the licensee’s actions to address similar or related problems

that were previously identified, to verify the extent of condition and to verify the effectiveness of the licensee's corrective measures.

b. Findings

Introduction

The inspectors identified an ITAAC finding of very low safety significance (Green) with an associated noncited violation (NCV) of 10 CFR 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to assure the Unit 3 IDS 24-hour, 72-hour, and spare SR battery racks were installed in accordance with ITAAC 2.6.03.02.i and the approved design and was a performance deficiency (PD).

Description

The inspectors reviewed CR 50095783, which was written by the licensee on January 18, 2022, to address "loose through bolts," also known as "loose threaded rods," on IDS battery racks in Unit 3 room 12102. Each battery cell clamp assembly has two threaded rods passing between a pair of battery cells that restrain the cells from lateral movement during seismic acceleration. These two threaded rods are to be individually tightened onto the cell clamp with two nuts each. A first nut, also known as the inner nut, is placed onto the cell clamp and it is further secured by a second nut (i.e., outer nut) that is torqued to 100 foot-pounds (ft-lbs). The CR identified 12 through bolts with rotational and/or longitudinal play along the axis of the bolt. The CR was written to evaluate and correct the identified condition of loose through bolts, which did not meet quality and installation requirements. However, during their follow up inspection, the inspectors identified that at least two of the previously identified loose through bolts were still loose along with an additional 26 loose through bolts on other battery rack clamps in Unit 3 rooms 12101, 12102, 12103, 12104, 12105, 12202, and 12204. The as-built installation of those 28 through bolts included seven bolts that could rotate by hand manipulation, 19 bolts that could also rotate by hand and had an observable gap between the inner nut and the clamp, and two bolts whose outer nuts were not correctly torqued.

The inspectors noted work packages for the installation of the battery racks, including work package SV3-IDS-DBW-1148485, required rack installation per vendor installation manual SV3-DB01-V8M-001. Vendor's installation manual, SV3-DB01-V8M-001, "AP1000 Class 1E 250 Volts DC (VDC) Battery Assembly Drawings: Instruction for Assembling 1E Racks," Revision 0, Section 7.5, required cell installation as described above using 5/8-inch bolts with 100 ft-lbs. of torque. This installation manual further stated that "When torquing hex nuts on threaded rod, use caution to avoid bending cell clamp plates against battery jars. Hold hex nut between plates stationary and torque the hex nut on the outside of the assembly."

The installation personnel assembled the inner nut "snug tight" (hand tight) against the bracket to "avoid bending cell clamp plates against battery jars" as required in the design documentation; however, "snug tight" was not specified in the installation and design requirements. This was a field deviation from the installation requirements that was not evaluated and approved by authorized design personnel. Therefore, by not meeting the installation and torquing requirements for the through bolts and depending on how tight the inner nut was, some through bolt assemblies were either left still turning even after the nuts were torqued and/or not touching the cell clamp or with not adequately torqued

outer nuts. This left the nuts simply torqued against each other or loose, and thus not adequately securing the cell clamp plates. After a review of the applicable work packages, the inspectors noted the quality control (QC) inspection staff had accepted, by initial on the electrical equipment installation inspection records, the equipment and hardware (i.e., through bolts and nuts) were mounted correctly.

The inspectors determined the installation personnel deviated from installation and design requirements and the deviation was not evaluated and approved by authorized design personnel. In response to the inspectors' questions, the licensee initiated CR 50118295 to perform an extent of condition review to identify and correct loose through bolt assemblies in all the SR battery racks. As result of this nonconforming condition, it was indeterminate if the applicable Category 1 equipment could withstand seismic design basis loads without a loss of safety function and if the as-built equipment, including anchorage, was seismically bounded by the tested or analyzed conditions. The licensee entered this issue into its CAP as CR 50130395. The licensee completed evaluation SVP-SV0-006493, "Battery Rack Loose Cell Clamp Assembly Structural Safety Evaluation," to demonstrate with reasonable assurance the design function of the battery racks would not have been impaired by the nonconformances. The licensee subsequently restored the as-built configuration of the Unit 3 IDS battery racks to match the seismically qualified condition specified by the design.

Analysis

The licensee's failure to assure the Unit 3 Class 1E dc and uninterruptible power supply system (IDS) 24-hour, 72-hour, and spare safety-related battery racks were installed in accordance with ITAAC 2.6.03.02.i and the approved design was a PD. Specifically, the licensee failed to assure the Unit 3 IDS batteries racks were installed in accordance with the requirements specified in SV3-DB01-V8M-001, APP-DB01-VBR-001 and APP-DB01-Z0-001. Per the guidance in IMC 0613, "Power Reactor Construction Inspection Reports," Appendix B, "Issue Screening," dated November 4, 2020, the inspectors determined traditional enforcement or enforcement discretion would not apply to this PD. Per further guidance in IMC 0613, Appendix E, "Examples of Minor Construction Issues," the inspectors determined this PD was of more than minor safety significance, and thus a finding, because it was material to the acceptance criteria of an ITAAC and invalidated the inspection, test, or analysis described in the ITAAC. This is an ITAAC finding because the acceptance criteria for ITAAC 2.6.03.02.i (Sequence 597) requires, in part, the as-built Class 1E IDS batteries listed in Table 2.6.3-1 of the Vogtle Unit 3 COL, including anchorage, are seismically bounded by the tested or analyzed conditions and can withstand seismic design basis loads without loss of safety function. The inspectors also reviewed the Appendix E examples of minor issues and found two similar examples of "not minor if" performance deficiencies. Example 1 was similar, in that the inspectors identified the as-built condition did not meet the applicable design requirements and the PD was not minor because substantial rework and additional examination was required to restore the components to the approved design. Example 11 was similar, in that the inspectors identified the licensee had failed to identify the acceptance criteria were not met for the battery racks during their quality control inspection and the PD was not minor because the components were rendered unacceptable and corrective action was required to bring SSCs into conformance.

This finding was associated with the Construction/Installation cornerstone of the Construction Reactor Safety strategic performance area. 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. In accordance with IMC 2519, "Construction Significance Determination Process," Appendix A, "AP 1000 Construction Significance Determination Process," dated October 26, 2020, the inspectors determined this finding was associated with a system; (i.e. the IDS), which is assigned to the high risk importance column of the AP1000 Construction Significance Determination Matrix. The inspectors determined this finding was a PD of very low safety significance (Green) because the licensee was able to demonstrate with reasonable assurance through additional analyses that the design function of the Class 1E IDS batteries would not have been impaired by the PD, and the nonconforming condition was corrected such that the installation was seismically bounded by the tested or analyzed conditions.

The inspectors determined this finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Procedure Adherence 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 a failure to review procedures and instructions before work was performed to validate they were appropriate for the scope of work and required changes were completed before implementation. [H.8]

Enforcement

10 CFR 50, Appendix B, Criterion III, “Design Control,” requires in part, “Measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in § 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are 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. Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the SR functions of the structures, systems and components.”

Contrary to the above, on and before January 18, 2022, the licensee failed to assure that appropriate quality standards are specified and that deviations from such standards are controlled. Specifically, the licensee failed to review and control process and quality standard deviations by field personnel installing battery racks for the Unit 3 IDS 24-hour, 72-hour, and spare IDS batteries in accordance with ITAAC 2.6.03.02.i and the approved design requirements specified in SV3-DB01-V8M-001, APP-DB01-Z0-001 and APP-DB01-VBR-001. The licensee entered this finding into its CAP for evaluation and identification of corrective actions (CR 50130395). As immediate corrective actions, the licensee restored the as-built configuration of the Unit 3 IDS battery racks to match the seismically qualified condition specified by the design. Based on the review described above, the inspectors determined the licensee took corrective actions to address the ITAAC finding, and the nonconforming conditions had been appropriately addressed such that the acceptance criteria of ITAAC 2.6.03.02.i (597) was no longer impacted. As a result of the licensee’s corrective actions to restore compliance, ITAAC finding for 2.6.03.02.i is opened and closed in this report.

Because this violation was not repetitive or willful; was of very low safety significance

(Green); and was entered into the licensee's CAP as CR 50130395, it is being treated as an NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy (**NCV 05200025/2022001-01, Failure to Review and Control Process and Quality Standard Deviations on the IDS Battery Racks**).

1A10 (Unit 3) ITAAC Number 3.3.00.02a.i.b (761) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.b (761). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 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 shield building to verify the report reconciled deviations during construction, including Table 3.3-1 wall and floor thicknesses, and concluded the as-built shield building, including the critical sections, conformed to the approved design and would withstand the design basis loads specified in the design description without loss of structural integrity or the SR functions, and without impacting compliance with the radiation protection licensing basis.

The inspectors verified the as-built summary report addressed deviations to the standard plant issued after the effective date of the as-designed summary report, as well as unit-specific deviations.

The inspectors reviewed Tables 3-1 and 3-2 of the as-built summary report to verify margin existed in 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 nonconformance and disposition reports (N&D) and E&DCRs, respectively.

The inspectors noted that 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 did not impact the AP1000 seismic analysis model(s) or had already been incorporated.

Additionally, the inspectors reviewed Section 4.2 and 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 the Vogtle Units 3 and 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

Introduction

The inspectors identified an ITAAC finding of very low safety significance (Green) with an associated NCV of 10 CFR 52.99(c)(1), "ITAAC Closure Notification," for the licensee's failure to submit an ITAAC closure notification (ICN) for Unit 3 ITAAC 3.3.00.02a.i.b (761) that contained sufficient information to demonstrate the prescribed inspections, tests, and analyses had been performed and the prescribed acceptance criteria were met and was a performance deficiency.

Description

On December 8, 2021, the licensee submitted the ICN for Vogtle Unit 3 ITAAC 3.3.00.02a.i.b to the NRC. Subsequently, during the week of December 12, 2021, NRC inspectors determined the ICN did not contain sufficient information to demonstrate the prescribed inspections, tests, and analyses had been performed and the acceptance criteria were met.

The acceptance criteria of the ITAAC requires, in part, that deviations during construction, including those from the Vogtle Units 3 and 4 UFSAR Table 3.3-1 wall and floor thicknesses, be reconciled to demonstrate the as-built structures conform to the approved design and will withstand the design basis loads without loss of structural integrity or the SR functions, and without impacting compliance with the radiation protection licensing basis.

The inspectors reviewed SV3-1208-GCR-001, "VEGP Unit 3 As-Built Summary Report: Shield Building," Revision 1, and noted N&D SV3-CC01-GNR-000451 was still open. The inspectors reviewed the N&D and determined it was associated with out of tolerance wall thicknesses in the shield building reinforced concrete cylindrical wall. The inspectors further determined some of these deviations had not been repaired or reconciled to the approved design and, as a result, it was not possible to conclude the ITAAC acceptance criteria were met.

In response to the inspectors' questions, the licensee withdrew the ICN and issued N&D SV3-CC01-GNR-000686, which superseded N&D SV3-CC01-GNR-000541, to address areas of the shield building concrete wall with thickness not meeting the requirements of the Vogtle Units 3 and 4 UFSAR Table 3.3-1. The as-built summary report for the shield building was also updated to reflect the closure of N&D SV3-CC01-GNR-000686. As documented in N&D SV3-CC01-GNR-000686, the nonconforming areas were either repaired to bring them into compliance with the thickness requirements of the VEGP Units 3 and 4 UFSAR or construction deviations were reconciled in accordance with UFSAR Table 3.3-1, Note 15 to demonstrate the as-built structures would withstand design basis loads without loss of structural integrity or safety functions and without impacting compliance with the radiation protection licensing basis.

The inspectors reviewed the updated as-built summary report for the shield building to verify the report reconciled deviations during construction, including Table 3.3-1 wall and floor thicknesses, and concluded the as-built shield building, including the critical sections, conformed to the approved design and would withstand the design basis loads specified in the Design Description without loss of structural integrity or the SR functions, and without impacting compliance with the radiation protection licensing basis. The inspectors verified the as-built summary report addressed deviations to the standard

plant issued after the effective date of the as-designed summary report as well as unit-specific deviations. The inspectors reviewed Tables 3-1 and 3-2 of the as-built summary report to verify margin existed in 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, respectively. 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 did not impact the AP1000 seismic analysis model(s) or had already been incorporated. Additionally, the inspectors reviewed Section 4.2 and 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 the Vogtle Units 3 and 4 UFSAR Table 3.3-1 and found any localized deviations from Table 3.3.-1 were appropriately evaluated and reconciled to the approved design.

Analysis

The inspectors determine the licensee's failure to submit an ICN that contained sufficient information to demonstrate that the prescribed inspections, tests, and analyses had been performed and the prescribed acceptance criteria were met was a PD.

The inspectors evaluated the PD in accordance with IMC 0613, "Power Reactor Construction Inspection Reports." The PD involved the failure to provide complete and accurate information, could be associated with a specific ITAAC, and was material to the acceptance criteria of that ITAAC. For violations of this nature, IMC 0613 outlines a dual path that involves using both the traditional enforcement process and the construction reactor oversight process (cROP). The inspectors evaluated the PD using both processes. The inspectors reviewed examples of 52.99 violations provided in Section 6.9 of the Enforcement Policy. ITAAC management, however, is a construction program listed in IMC 2504, "Construction Inspection Program: Inspection of Construction and Operational Programs." Construction programs, including ITAAC management, are within the scope of the cROP. After proceeding along both paths, the inspectors determined that following either led to the same destination, a violation of 10 CFR 52.99(c)(1) and, therefore, using both processes was superfluous. The inspectors evaluated both routes and determined that using the cROP was appropriate in this case given that PD involved a construction program, could be associated with a specific ITAAC, and was material to the acceptance criteria of that ITAAC. As a result, the inspectors determined traditional enforcement did not apply and proceeded to assess the PD using the cROP.

The PD was considered more than minor and a finding because it represented a substantive failure to implement a program, process, procedure, or quality oversight function. Specifically, the licensee failed to develop an ICN that accurately reflected ITAAC completion as supported by verifiable documents and traceable records. As a result, the ICN would have been rejected by the NRC, if the licensee had not voluntarily withdrawn it.

The inspectors evaluated the finding in accordance with IMC 2519, "Construction Significance Determination Process," Appendix A, "AP 1000 Construction Significance Determination Process," dated October 26, 2020, and determined the finding was not associated with a security program, or an operational program listed in IMC 2504, but

involved the requirements of a construction program listed in IMC 2504. The inspectors also determined the finding could be associated with a specific ITAAC and was material to the ITAAC acceptance criteria since it was associated with deviations that had not been repaired or reconciled to the approved design as required by the ITAAC. The inspectors determined the finding was associated with the Inspection/Testing cornerstone of the Construction Reactor Safety strategic performance area. The finding did not involve a repetitive, NRC identified omission of a program critical attribute. Based on review of N&D SV3-CC01-GNR-000686, the inspectors determined the design function of the affected structure would not have been impaired by the deficiency. As a result, the inspectors concluded the finding was of very low safety significance (Green).

The inspectors reviewed the finding for a possible cross-cutting aspect in accordance with IMC 0613 Appendix F, "Construction Cross-Cutting Areas and Aspects," dated November 4, 2020, and determined the finding had a cross-cutting aspect of Conservative Bias in the area of Human Performance. The proximate cause of the PD was attributed to the failure to use conservative decision making when submitting the ICN without all the determination basis input documents finalized. [H.14]

Enforcement

10 CFR 52.99(c)(1), "ITAAC Closure Notification," requires, in part, that the ICN must contain sufficient information to demonstrate that the prescribed inspections, tests, and analyses have been performed and that the prescribed acceptance criteria are met.

Contrary to the above, on December 8, 2021, the licensee failed to provide sufficient information in the ICN to demonstrate that the prescribe inspections, tests, and analyses had been performed and that the prescribed acceptance criteria were met. Specifically, the ICN did not contain sufficient information to demonstrate that the wall thickness requirements of UFSAR Table 3.3-1 had been met or that construction deviations from the thickness and tolerances specified in Table 3.3-1 had been reconciled. As a result, it was not possible to determine, based on the information provided, the as-built structures conformed to the approved design and would withstand the design basis loads without loss of structural integrity or the SR functions, and without impacting compliance with the radiation protection licensing basis.

As immediate corrective actions, the licensee withdrew the ICN. Subsequently, N&D SV3-CC01-GNR-000541 was superseded by N&D SV3-CC01-GNR-000686 to address areas of the shield building concrete wall with thicknesses not meeting the requirements of UFSAR Table 3.3-1 and the as-built summary report for the shield building was updated to reflect the closure of N&D SV3-CC01-GNR-000686. Based on the review described above, the inspectors determined the licensee took corrective actions to address the ITAAC finding, and the nonconforming conditions had been appropriately addressed such that the acceptance criteria of ITAAC 3.3.00.02a.i.b (761) was no longer impacted. As a result of the licensee's corrective actions to restore compliance, ITAAC finding for 3.3.00.02a.i.b is opened and closed in this report.

Because this violation was not repetitive or willful; was of very low safety significance (Green) and was entered into the licensee's CAP as CR 50127060, it is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy (**NCV 05200025/2022001-02, Failure to Provide Sufficient Information in the ICN for ITAAC 761**).

1A11 (Unit 3) 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 SV3-11000-ITR-800786, "NRC Index No. 786 Accumulator Rooms and CVS Room Flood Prevention," Revision 1, 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 internal flooding.

The inspectors performed a walkdown of the watertight hatches to the PXS-A compartment (Room 11206) at elevation 107'-2", PXS-B compartment (Room 11207) at elevation 107'-2", and the door to the CVS valve room (Room 11209) at elevation 107'-2", (SV3-11300-AD-H03, SV3-11300-AD-H05, and SV3-11300-AD-H11, respectively) to determine whether the boundaries between these rooms containing SR equipment were constructed as designed to prevent flooding into these rooms. The inspectors also performed a walkdown of the instrumentation SL32 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; and
- 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 verify deviations were bounded by the analyzed conditions.

b. Findings

No findings were identified.

1A12 (Unit 3) ITAAC Number 3.3.00.07aa (789) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07aa (789). 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
- 65001.09-02.04 - Problem Identification and Resolution

The inspectors performed a direct inspection of raceways inside the containment building. The rooms inspected included the reactor coolant drain tank, reactor vessel cavity, steam generator-1 lower manway area, and steam generator-1 access room. The inspectors conducted walkdowns of the 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 also verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors reviewed construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify the Class 1E raceways were installed and designed in accordance with installation requirements. The inspectors also reviewed cable tray installations to verify cable fill design requirements, as applicable.

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. Inspectors also verified fittings and clamps were installed according to work procedures. The inspectors reviewed the licensee's corrective actions to verify issues were identified, evaluated, and corrected.

b. Findings

No findings were identified.

1A13 (Unit 3) ITAAC Number 3.3.00.07ac (791) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07ac (791). 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 performed a direct inspection of raceways inside the radiologically controlled area of the auxiliary building. The rooms inspected included the sump equipment room, lower annulus valve area, mid annulus access room, and the waste

monitor tank room. The inspectors conducted walkdowns of the 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 also verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors reviewed construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify the Class 1E raceways were installed and designed in accordance with installation requirements. The inspectors also reviewed cable tray installations to verify cable fill design requirements, as applicable.

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. Inspectors also verified fittings and clamps were installed according to work procedures. The inspectors reviewed the licensee's corrective actions to verify issues were identified, evaluated, and corrected.

b. Findings

No findings were identified.

1A14 (Unit 3) ITAAC Number 3.3.00.07ba (792) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07ba (792). 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

The inspectors performed a direct inspection of raceways inside the containment building. The rooms inspected included the reactor coolant drain tank, reactor vessel cavity, steam generator-1 lower manway area, and steam generator-1 access room. The inspectors conducted walkdowns of the 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 also verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors reviewed construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify the Class 1E raceways were installed and designed in accordance with installation requirements. The inspectors also reviewed cable tray installations to verify cable fill design requirements, as applicable.

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. Inspectors also verified fittings and clamps were installed according to work procedures. The inspectors reviewed the licensee's corrective actions to verify issues were identified, evaluated, and corrected.

b. Findings

No findings were identified.

1A15 (Unit 3) ITAAC Number 3.3.00.07bc (794) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07bc (794). 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 performed a direct inspection of raceways inside the radiologically controlled area of the auxiliary building. The rooms inspected included the sump equipment room, lower annulus valve area, mid annulus access room, and the waste monitor tank room. The inspectors conducted walkdowns of the 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 also verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors reviewed construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify the Class 1E raceways were installed and designed in accordance with installation requirements. The inspectors also reviewed cable tray installations to verify cable fill design requirements, as applicable.

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. Inspectors also verified fittings and clamps were installed according to work procedures. The inspectors reviewed the licensee's corrective actions to verify issues were identified, evaluated, and corrected.

b. Findings

No findings were identified.

1A16 (Unit 3) ITAAC Number 3.3.00.07c.i.b (796) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07c.i.b (796). 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.A.02.02 - Installation Records Review

The inspectors performed a direct inspection of raceways inside the radiologically controlled area of the auxiliary building. The rooms inspected included the sump equipment room, lower annulus valve area, mid annulus access room, and the waste monitor tank room within fire areas 1200 AF 01 and 1220 AF 02. The inspectors conducted walkdowns of the 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 also verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors reviewed construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify the Class 1E raceways were installed and designed in accordance with installation requirements. The inspectors also reviewed cable tray installations to verify cable fill design requirements, as applicable.

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. Inspectors also verified fittings and clamps were installed according to work procedures. The inspectors reviewed the licensee's corrective actions to verify issues were identified, evaluated, and corrected.

b. Findings

No findings were identified.

1A17 (Unit 3) 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
- 65001.09-02.02 - Attributes of Electrical Cable installation
- 65001.09-02.03 - Documentation
- 65001.09-02.04 - Problem Identification and Resolution

The inspectors performed a direct inspection of raceways inside the containment building. The rooms inspected included the reactor coolant drain tank, reactor vessel cavity, steam generator-1 lower manway area, and steam generator-1 access room. The inspectors conducted walkdowns of the 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 also verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors reviewed construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify the Class 1E raceways were installed and designed in accordance with installation requirements. The inspectors also reviewed cable tray installations to verify cable fill design requirements, as applicable.

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. Inspectors also verified fittings and clamps were installed according to work procedures. The inspectors reviewed the licensee's corrective actions to verify issues were identified, evaluated, and corrected.

b. Findings

No findings were identified.

1A18 (Unit 3) ITAAC Number 3.3.00.07d.ii.c (802) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07d.ii.c (802). 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 performed a direct inspection of raceways inside the radiologically controlled area of the auxiliary building. The rooms inspected included the sump equipment room, lower annulus valve area, mid annulus access room, and the waste monitor tank room. The inspectors conducted walkdowns of the 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 also verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors reviewed construction specifications, installation procedures, written instructions, drawings, work packages, and quality control inspection reports to verify the Class 1E raceways were installed and

designed in accordance with installation requirements. The inspectors also reviewed cable tray installations to verify cable fill design requirements, as applicable.

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. Inspectors also verified fittings and clamps were installed according to work procedures. The inspectors reviewed the licensee's corrective actions to verify issues were identified, evaluated, and corrected.

b. Findings

No findings were identified.

1A19 (Unit 3) ITAAC Number 3.3.00.14 (820) / Family 17E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.14 (820). The inspectors used the following NRC IP/section to perform this inspection:

- 65001.17-02.07-Bullet Resisting Physical Barriers

The inspectors reviewed acceptance testing documents and observed the licensee's performance of its procedures to verify the external walls, doors, ceilings, and floors in the main control room, the central alarm station, and the secondary alarm station are bullet-resistant to at least Underwriters Laboratory Ballistic Standard 752, level 4 as specified in Table 3.3-6 of Appendix C of the Vogtle Unit 3 COL; and satisfied the manufacture's specifications, Vogtle 3 security plan, and the ITAAC.

b. Findings

No findings were identified.

1A20 (Unit 3) 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 was located within a vital area as specified in Table 3.3-6 of Appendix C of the Vogtle Unit 3 COL. The inspectors conducted a walkdown of the

Vogtle 3 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 3 security plan, and the ITAAC.

b. Findings

No findings were identified.

1A21 (Unit 3) 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 3 COL. The inspectors observed the alarm testing and reviewed the test records for the Vogtle Unit 3 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 3 security plan, and the ITAAC.

b. Findings

No findings were identified.

1A22 (Unit 3) 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 3 particulate and gaseous radiation monitoring package SV3-PSS-JS-26 to determine if the seismic Category I equipment can withstand seismic design basis loads without loss of safety function as specified in Table 3.5-6 of Appendix C of the Vogtle Unit 3 COL. Specifically, the inspectors reviewed the EQRRs for Unit 3 containment atmosphere radiation detectors SV3-PSS-JE-026 and SV3-PSS-JE-027 to determine whether the as-built configuration, including anchorage and electrical connections 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 3 COL.

The inspectors reviewed the equipment qualification summary reports and equipment qualification data packages to determine whether installation requirements were appropriately translated to the drawings and work packages. The inspectors reviewed the licensee's methodology and applicable work packages, design changes, and nonconformances to confirm work orders, data sheets, and design drawings which reflected the as-installed radiation detectors were bounded by the design analysis and tested configuration.

The inspectors performed a walkdown of the as-built radiation monitors to determine whether the weld dimensions matched the as-tested configuration, or an evaluation was performed to demonstrate another configuration was acceptable. The inspectors examined the as-built radiation monitors to verify the make/model/serial number, mounting orientation and location was in accordance with design documents. The inspectors also verified the mechanical and electrical connections were bounded by the analyzed and tested conditions.

b. Findings

No findings were identified.

1A23 (Unit 4) ITAAC Number 2.1.02.08d.v (36) / Family 07A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.08d.v (36). 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.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed an inspection to verify the minimum elevation of the bottom inside surface of the outlet of each of the four Unit 4 fourth-stage ADS valves (RCS-PL-V004A, V004B, V004C, and V004D) was greater than plant elevation 110'-0" as specified in Table 2.1.2-4 of Appendix C of the Vogtle Unit 4 COL. Similarly, the inspectors performed an inspection to verify the discharge of these valves was directed into the steam generator compartments as specified in Table 2.1.2-4 of Appendix C of the Vogtle Unit 4 COL. The inspectors observed the licensee survey the elevation of the centerline of each pipe flange at the inlet to the four ADS valves; reviewed the vendor's as-built reports for each ADS valve; and reviewed the vendor's assembly drawing for the ADS valves and compared the drawing dimensions with the as-built (or as-measured) dimensions from the as-built reports. The inspectors reviewed the survey results; reviewed the licensee's calculations of the minimum elevation of the bottom inside surface of the outlet of each of the four ADS valves; and performed independent calculations to verify the licensee's results. The inspectors also observed the discharge lines for the valves to verify they would discharge directly into the steam generator compartments to satisfy the ITAAC.

b. Findings

No findings were identified.

1A24 (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 IPs/sections to perform this inspection:

- 65001.11 - Construction Inspection Program Inspection of ITAAC-Related Containment Integrity and Containment Penetrations
- 65001.11-02.05 - Nondestructive Examination
- 65001.11-02.11 - Problem Identification and Resolution
- 65001.C - Inspection of the ITAAC-Related Construction Test Program
- 65001.C-02.01 - Program and Procedure Reviews
- 65001.C-02.02 - Construction Test Observation
- 65001.C-02.03 - Construction Test Record Review
- 65001.C-02.04 - General Quality Assurance Review

From February 1 to February 4, 2022, a pneumatic structural integrity test (SIT) of the Vogtle Unit 4 containment vessel (CV) was performed to demonstrate the ability of the containment to withstand specified internal pressure loads and act as a leak-tight barrier during a design basis accident. The SIT was conducted by Chicago Bridge and Iron Services in the accompaniment of Westinghouse, ILRT Inc., and the licensee. The inspectors reviewed procedures and records, conducted walkdowns, performed test observations, and interviewed personnel to assess performance and compliance with rules and regulations, license conditions, site procedures, and ASME Code requirements.

The inspectors performed a pre-test walkdown and general inspection of accessible portions of the containment interior and exterior surfaces; attended pre-job, safety, and infrequent test evolution briefings; observed test equipment setup and performance; and interviewed test personnel regarding procedural limitations, examination techniques, and ASME Code requirements. The inspectors reviewed the pneumatic test procedure and related drawings, SIT chart recorder data, calibration records and test prerequisites, and personnel qualifications and certifications.

The inspectors reviewed the following information to determine if the inspection attributes were met:

- procedures and work instructions were approved by authorized personnel;
- current procedure revision was available and in use at the test location by test personnel;
- records existed for those welds/joints that were vacuum box tested prior to the SIT due to being inaccessible;
- following test completion, the test data was evaluated by the licensee and its

contractors (ILRT Inc.);
- test data was accurate and precisely recorded;
- deficiencies and test interruptions or continuations were handled in accordance with approved procedures and documented in the test narrative log;
- preliminary test results, records, data, and analyses were as expected and any discrepancies were logged;
- test anomalies, problems, interruptions, and/or deficiencies recorded in the logs were documented and evaluated in accordance with procedures; and
- the disposition of any deviations and corrective measures, if any, were documented and evaluated, and required retests or leakage examinations were performed, as necessary.

The inspectors verified through observation the following activities to determine if the inspection attributes were met:

- administrative test controls were followed;
- a qualified (licensed) nuclear inspector was present during the SIT and at the time of the leakage examinations;
- containment was pressurized to 1.1 times its design pressure and the maximum permissible test pressure was not exceeded;
- test pressure was retained for a minimum of 10 minutes then reduced to a specified fraction of the pressure for leakage examinations of joints, penetrations, connections, and high stress regions;
- after achieving 50% of the final test pressure, the rate of containment pressurization was increased in increments of approximately 1/10 of the test pressure up to 1.10 times the design pressure;
- maximum rate of containment pressurization and depressurization were specified by procedure and adhered to throughout the SIT;
- verified hold times for pressure stabilization and depressurization were specified and adhered to during the test;
- depressurization rate of the containment and unloading increments paralleled the loading cycle;
- maximum permissible test pressure was maintained for a minimum of 10 minutes then reduced to the greater of either the design pressure or the specified fraction of the test pressure for the leakage examinations;
- adverse weather or environmental conditions that could impact test results were appropriately monitored and taken into consideration during the test;
- logging of test parameters, leakage rates, observations was performed at a pre-determined periodicity; and
- observed leakage examinations (solution/bubble film test technique) of various welds, reviewed sketches, and verified examinations of applicable joints, penetrations, and connections and regions of high stress (such as seam welds, welds in the shell and dome, nozzle welds, welds of penetration sleeves) were performed in accordance with ASME Subsection NE.

The inspectors also performed the following activities to determine if the inspection attributes were met:

- verified by observation, interviews, and walkdowns the containment structure was pressurized using a medium that was reasonably clear, dry, nonflammable,

and free of contaminants;
- verified by observation and data review the containment displacement was appropriately monitored during the test and did not exceed design parameters;
- verified through interviews the testing was coordinated, including "abort" criteria established; and
- verified through interview and preliminary data review no structural damage resulted from the test.

The inspectors verified through walkdowns, interviews, and observation the type, sensor location, range, accuracy, and calibration of instrumentation met requirements and standards, were specified, and indicating as expected. Specifically, the inspectors verified:

- displacement instrumentation used to measure overall deformation and deflection of the CV were installed at several points and elevations on the vessel;
- humidity and temperature sensors were located at several locations and elevations throughout the containment and trending as expected; and
- pressure gauges, recorders, displays, and other required test equipment were within the range and accuracy specified, calibrations were current, and instruments were in service prior to test.

b. Findings

No findings were identified.

1A25 (Unit 4) ITAAC Number 3.3.00.02b (770) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02b (770). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.A.02.02 - Installation Records Review

The inspectors reviewed documentation for construction activities associated with ITAAC 3.3.00.02b to verify the as-built configuration of the site grade was consistent with the plant design grade and met the acceptance criteria.

The inspectors reviewed the results of the survey report documented in ITAAC Technical Report SV4-000-ITR-800770 to verify the elevation of the site grade was consistent with design plant grade. Specifically, the inspectors reviewed the technical report to verify the distance from site grade to plant floor elevation 100’-0” was within the tolerance described in Table 3.3-5 of the Vogtle 3 and 4 UFSAR.

b. Findings

No findings were identified.

1A26 (Unit 4) ITAAC Number 3.3.00.07bb (793) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07bb (793). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.01 - Physical Separation of Cables
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors observed the following cable pulls to determine whether the pulls were conducted in accordance with SV4-G1-V8-001, “AP100 Electrical Installation Specification”, Revision 11 and 26139-000-4MP-T81C-N3303, "Cable Installation," Revision 16.

- SV4-PMS-EW-JDBCC-0201MXC;
- SV4- PMS-EW-JDBCC-0201KZC;
- SV4-PMS-EW-JDBCC-0204TZC;
- SV4-PXS-EW-PLV002BKZC;
- SV4-VBS-EW-PLV191KZC;
- SV4-RCS-EW-PLV012AKZC;
- SV4-SDS-EW-PLV002KZC;
- SV4-VBS-EW-PLV187KZC;
- SV4-CVS-EW-PLV084HYC;
- SV4-RCS-EW-PLV150CHYC;
- SV4-CVS-EW-PLV136BHYC;
- SV4-PCS-EW-100103FZC;
- SV4-PXS-EW-PLV002AFXD;
- bulk cable pull from SV4-IDSB-EY-P30Z to Division "B" and "D" panels; and
- cable pull from SV4-IDSS-DF-3 to SV4-IDSD-DF-1.

Specifically, the inspectors observed the cable pulls to determine if the following attributes were in accordance with specified requirements:

- correct cable type is installed;
- cable bend radius is maintained;
- correct cable lubricant;
- no visible damage present in cable jackets;
- cable labels meet color coding and distance requirements;
- pull tension was within specified limits (Please note both pulls were hand pulls);
- conduits were cleaned; and
- routing was in accordance with drawings and pull tickets.

The inspectors also reviewed work package SV4-IDS-EWW-1091668 Version 1.0 to determine if the requirements from APP-G1-V8-001 had been translated correctly into associated field documents and drawings. The inspectors additionally reviewed QC cable installation inspection records to determine whether they were accurate and

whether the attributes inspected were appropriate for the associated cable pulls. The inspectors reviewed the qualifications records of the quality control personnel involved in the cable pulls to determine whether they were qualified in accordance with the project nuclear quality control manual.

b. Findings

No findings were identified.

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

1P01 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 verify the CAP appropriately included regulatory required nonsafety-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 actions 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.

1P02 Construction QA Criterion 3

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

a. Inspection Scope

The inspectors reviewed design change documents associated with Roxtec electromagnetic compatibility (EMC) glands in SR Class 1E electrical panels or enclosures to determine whether the necessary inputs were included in the design package governing their installation. Specifically, the inspectors reviewed E&DCR APP-GW-GEF-2640, "Application of EMC Glands," Revision 0, for evaluation of the applicable design inputs.

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 assure applicable regulatory requirements and the design basis, as defined in § 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee's failure to evaluate applicable design inputs in the design package (E&DCR APP-GW-GEF-2640) that installed EMC glands in Class 1E plant electrical enclosures was a PD.

Description

On November 2, 2021, the inspectors identified applicable design inputs were missing from the design package (APP-GW-GEF-2640) that addressed requirements for installation of EMC shielding and grounding glands. These glands were classified as NSR Class D, seismic Category II components. The glands were installed on numerous Class 1E panels throughout the plant. The design package (APP-GW-GEF-2640) was completed and issued without documenting the seismic qualification of the EMC glands.

APP-G1-V8-001, "AP1000 Electrical Installation Specification," Revision 11, Section 2.1 referenced APP-GW-G1-014, "AP1000 Plant Nuclear Safety Classification and Seismic Requirement Methodology," Revision 9. In addition, APP-G1-V8-001, Section 3.1.2 stated, in part, "Westinghouse safety Classification D seismic Category II components shall require a quality program…" and Section 3.6.4 stated, in part, "Class 1E instrumentation, control, and power distribution cabinets are typically supplied in their as-qualified condition (including required EMC mitigation features). The use of additional EMC glands or seals on Class 1E enclosures shall conform to the qualified configuration and must be approved by engineering using design change control processes".

APP-GW-G1-014, Section 6.1.4 stated, in part, "Class D… this class is nonsafety-related with some additional requirements on procurement, inspections or monitoring." In addition, Section 7.1.2, "Seismic Category II," stated "seismic Category II shall apply to all plant SSCs which perform no nuclear safety function, and whose continued function is not required, but whose structural failure or interaction could degrade the functioning of a safety class SSC to an unacceptable safety level. Seismic Category II SSCs shall be specified, designed and/or analyzed so that the safe shutdown earthquake will not cause unacceptable structural interaction or failure."

APP-GW-GAP-420, "Engineering and Design Coordination Report", Revision 11, Section 5.8 stated "The Technical Justification, Design Inputs reviewed, and Design

Outputs changed shall be recorded in the disposition of the E&DCR and shall explain in detail why the design change is necessary and acceptable." The inspectors reviewed APP-GW-GEF-2640 and noted the required technical justification for the seismic design input for the Roxtec EMC glands was missing from the engineering package.

The licensee issued CR 50113095, CR 50112869, CAP-IR-2021-11884, Engineering Service Request (ESR) 50112865 and Technical Evaluation (TE) 60031294 to address the missing seismic input. As a result, the licensee issued two new E&DCRs (APP-GW-GEF-519 and APP-GW-GEF-529) to supplement APP-GW-GEF-2640, documenting the technical design input details for seismic qualification.

Analysis

The licensee's failure to evaluate applicable design inputs in the design package (E&DCR APP-GW-GEF-2640) that installed EMC glands in Class 1E plant electrical enclosures was a PD. Per the guidance in IMC 0613, "Power Reactor Construction Inspection Reports," Appendix B, "Issue Screening," dated November 4, 2020, the inspectors determined traditional enforcement or enforcement discretion would not apply to this PD. Per further guidance in IMC 0613, Appendix E, "Examples of Minor Construction Issues," the inspectors determined this PD was of more than minor safety significance, and thus a finding, because it represented a substantive non-conservative error in a design document that defines the technical requirements for plant Class 1E electrical enclosures and justification was required by the licensee to ensure the as-built seismic Category II, Class D component did not adversely affect the ability of plant Class 1E electrical enclosures to perform their intended safety function during a seismic event. The inspectors also reviewed the Appendix E examples of minor issues and found two similar examples of a "not minor if" PD. Examples 1 and 13 were similar, in that the inspectors identified the licensee failed to implement technical and quality requirements leaving the Class 1E electrical enclosures unacceptable or indeterminate without subsequent substantive engineering justification. The inspectors determined the finding was not material to an ITAAC and therefore it was a construction finding because the EMC gland seismic qualifications did not impact the seismic qualifications and acceptance criteria of ITAAC related 1E panels in which the glands were installed.

The inspectors determined the finding was associated with the Design/Engineering cornerstone of the Construction Reactor Safety strategic performance area. This finding was not associated with a security program; it was not associated with an IMC 2504 operational/construction program; it was not associated with a specific ITAAC and was not material to the ITAAC acceptance criteria; and it was not associated with a repetitive, NRC-identified omission of a program critical attribute. In accordance with IMC 2519, "Construction Significance Determination Process," Appendix A, "AP1000 Significance Determination Process," dated October 26, 2020, the inspectors determined this finding was of very low safety significance (Green) because the licensee subsequently revised the design documents to include seismic evaluation and testing results which determined the EMC gland would not affect seismic Category I SSCs during a seismic event and the nonconforming conditions were corrected such that the gland installation was seismically bounded by the tested or analyzed conditions.

The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Change Management 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 licensee's failure to implement a process where managers maintain a clear focus on nuclear safety when implementing the change management process to ensure significant unintended consequences are avoided. [H.3]

Enforcement

UFSAR Section 3.2.2.6, "Equipment Class D," states in part, "when Class D structures, systems, and components are located near a Class A, B, or C structure, system, or component, the requirements for seismic Category II may apply."

UFSAR Section 3.2.1.1.2, "Seismic Category II (C-II)," states in part, "seismic Category II structures, systems, and components are designed so that the safe shutdown earthquake does not cause unacceptable structural failure of or interaction with seismic Category I items." This section also states "pertinent portions of 10 CFR 50, Appendix B apply to the analysis and design of seismic Category II structures, systems, and components. The quality assurance requirements for the analysis and design of seismic Category II structures, systems, and components are performed in accordance with the Westinghouse AP1000 quality plan."

10 CFR 50, Appendix B, Criterion III, "Design Control," states in part, "measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in § 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are 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."

Contrary to the above, on November 2, 2021, the licensee failed to establish measures and include provisions to assure that appropriate quality standards were specified and included in design documents for installation of EMC glands in plant Class 1E electrical enclosures. Specifically, the design documents failed to address and analyze design inputs that were applicable to the installation of seismic Category II, Safety Classification D, EMC glands. As a result, NSR components were installed on SR components without a seismic Category II analysis. The licensee entered this finding into its CAP for evaluation and identification of appropriate corrective actions as CR 50125873. As immediate corrective actions, the licensee issued new E&DCRs APP-GW-GEF-519 and APP-GW-GEF-529 that analyzed, and provided seismic testing results, indicating the seismic input for the EMC glands met the as-built seismic Category II, Class D component and would not adversely affect the ability of plant Class 1E electrical enclosures to perform their intended safety function during a seismic event.

Because this violation was not repetitive or willful, was of very low safety significance (Green), and was entered into the licensee's CAP as CR 50125873, this violation is being treated as an NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy (**NCV 05200025/2022001-03, Failure to Evaluate Applicable Design Inputs for EMC Glands**). This construction finding is opened and closed in this report.

4. OTHER INSPECTION RESULTS

4OA3 Follow-up of Licensee Reports, URIs, NCVs, and VIOs

.1 (Closed) NCV 05200025/2021005-05, Failure to Qualify EPAs in Accordance with IEEE 317

The inspectors performed a document review of the licensee's corrective actions for NCV 05200025/2021005-05, "Failure to Qualify EPAs in Accordance with IEEE 317," which was documented in NRC Inspection Report 05200025/2021005, 05200026/2021005 (ML21316A057). The review was to determine whether the corrective actions taken by the licensee were sufficient to address the issue and to verify the acceptance criteria for the related ITAAC could be met. The violation was associated with the licensee's failure to consider all significant types of degradation that would have an adverse impact on electrical penetration assembly (EPA) functional capability for seismic and environmental qualification during a design basis accident.

The violation represented an ITAAC finding because it was material to the acceptance criteria of ITAAC 2.2.01.05.i (98), in that, if left uncorrected, the licensee may not have been able to demonstrate the acceptance criteria of the ITAAC was met. The acceptance criteria of this ITAAC requires, in part, that the as-built equipment (including anchorage) is seismically bounded by the tested or analyzed conditions and a report exists that concluded 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.

The inspectors reviewed E&DCR APP-EY01-GEF-051 to verify environmental qualification program changes document the analysis for EPAs.

Regarding EPA qualification, the updated environmental qualification analysis described and justified the as-tested configuration. Specifically, the E&DCR revised the environmental qualification to clarify how the requirements of IEEE 317-1987 and IEEE 344-1987 were met, how excluded components were considered, and why there would be no additional impact from excluded components. The updated environmental qualification analysis concluded seismic loads would not be transferred from the excluded components or external items (e.g., termination box, raceways, external cables) to the EPA through the cable. The E&DCR approved adding the analysis for the as-tested assembly to the following environmental qualification program documents:

- APP-EY01-VBR-001, Revision 4
- APP-EY01-VBR-002, Revision 4
- APP-EY01-VBR-003, Revision 5
- APP-EY01-VBR-004, Revision 5

Regarding EPA as-built configurations, the E&DCR description included the as-tested configuration was intended to be generic since it was performed before the final AP1000 plant design configurations were complete; therefore, analysis was created to allow for the differences in each installation. The inspectors noted IEEE 344-1987 allowed for the use of analysis in seismic qualification. The inspectors also noted the licensee had a methodology in place to analyze the as built configurations, as described in APP EY01-E0C-002, "Methodology for the Determination of Electrical Penetration Assembly (EPA) Weight."

Regarding seismic benchmark acceptance criteria, the licensee provided analysis in the

E&DCR that justified calculating seismic acceleration by applying a static coefficient to previous seismic testing data. Specifically, the actual seismic test ("as tested") performed by the EPA vendor produced an acceleration that exceeded the calculated seismic acceleration. The licensee provided further justification that the calculated seismic acceleration and as-tested seismic acceleration envelope the AP1000 peak acceleration by a significant margin.

Based on the review described above, the inspectors determined the licensee took corrective actions to address the violation and the potential related impacts to the ITAAC have been appropriately addressed such that the acceptance criteria of ITAAC 2.2.01.05.i (98) can be met. NCV 05200025/2021005-05 is closed.

4OA6 Meetings, Including Exit

.1 Exit Meeting.

On April 25, 2022, the NRC 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

R. Beilke, SNC ITAAC Project Manager
M. Brummitt, SNC PI/CAP Project Director
C. Castell, WEC Licensing Engineer
K. Drudy, SNC ITAAC Project Manager
V. Floyd, SNC/Bechtel QC Manager
S. Hand, CB&I Quality Manager – Nuclear
M. Hillis, SNC Security Support Operations Manager
M. Kelley, IEEE 384 ITAAC Project Manager
D. Kettering; SNC Engineering
S. Leighty, SNC Licensing Manager
M. Long, SNC Security Director Vogtle 1-4
N. Patel, SNC Licensing Engineer
L. Pritchett, SNC Licensing Engineer
K. Roberts, SNC ITAAC Manager
G. Scott, SNC Licensing Engineer
M. Yox, SNC Regulatory Affairs Director

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
05200025/2022001-01	NCV	Open/Closed	Failure to Review and Control Process and Quality Standard Deviations on the IDS Battery Racks (Section 1A09)
05200025/2022001-02	NCV	Open/Closed	Failure to Provide Sufficient Information in the ICN for ITAAC 761 (Section 1A10)
05200025/2022001-03	NCV	Open/Closed	Failure to Evaluate Applicable Design Inputs for EMC Glands (Section 1P02)
05200025/2021005-05	NCV	Closed	Failure to Qualify EPAs in Accordance with IEEE 317 (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1A01
Westinghouse Electric Company (WEC) SV3-RCS-S3R-001 “Vogtle Unit 3 Reactor Coolant System (RCS) ASME Section III As-Built Piping System Design Report,” Revision 1
WEC SV3-GW-GEI-100, "AP1000 Preservice Inspection Program Plan for Vogtle Unit 3," Revision 2
WEC APP-RCS-M6-001, "Piping & Instrumentation Diagram (P&ID), Reactor Coolant System, Class 1," Revision 19
WEC APP-RCS-M6-002, "P&ID Reactor Coolant System, Class 1," Revision 21

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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MUR-001 installed for the Southern Nuclear Operating Company, 2/13/2022
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-007 installed for WEC, 02/08/2021
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-008 installed for WEC, 04/26/2021
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-012 installed for WEC, 09/07/2020
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-020 installed for WEC, 02/16/2021
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-022 installed for WEC, 03/01/2021
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-023 installed for WEC, 10/26/2020
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-MP01A installed for WEC, 01/20/2021
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-MP01B installed for WEC, 01/20/2021
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-MP02A installed for WEC, 01/20/2021
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-MP02B installed for WEC, 01/20/2021
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 Reactor Cooling System by Certificate Holder's Serial No. SV3-RCS-MJR-Q601 installed for WEC, 11/18/2020

WEC SV3-MV01-VQQ-001, "Doosan Heavy Industries & Construction Co. Ltd. Quality Verification Documentation for Vogtle #3 Reactor Vessel Assembly," Serial-No. SV3-RCS-MV-01, Revision 5
WEC "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 Plant Vogtle Unit 3 Certificate Holders Serial No. SV3-RCS-MV-01, 12/13/2012
APP-GW-P0C-003, “Bounding Analysis Curves for AP1000 Leak Before Break,” Revision 5
APP-RCS-PLR-010, “AP1000 Piping Analysis Report for Pressurizer Safety and Automatic Depressurization System PSADS,” Revision 10
APP-RCS-PLR-040, “AP1000 Piping Analysis Report for Pressurizer Surge Line,” Revision 4
APP-RCS-PLR-050, “AP1000 Reactor Coolant Loop (RCL): Piping Qualification,” Revision 5
SV3-RCS-P0R-0102, “AP1000 Piping for APP-RCS-PLR-010 - Vogtle Unit 3 ASME III As-Built Design Report,” Revision 1
SV3-RCS-P0R-0402, “AP1000 Piping for APP-RCS-PLR-040 - Vogtle Unit 3 ASME III As-Built Design Report,“ Revision 1
SV3-RCS-P0R-0502, “AP1000 Piping for APP-RCS-PLR-050 - Vogtle Unit 3 ASME III As-Built Design Report,” Revision 1

Section 1A02
Westinghouse Electric Company (WEC) SV3-RCS-S3R-001, “Vogtle Unit 3 Reactor Coolant System (RCS) ASME Section III As-Built Piping System Design Report,” Revision 1
WEC SV3-MV01-Z0R-101, "Southern Nuclear Vogtle Unit 3 As-Built AP1000 Reactor Vessel ASME Code Design Report," Revision 3
WEC SV3-MV11-S3R-001, "SV3 Control Rod Drive Mechanism (CRDM) As-Built Reconciliation Report." Revision 1
WEC APP-MV11-Z0-001, "Design Specification for AP1000 Control Rod Drive Mechanism (CRDM) for System: RXS," Revision 8
WEC SV3-GW-GEI-100, AP1000 Preservice Inspection Program Plan for Vogtle Unit 3, Revision 2
WEC "Form N-2 Certificate Holder's Data Report for Identical Nuclear Parts and Appurtenances, As Required by the Provisions of the ASME Code, Section III (Not to Exceed One Day's Production" for Latch Housing S/N 1400 (NPT S/N 4409) attached to Nozzle S/N 204 (NPT S/N 4410) by welding, Manufactured and Certified by WEC at LCC Newington Operations, 09/21/2012
WEC "Form N-2 Certificate Holder's Data Report for Identical Nuclear Parts and Appurtenances, As Required by the Provisions of the ASME Code, Section III (Not to Exceed One Day's Production" for Latch Housing S/N 1401 (NPT S/N 4411) attached to Nozzle S/N 205 (NPT S/N 4412) by welding, Manufactured and Certified by WEC at LCC Newington Operations, 09/21/2012
WEC "Form N-2 Certificate Holder's Data Report for Identical Nuclear Parts and Appurtenances, As Required by the Provisions of the ASME Code, Section III (Not to Exceed One Day's Production" for Latch Housing S/N 1434 (NPT S/N 4483) attached to Nozzle S/N 240 (NPT S/N 4484) by welding, Manufactured and Certified by WEC at LCC Newington Operations, 09/21/2012
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 Reactor Coolant System by Certificate Holder's Serial No. SV3-RCS-MUR-001 installed for the Southern Nuclear Operating Company, 2/13/2022

WEC SV3-MV01-VQQ-001, "Doosan Heavy Industries & Construction Co. Ltd. Quality Verification Documentation for Vogtle #3 Reactor Vessel Assembly," Serial-No. SV3-RCS-MV-01, Revision 5
WEC "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 Plant Vogtle Unit 3 Certificate Holders Serial No. SV3-RCS-MV-01, 12/13/2012

Section 1A03
2.1.03.06.1-U3-EQRR-PCD003, “Reactor System (RXS) EQ Reconciliation Report (EQRR),” Revision 0
SV3-JE92-VBR-001, “Equipment Qualification Summary Report for Nuclear Instrumentation System Detectors for Use in the AP1000 Plant,” Revision 3
SV3-JE92-VBR-002, “Equipment Qualification Data Package for Nuclear Instrumentation System Detectors for Use in the AP1000 Plant,” Revision 3
SV3-JE92-Z0-001, “AP1000 Excore Source Range Detector Design Specification,” Revision 6
SV3-JE92-Z0-002, “AP1000 Excore Intermediate Range Detector Design Specification,” Revision 8
SV3-JE92-Z0-003, “AP1000 Excore Power Range Detector Design Specification,” Revision 6
SV3-RXS-M6-001, “Piping and Instrumentation Diagram Reactor System,” Revision 0
SV3-1110-J2-001, “Containment Building Instrument and Device Location Plan EL. 71’-6” Areas 1 & 2,” Revision 2
SV3-JE92-J0M-001, “AP1000 Protection and Safety Monitoring System Nuclear Instrumentation System Source Range Detector Technical Manual,” Revision 3
SV3-JE92-J0M-002, “AP1000 Protection and Safety Monitoring System Nuclear Instrumentation System Intermediate Range Detector Technical Manual,” Revision 3
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Section 1A04
2.1.03.06.i-U3-EQRR-PCD-001, “Reactor System (RXS) EQ Reconciliation Report (EQRR),” Revision 1
SV3-MI01-Z0-101, “AP1000 Reactor Vessel Internals Design Specification,” Revision 1
SV3-MI01-S3R-001, “Southern Vogtle Unit 3 Reactor Vessel Internals Summary Design Report,” Revision 1
SV3-MI01-VFX-001, “AP1000 Reactor Vessel Internals Released Document List,” Revision 9
SV3-MI01-VFX-003, “AP1000 Reactor Vessel Internals Supplemental Released Document List for Vogtle 3 and 4,” Revision 2
APP-GW-M1-001, “Mechanical Design Criteria,” Revision 0
APP-MI01-N2C-001, “AP1000 Reactor Internals Neutron Shield Panel Stress Evaluation,” Revision. 7
APP-MI01-GEF-425, “Correction to Neutron Shield Panel Capscrew High-Cycle Fatigue Evaluation,” Revision 0
SV3-MI01-GNR-114, “Alignment Plate (SN 3 225 DEG and SN 5 314 DEG) Hardfaced Surface Excavation Deviations,” Revision 0
SV3-MI01-GNR-213, “Deviation Notice for Exceeding Cobalt Content on Neutron Panel Shim,” Revision 0
SV3-MI01-GNR-000045, “Unit 3 Upper Internals Interface Keyways Damage (ESR 50108158) Revision 0
CR 50124982, “NRC Inspection Review of 2.1.03.06.i U3-EQRR-PDC001”
CAR 8006474, “Unsatisfactory Levelness of Reactor Vessel Upper Internals”
ESR 50107475, “Recurring Damage to Reactor Vessel Internals,” Revision 0

ESR 50108158, “Raised Metal at Interfacing UI Keyways,” Revision 0

Section 1A05
2.2.02.05a.i-U3-EQRR-PCD004, “Passive Containment Cooling System EQ Reconciliation Report,” Revision 0
2.2.02.05a.i-U3-EQRR-PCD005, “Passive Containment Cooling System EQ Reconciliation Report,” Revision 0
2.2.02.05a.i-U3-EQRR-PCD006, “Passive Containment Cooling System EQ Reconciliation Report,” Revision 0
2.2.02.05a.i-U3-EQRR-PCD007, “Passive Containment Cooling System EQ Reconciliation Report,” Revision 0
2.2.02.05a.i-U3-EQRR-PCD008, “Passive Containment Cooling System EQ Reconciliation Report;” Revision 0
2.2.02.05a.i-U3-EQRR-PCD009, “Passive Containment Cooling System EQ Reconciliation Report,” Revision 0
SV3-JE52-VBR-001, “Equipment Qualification Summary Report for Model DTN2070, Pressure and Differential Pressure Transmitter for Use in the AP1000 Plant,” Revision 1
SV3-JE52-VBR-002, “Equipment Qualification Data Package for Model DTN2070, Pressure and Differential Pressure Transmitter for Use in the AP1000 Plant,” Revision 1
SV3-JE52-VBR-005, “Equipment Qualification Summary Report for NLI Differential Pressure Transmitters for Use in the AP1000 Plant,” Revision 1
SV3-JE52-VBR-006, “Equipment Qualification Data Package for NLI Differential Pressure Transmitters for Use in the AP1000 Plant,” Revision 1
SV3-PV01-VBR-009, “Equipment Qualification Summary Report for Flowserve Flex Wedge Gate Valves for Use in the AP1000 Plant,” Revision 0
SV3-PV01-VBR-010, “Equipment Qualification Data Report for Flowserve Flex Wedge Gate Valves for Use in the AP1000 Plant,” Revision 0
SV3-PV01-VBR-011, “Equipment Qualification Summary Report for Flowserve Flex Wedge Gate Valves with Limitorque Motor Operators for Use in the AP1000 Plant,” Revision 1
SV3-PV01-VBR-012, “Equipment Qualification Data Package for Flowserve Flex Wedge Gate Valves with Limitorque Motor Operators for Use in the AP1000 Plant,” Revision 1
SV3-PCS-M6-003, “Piping and Instrumentation Diagram Passive Containment Cooling System,” Revision 3
SV3-JE52-VIY-101, “Vogtle AP1000 Class 1E Pressure and Differential Pressure Transmitter Design Configuration Drawing–Supplier A,” Revision 0
SV3-MT05-MTW-1115629, “U3-CH73; INSTALL PCS Distribution Bucket–SV3-PCS-MT-03,” Revision 0
SV3-CH73-GNR-000018, “Review Previous N&D SV3-CH73-GNR-000017 with 1/2-inch Shim Plate Instead of 3/8-inch (ESR 50094596),” Revision 0
SV3-CH73-GNR-000019, “Longer Bolts used for Bucket Assembly Installation (ESR 50098549),” Revision 0
E&DCR No. APP-MT05-GEF-006, “CH73 PCS Bucket Modifications,” Revision 0
E&DCR No. APP-MT05-GEF-013, “Modifications to the Weir Distribution Bucket,” Revision 0
Work Package SV3-MT05-M0W-1002903, “Unit 3 Outfit (CV) Top Head- Stainless Weir System–Install Screens, Upper and Lower Distribution Boxes & Trough,” Revision 0
Condition Report 50131787, “Loose Hex Nut on SV3-PCS-JE-FT001, Capillary Support Tube Clamp,” 3/24/22

Section 1A06
SV3-PCS-ITR-801138, “Unit 3 Passive Containment Cooling System (PCS) Inspection Coatings: ITAAC 2.2.02.07b.i (Item 7.b ii and iii),” Revision 0

APP-GW-G0-604, “Application of Protective Coatings to Systems, Structures and Components for the AP1000 Reactor Plant,” Revision 9

Section 1A07
SV3-PXS-S3R-001 “Vogtle Unit 3 Passive Core Cooling System (PXS) ASME Section III As-Built Piping System Design Report”, Revision 2
SV3-GW-GEI-100, AP1000 Preservice Inspection Program Plan for Vogtle Unit 3, Revision 2
APP-PXS-M6-001, “Piping & Instrumentation Diagram (P&ID), Passive Core Cooling System, Class 1,” Revision 15
APP-PXS-M6-002, “P&ID, Passive Core Cooling System, Class 1,” Revision 19
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 Passive Core Cooling System by Certificate Holder's Serial No. SV3-PXS-MUR-001 installed for the Southern Nuclear Operating Company, 02/18/2022
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. SV3-PXS-MJR-002 installed for WEC, 02/26/2021
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. SV3-PXS-MJR-003 installed for WEC, 04/15/2020
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. SV3-PXS-MJR-005 installed for WEC, 02/04/2021
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. SV3-PXS-MJR-006 installed for WEC, 04/20/2021
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. SV3-PXS-MJR-021 installed for WEC, 04/20/2021
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. SV3-PXS-MJR-029 installed for WEC, 04/23/2020
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. SV3-PXS-MJR-030 installed for WEC, 05/16/2020
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. SV3-PXS-MJR-003001 installed for WEC, 08/04/2020
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. SV3-PXS-MJR-004001 installed for WEC, 08/25/2020

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. SV3-PXS-MJR-MT01B installed for WEC, 06/04/2020
APP-GW-P0C-003, “Bounding Analysis Curves for AP1000 Leak Before Break,” Revision 5
APP-PXS-PLR-010, “AP1000 Direct Vessel Injection Line A (APP-PXS-PLR-010) Piping Stress Analysis Report,” Revision 6
APP-PXS-PLR-030, “Piping Analysis Report for Loop 1 – Automatic Depressurization System 4th Stage West Compartment and Passive Residual Heat Removal Supply,” Revision 5
SV3-PXS-P0R-0102, “AP1000 Piping for APP-PXS-PLR-010 - Vogtle Unit 3 ASME III As-Built Design Report,” Revision 1
SV3-PXS-P0R-0302, “AP1000 Piping for APP-PXS-PLR-030 – Vogtle Unit 3 ASME III As-Built Design Report,” Revision 1

Section 1A08
2.5.02.02.i-U3-EQRR-PCD001, “Protection and Safety Monitoring System (PMS) EQ Reconciliation Report (EQRR),” Revision 0
SV3-PMS-VBR-002, “Equipment Qualification Data Package for PMS Cabinets and NIS Auxiliary Panels for Use in the AP1000 Plant,” Revision 10
SV3-PMS-VBR-003, “Equipment Qualification Summary Report for PMS Cabinets and NIS Auxiliary Panels for Use in the AP1000 Plant,” Revision 11
SV3-JW03-VBR-001, “Equipment Qualification Summary for the Main Control Room/Remote Shutdown Room Transfer Panel for Use in the AP1000 Plant,” Revision 6
SV3-JW03-VBR-002, “Equipment Qualification Data Package for the Main Control Room/Remote Shutdown Room Transfer Panel,” Revision 5
SV3-JW03-VPR-001, “Environmental and Seismic Test Report for the AP1000 Main Control Room/Remote Shutdown Room Transfer Panel,” Revision 0
SV3-OCS-VBR-006, “Equipment Qualification Summary for PDSP, SDSP, and RO Consoles Line-up for Use in the AP1000 Plant,” Revision 4
SV3-OCS-VBR-008, “Equipment Qualification Data Package for PDSP, SDSP, and RO Consoles Line-up for Use in the AP1000 Plant,” Revision 2
SV3-PMS-J4-020, “AP1000 System Design Specification for the Protection and Monitoring System,” Revision 18
SV3-JC01-Z0-001, “AP1000 Design Specification for Control Room Consoles and Panels,” Revision 2
SV3-PMS-JD-001, “AP1000 Standard PMS Pentair Cabinet Outline and Installation,” Revision 3
SV3-OCS-J8Y-002, “AP1000 Operation and Control Centers System Primary Safety Panel Drawing Package,” Revision 2
SV3-OCS-J8Y-014, “AP1000 Operation and Control Centers Main Control Room/Remote Shutdown Room Transfer Panel Drawing Package,” Revision 3
SV3-JC01-V8-005, “AP1000 Main Control Area OCS Installation Consoles and Panels,” Revision 1
APP-PMS-GEF-850013, “Direct Mounting for PMS System Preamp Cabinets (ESR 50036353),” Revision 0
SV3-JC01-GNR-000002, “MCR Console Bases–Misalignment (ESR 50032085),” Revision 0;
SV3-PMS-JWW-1045614, “Work Package–U3-Auxillary Install–Label PMS and Support–Room 12412, EL. 117’6,” Revision 0
SV3-PLS-JCW-1044709, “Work Package–U3–AUX BLDG.-Install MCR/RSR Transfer Panel SV3-OCS-JW00101,” Revision 0
SV3-OCS-JCW-1029866, “Work Package–U3-AUX–Perform I&C FCN SV3-GW-GCW-0086 For OCS Panel OCS-JC-10,” Revision 0

SV3-OCS-JW-001, “EQ Verification Checklist for Protection and Safety Monitoring Equipment,” Revision 0
SV3-OCS-JC-10, “EQ Verification Checklist for Protection and Safety Monitoring Equipment,” Revision 0
SV3-JY50-VBR-003, “Equipment Qualification Data Package for the Reactor Trip Switchgear for Use in the AP1000 Plant,” Revision 4
SV3-JY50-VBR-002, “Equipment Qualification Summary Report for the Reactor Trip Switchgear for Use in the AP1000 Plant,” Revision 5
SV3-JY50-J0M-001, “AP1000 Reactor Trip Switchgear Technical Manual,” Revision 2
SV3-PLS-JCW-1044709, “Attachment D–Torque Value Record for SV3-OCS-JW-001,” 12/13/2019
SV3-OCS-JCW-1042785, “Attachment D–Torque Value Record for SV3-OCS-JC-11,” 11/4/2019
SV3-PMS-GNR-000046, “PMS Cabinets Clearance Issues (ESR 50130119),” Revision 0
APP-PMS-J0M-003, “AP1000 Protection and Safety Monitoring System – Technical Manual,” Revision 3
EQ Verification Checklist, Tag No. SV3-OCS-JW-001, dated 7/30/2020
ND-RA-001-014, “EQ ITAAC As-Built Walkdown Guideline,” Version 3.1
ND-RA-001-016, “EQ ITAAC As-built Installation Documentation Guideline,” Version 1.0
SV3-1232-GNR-000039, “Conduits to SV3-OCS-JW-001 Not Installed per Design Drawings (ESR 50111343),” Revision 0
CR 50129655, “Revise Procedure B-PMS-MEM-001,” dated 3/11/2022
CR 50129572, “MCR/RSR transfer panel not meeting seismic EQ requirements,” dated 3/11/2022
CR 50129677, “Non-1E conduit installed in the 3" seismic gap of PMS cabinets,” dated 3/11/2022

Section 1A09
Work Order Packages:
SV3-1212-DBW-1001979
SV3-1212-DBW-1003989
SV3-1212-DBW-1004270
SV3-1211-DBW-1003998
SV3-1211-DBW-1002024
SV3-1222-DBW-1002147
SV3-1221-DBW-1001981
SV3-IDSS-DBW-1120364
SV3-IDSB-DBW-1122018
SV3-IDS-DBW-1148485

Specifications:
SV3-G1-V8-001, AP1000 Electrical Installation Specification, Revision 7
APP-DB01-Z0-001, Design Specification for Class 1E 250 VDC Batteries and Racks, Revision 9

Procedures:
ND-AD-002-025, Issue Identification and Condition Report Screening, Version 6.0
ND-AD-006-001, Cause Analysis and Corrective Action Guideline, Version 8
SV3-DB01-V8M-001, AP1000 Class 1E 250 VDC Battery Assembly Drawings: Instruction for Assembling 1E Racks, Revision 0

Design Documents:

SV3-DB01-VBR-001, Equipment Qualification Summary Report for Class 1E 250 VDC Batteries for Use in the AP1000 Plant, Revision 2
APP-DB01-VBR-002, Equipment Qualification Data Package for Class 1E 250 VDC Batteries for Use in the AP1000 Plant, Revision 0

Corrective Action Report (CARs):
CAR 80003772, U3 Battery Rack Installation and Inspections Unsat, dated 11/25/2020

Condition Reports (CRs):
CR 50095783
CR 50118295
CR 50054000
CR 50096902
CR 50130395

Engineering Evaluation:
SVP-SV0-006493, Battery Rack Loose Cell Clamp Assembly Structural Safety Evaluation, dated January 18, 2022
SVP-SV0-006099, Battery Rack Nonconformance Structural Safety Evaluation – Updated Based on Completed Extent of Condition Work, dated November 17, 2020

Nonconformance & Disposition Report (N&D):
SV3-DB01-GNR-000018, “IDS Battery Racks - Battery Cell Through Rod Clamps (ESR 50125331),” Revision 0

Section 1A10
ND-RA-001-006, “Development and Approval of ITAAC Submittals (ICN, UIN, PCN),” Revision 9
SV3-1208-GCR-001, “Vogtle Unit #3 As-Built Summary Report: Shield Building,” Revision 1
SV3-1208-GCR-001, “Vogtle Unit #3 As-Built Summary Report: Shield Building,” Revision 2
N&D SV3-CC01-GNR-000451, “Unit 3 RC02 Post-Placement Concrete As-built Dimensions,” Revision 0
N&D SV3-CC01-GNR-000686, “U3 RC02 Post-Placement Concrete As-Built Dimensions (ESR 50119336),” Revision 0

Section 1A11
SV3-1100-ITR-800786, “Unit 3 Inspection Report: ITAAC 3.300.05c Accumulator Rooms and CVS Room Flood Prevention,” Revision 1
APP-1124-ER-102, “Conduit Layout Containment Building 11206 PXS-A Room,” Revision 12
APP-1030-AD-001, “Doors, Windows, Hatches Numbering/Classification Nuclear Island Plan at EL 100’-0”/107-2,” Revision 4
SV3-ML05-V2-206, “AP1000 Penetration 11209-ML-I18 Tubing Penetration Type SL32 Details,” Revision 0
SV3-ML05-V2-207, “AP1000 Penetration 11202-ML-I06 Tubing Penetration Type SL32 Details,” Revision 1
SV3-AB01-AB-003, “Blockouts and Barriers (Penetrations, Seals and Fire Stops) Details,” Revision 4
SV3-CA37-S5-033, “Containment Building Area 4 CA37 Floor EL.107’-2” Penetration Attachment Details VII,” Revision 1
SV3-AB01-Z0X-001, “Penetration Seal Schedule (PSS),” Revision 5
SV3-ML05-MLX-002, “ML05 Penetration Drawing and Calculation Index,” Revision 2

CR 50125503, “Need Clarification of Which Penetration Seals Details Have Been Replaced by New Details”
ESR 50126100, “Need Clarification of Which Penetration Seals Details Have Been Replaced by New Details,” February 11, 2022

Section 1A12
Room-11104 Reactor Coolant Drain Tank
APP-1110-ER-101, "Conduit Layout Drawing Containment Building 11104 RCDT Room EL 71'-6" - 84'-6" X and Z Conduits," Revision 12
APP-1110-ER-801, "Conduit Layout Sections Drawing Containment Building 11104 RCDT Room EL 71'-6" - 84'-6" X and Z Conduits," Revision 8
SV3-1110-ERW-EL1532, "U3 -CONTAINMENT CONDUIT SUPPORTS ROOM 11104 AND EL 71'6" TO 84'-6"," Revision 0
SV3-1110-SHW-800002, "U3 CONTAINMENT BLDG, FAB & INSTALL SUPPORTS ASSOCIATED WITH LIGHTING FIXTURES, RECEPTACLES, ETC., ROOM 11104, EL 66' 6", AREAS 2 & 3, PKG 01," Revision 0
SV3-1112-SHW-1132655, "U3 - CT - FABRICATE / INSTALL / MODIFY / DELETE ELECTRICAL SUPPORTS IAW ESR 50076590 - EL 71'-6" /84'-6" - AREA 2 [WLS-1]," Revision 0
SV3-1112-SHW-1139130, "U3 CT - FAB / INSTALL ADDED ELECTRICAL SUPPORT IN CONTAINMENT, EL. 71' 6", ROOM 11104, AREA 2," Revision 0
SV3-1112-SHW-1148463, "U3 CT, REMOVE TYPICAL SUPPORTS and FAB / INSTALL NEW SUPPORT - Room 11104 - AREA 2. EDCR SV3-1112-GEF-000001," Revision 0
APP-JE61-V0-002, "AP1000 Class 1E Magnetic Level Sensors Containment Flood-Up Envelope Dimensions," Revision 3
ESR 50116821
APP-JE61-J0M-010, "AP1000 Class 1E Containment Floodup Level Transmitters - Technical Manual," Revision 5
CR 50095595
CR 50112754
CR 50094676

Room-11105 Reactor Vessel Cavity
SV3-1100-ER-200, "Containment Building EX Core Instrumentation Embedded Conduit Plan, Sections and Details," Revision 7
SV3-1100-ERW-1096785, "U3 - CT INSTALL- LABEL 1E 4" 304 SS CONDUIT - ELEV. 71' 6" - ROOM 11105 (REACTOR VESSEL CAVITY)," Revision 0
SV3-1100-ERW-EL1589, "Install 6" Ex Core Embedded Conduit and Associated Construction Aids," Revision 0
SV3-RXS-EWW-1118405, "U3 NI – TERMINATE NIC SOURCE RANGE NEUTRON DETECTOR SYSTEM CABLES," Revision 0
SV3-RXS-EWW-1118406, "U3 NI – TERMINATE NIC INTERMEDIATE RANGE NEUTRON DETECTOR SYSTEM CABLES," Revision 0
CR 50087519
CR 50090201
CR 50102652

Room 11301 - Steam Generator 1 Lower Manway Area
SV3-1100-SHW-1127968, “U3-CT-FAB-INSTALL SCHEDULED CONDUIT SUPPORTS - EL 107'-2" / 118' -6" -ROOMS 11301 AND 11401 -AREA 1 SGI,” Revision 0
SV3-1130-ER-101, “Conduit Layout Containment Building SG West Compartment EL 107’-2” –

116’-0”,” Revision 10
SV3-1130-ER-520, “Containment Building Room 11301 SG1 EL 107’-2” Conduit Supports Plan View (Sheet 1),” Revision 2
SV3-1130-ER-521, “Containment Building Room 11301 SG1 EL 107’-2” Conduit Supports Plan View (Sheet 2),” Revision 2
SV3-1131-EJW-1003997, “U3 - CT - INSTALL AND LABEL SAFETY CLASS 1E JUNCTION BOXES AND SUPPORTS - ELEV. 107' 2" -Room 11301 - Area 1,” Revision 0
SV3-1131-EJW-1004001, “U3 - CT FABRICATE/ INSTALL SUPPORTS AND CLASS NON-IE JUNCTION BOX - ELEV. 107' 2" - Room 11301 - Area 1,” Revision 0
SV3-1131-ERW-1020413, “3 - CT - Install and Label 1E Conduit - EL 107'2 – Room 11301 – Area 1,” Revision 0
SV3-1131-SHW-1012084, “3 - CT - Install Scheduled Conduit Supports - EL 107'2" Room 11301 - Area 1,” Revision 0
SV3-RCS-EJW-1053380, “U3 -CT -INSTALL -LABEL RCS NON -1E JUNCTION BOXES AND SUPPORTS, CONTAINMENT BUILDING EL 107-6", 116'-0"AREA 1 ROOM 11301,” Revision 0
SV3-RCS-EJW-1098923, “U3 - CT - INSTALL & LABEL NON -1E RCS JUNCTION BOXES & SUPPORTS, EL 107'-2", AREAS 2 & 3, ROOMS 11301 & 11302,” Revision 0
SV3-VCS-EJW-1031937, “U3 - CT INSTALL- LABEL NON-1E VCS JUNCTION BOXES AND SUPPORTS, ELEV. 99' 0 " TO 135' 3" ROOMS 11209, 11301, 11302, AREAS 1,2,4,” Revision 0

Room 11304 - Steam Generator 1 Access Room
SV3-1132-ER-104, “Conduit Layout Containment Building Area 2 EL 107’-2” – 118’-6”,” Revision 10
SV3-1132-SHW-1013894, “U3- CT, FABRICATE / INSTALL SCHEDULED CONDUIT SUPPORTS, EL 105, AREA 2, ROOM 11304, 11303,” Revision 0
SV3-1132-SHW-800004, “U3 Fabricate Install Scheduled Conduit Supports EL 107'2" Area 2 Containment PK 003,” Revision 0
SV3-CVS-EWW-1046116, “U3 CT TERMINATE SYS CVS-1E CABLES IN SV3-CVS-EJ-PLV084, SV3-CVS-EJ-PLV084-1 AND ASSOCIATED EQP,” Revision 0
SV3-CVS-EWW-1046118, “U3 CT TERMINATE / INSTALL VENDOR PIGTAILS, SYS CVS-1E CABLES IN SV3-CVS-EJ-PLV084, SV3-CVS-EJ-PLV084-1 AND ASSOCIATED EQUIPMENT,” Revision 0

Section 1A13
Room 12154 - Sump Equipment Room
SV3-1214-SHW-800007, “3 - AUX - INSTALL SCHEDULED CONDUIT SUPPORTS -EL 66'6" - ROOM 12152 and 12154 - AREA 4,” Revision 0
SV3-WLS-EJW-1033876, “U3 AUX INSTALL JUNCTION BOXES (SV3-WLS-EJ-LT400A, LT400B) IN AUXILIARY BUILDING, EL. 66' 6", ROOM 12154, AREA 4,” Revision 0
SV3-WLS-EWW-1136292, “U3 AUXILIARY, DE -TERM, REWORK AND RETERM WLS CABLES AT SV3-WLS-JE-LT400A & SV3-WLS-JE-LT400B, ROOM 12154, ELEV 66'-6",” Revision 0
SV3-WRS-EJW-1033903, “U3 AUX INSTALL JUNCTION BOX (SV3-WRS-EJ-LE001) EL. 66' 6" ROOM 12154, AREA 4,” Revision 0
SV3-1214-ER-101, “Auxiliary Building Area 4 Conduit Arrangement Plan at Elevation 66' 6",” Revision 12
SV3-1214-ER-102, “Auxiliary Building Area 4 Conduit Arrangement Plan at Elevation 66' 6" Sections and Details,” Revision 9
SV3-1214-ERW-1018816, “Attachment B — Raceway and Accessories Inspection Record,” dated 3/2/2022

SV3-PMS-EWW-1057583, “U3 AUX TERMINATE PMS-1 CABLES IN SV3-PMS-JD-BCCC01, SV3-PMS-JD-BCCB01, AND ASSOCIATED EQP,” Revision 3
CR 50070956
CR 50109496
CR 50110630
CR 50113168
CR 50121232
CR 70000658
CR 70000665
CR 70001356
CR 70001492
CR 70001532
TE 60033120
TE 60035261

Room 12244 - Lower Annulus Valve Area
SV3-1221-SHW-800029, “U3 AUX BLDG, FAB & INSTALL UNSCHEDULED LIGHTING SUPPORTS ROOM 12244, EL 82' 6", AREA 1,” Revision 0
SV3-1227-ERW-860442, “INSTALL DESIGN ROUTED CABLE TRAY & CABLE TRAY SUPPORTS IN SHIELD ANNULUS TUNNEL. 82'-6" LEVEL,” Revision 0
SV3-1227-ERW-860443, “INSTALL DESIGN ROUTED SAFETY RELATED CONDUIT BOXES & CONDUIT SUPPORTS IN SHIELD ANNULUS TUNNEL, 82,” Revision 0
SV3-1227-ERW-1005635, “U3- Aux Install and Label Class 1 E Conduits - Elev. 82' 6" -Room 12244 - Area 7,” Revision 0
SV3-CVS-EJW-1034213, “U3 - AUX INSTALL- LABEL CVS JUNCTION BOXES AND SUPPORTS- ELEV. 82'-6"- ROOM 12244- AREA 7,” Revision 0
SV3-WLS-EJW-1033073, “U3- AUX INSTALL- LABEL WLS JUNCTION BOXES AND SUPPORTS- ELEV. 82' 6"- ROOM 12244- AREA 7,” Revision 0
SV3-1227-ER-101, “Auxiliary Building Area 7 Lower Annulus Conduit Arrangement Plan at Elevation 82’-6”,” Revision 11
SV3-1227-ER-102, “Auxiliary Building Area 7 Lower Annulus Conduit Arrangement Plan at Elevation 82’-6” Sections and Details,” Revision 8
SV3-CVS-EWW-1045642, “Attachment A — Cable Installation Inspection Record,” dated 3/2/2022
SV3-PXS-EWW-1045413, “Attachment B — Raceway and Accessories Inspection Record,” dated 11/10/2021
CR 50070185
CR 50070189
CR 50075414
CR 50087505
CR 50103985
CR 50108462
CR 50108585
CR 50113675
CR 50121478
TE 60019171
TE 60023816
TE 60026112
TE 60033501
TE 60034444

Room 12354 - Mid Annulus Access Room
SV3-1234-SHW-1010621, “U3 - AUX - INSTALL CONDUIT SUPPORTS RM 12354, EL 100'-0", AREA 4,” Revision 0
SV3-1234-SHW-800001, “U3 FABRICATE RACEWAY SUPPORTS AUX BLDG, AREA 4, ELEV. 100'-0" ROOM 12354 & 12351,” Revision 0
SV3-1234-ER-001, “Auxiliary Building Area 4 Cable Tray Arrangement Plan at Elevation 100’-0”,” Revision 6
SV3-1234-ER-002, “Auxiliary Building Area 4 Class 1E Conduit Arrangement Plan at Elevation 100’-0”,” Revision 8

Room 12365 – Waste Monitor Tank Room B
SV3-1236-EJW-800000, “U3 FAB / INSTALL NON 1E JB, AUX BLD, RM 12365 AREA 6 EL 82'6",” Revision 0
SV3-1236-EJW-800001, “U3 FAB AND INSTALL TWO SR JB'S AND SUPPORTS, AUX BLDG, AREA 6, EL 92'6" RM 12365,” Revision 0
SV3-1236-ELW-800000, “U3 AUX BLDG, INSTALL CONDUIT, LIGHTING FIXTURES, RECEPTACLES, ETC., ROOM 12365, EL 92'-6" & 107--2", AREA 6,” Revision 0
SV3-SFS-EWW-1050427, “U3 AUX INSTALL AND CONNECT VENDOR PIGTAIL CABLES FOR TRANSMITTERS SV3-SFS-JE-LT019A, SV3-SFS-JE-LT019B, & SV3-SFS-JE-LT019C EL 100' 0",” Revision 0
SV3-WLS-EJW-1049772, “U3- AUX INSTALL- LABEL NON 1E JUNCTION BOXES AND SUPPORTS- ELEV. 100' 0"- ROOM 12365- AREA 6,” Revision 0
SV3-CA20-ER-419, “Auxiliary Building Area 6 CA20 Module Conduit Arrangement Plan at Elevation 100’ – 0”,” Revision 8
SV3-PMS-EWW-1057583, “U3 AUX TERMINATE PMS-1 CABLES IN SV3-PMS-JD-BCCC01, SV3-PMS-JD-BCCB01, AND ASSOCIATED EQP,” Revision 3

Section 1A14
Room-11104 Reactor Coolant Drain Tank
APP-1110-ER-101, "Conduit Layout Drawing Containment Building 11104 RCDT Room EL 71'-6" - 84'-6" X and Z Conduits," Revision 12
APP-1110-ER-801, "Conduit Layout Sections Drawing Containment Building 11104 RCDT Room EL 71'-6" - 84'-6" X and Z Conduits," Revision 8
SV3-1110-ERW-EL1532, "U3 -CONTAINMENT CONDUIT SUPPORTS ROOM 11104 AND EL 71'6" TO 84'-6"," Revision 0
SV3-1110-SHW-800002, "U3 CONTAINMENT BLDG, FAB & INSTALL SUPPORTS ASSOCIATED WITH LIGHTING FIXTURES, RECEPTACLES, ETC., ROOM 11104, EL 66' 6", AREAS 2 & 3, PKG 01," Revision 0
SV3-1112-SHW-1132655, "U3 - CT - FABRICATE / INSTALL / MODIFY / DELETE ELECTRICAL SUPPORTS ESR 50076590 - EL 71'-6" /84'-6" - AREA 2 [WLS-1]," Revision 0
SV3-1112-SHW-1139130, "U3 CT - FAB / INSTALL ADDED ELECTRICAL SUPPORT IN CONTAINMENT, EL. 71' 6", ROOM 11104, AREA 2," Revision 0
SV3-1112-SHW-1148463, "U3 CT, REMOVE TYPICAL SUPPORTS and FAB / INSTALL NEW SUPPORT - Room 11104 - AREA 2. EDCR SV3-1112-GEF-000001," Revision 0
APP-JE61-V0-002, "AP1000 Class 1E Magnetic Level Sensors Containment Flood-Up Envelope Dimensions," Revision 3
ESR 50116821
APP-JE61-J0M-010, "AP1000 Class 1E Containment Floodup Level Transmitters - Technical Manual," Revision 5
CR 50095595
CR 50112754

CR 50094676

Room-11105 Reactor Vessel Cavity
SV3-1100-ER-200, "Containment Building EX Core Instrumentation Embedded Conduit Plan, Sections and Details," Revision 7
SV3-1100-ERW-1096785, "U3 - CT INSTALL- LABEL 1E 4" 304 SS CONDUIT - ELEV. 71' 6" - ROOM 11105 (REACTOR VESSEL CAVITY)," Revision 0
SV3-1100-ERW-EL1589, "Install 6" Ex Core Embedded Conduit and Associated Construction Aids," Revision 0
SV3-RXS-EWW-1118405, "U3 NI – TERMINATE NIC SOURCE RANGE NEUTRON DETECTOR SYSTEM CABLES," Revision 0
SV3-RXS-EWW-1118406, "U3 NI – TERMINATE NIC INTERMEDIATE RANGE NEUTRON DETECTOR SYSTEM CABLES," Revision 0
CR 50087519
CR 50090201
CR 50102652

Room 11301 - Steam Generator 1 Lower Manway Area
SV3-1100-SHW-1127968, “U3-CT-FAB-INSTALL SCHEDULED CONDUIT SUPPORTS - EL 107'-2" / 118' -6" -ROOMS 11301 AND 11401 -AREA 1 SGI,” Revision 0
SV3-1130-ER-101, “Conduit Layout Containment Building SG West Compartment EL 107’-2” – 116’-0”,” Revision 10
SV3-1130-ER-520, “Containment Building Room 11301 SG1 EL 107’-2” Conduit Supports Plan View (Sheet 1),” Revision 2
SV3-1130-ER-521, “Containment Building Room 11301 SG1 EL 107’-2” Conduit Supports Plan View (Sheet 2),” Revision 2
SV3-1131-EJW-1003997, “U3 - CT - INSTALL AND LABEL SAFETY CLASS 1E JUNCTION BOXES AND SUPPORTS - ELEV. 107' 2" -Room 11301 - Area 1,” Revision 0
SV3-1131-EJW-1004001, “U3 - CT FABRICATE/ INSTALL SUPPORTS AND CLASS NON-IE JUNCTION BOX - ELEV. 107' 2" - Room 11301 - Area 1,” Revision 0
SV3-1131-ERW-1020413, “3 - CT - Install and Label 1E Conduit - EL 107'2 – Room 11301 – Area 1,” Revision 0
SV3-1131-SHW-1012084, “3 - CT - Install Scheduled Conduit Supports - EL 107'2" Room 11301 - Area 1,” Revision 0
SV3-RCS-EJW-1053380, “U3 -CT -INSTALL -LABEL RCS NON -1E JUNCTION BOXES AND SUPPORTS, CONTAINMENT BUILDING EL 107-6", 116'-0"AREA 1 ROOM 11301,” Revision 0
SV3-RCS-EJW-1098923, “U3 - CT - INSTALL & LABEL NON -1E RCS JUNCTION BOXES & SUPPORTS, EL 107'-2", AREAS 2 & 3, ROOMS 11301 & 11302,” Revision 0
SV3-VCS-EJW-1031937, “U3 - CT INSTALL- LABEL NON-1E VCS JUNCTION BOXES AND SUPPORTS, ELEV. 99' 0 " TO 135' 3" ROOMS 11209, 11301, 11302, AREAS 1,2,4,” Revision 0

Room 11304 - Steam Generator 1 Access Room
SV3-1132-ER-104, “Conduit Layout Containment Building Area 2 EL 107’-2” – 118’-6”,” Revision 10
SV3-1132-SHW-1013894, “U3- CT, FABRICATE / INSTALL SCHEDULED CONDUIT SUPPORTS, EL 105, AREA 2, ROOM 11304, 11303,” Revision 0
SV3-1132-SHW-800004, “U3 Fabricate Install Scheduled Conduit Supports EL 107'2" Area 2 Containment PK 003,” Revision 0
SV3-CVS-EWW-1046116, “U3 CT TERMINATE SYS CVS-1E CABLES IN SV3-CVS-EJ-PLV084, SV3-CVS-EJ-PLV084-1 AND ASSOCIATED EQP,” Revision 0

SV3-CVS-EWW-1046118, “U3 CT TERMINATE / INSTALL VENDOR PIGTAILS, SYS CVS-1E CABLES IN SV3-CVS-EJ-PLV084, SV3-CVS-EJ-PLV084-1 AND ASSOCIATED EQUIPMENT,” Revision 0

Section 1A15
Room 12154 - Sump Equipment Room
SV3-1214-SHW-800007, “3 - AUX - INSTALL SCHEDULED CONDUIT SUPPORTS -EL 66'6" - ROOM 12152 and 12154 - AREA 4,” Revision 0
SV3-WLS-EJW-1033876, “U3 AUX INSTALL JUNCTION BOXES (SV3-WLS-EJ-LT400A, LT400B) IN AUXILIARY BUILDING, EL. 66' 6", ROOM 12154, AREA 4,” Revision 0
SV3-WLS-EWW-1136292, “U3 AUXILIARY, DE -TERM, REWORK AND RETERM WLS CABLES AT SV3-WLS-JE-LT400A & SV3-WLS-JE-LT400B, ROOM 12154, ELEV 66'-6",” Revision 0
SV3-WRS-EJW-1033903, “U3 AUX INSTALL JUNCTION BOX (SV3-WRS-EJ-LE001) EL. 66' 6" ROOM 12154, AREA 4,” Revision 0
SV3-1214-ER-101, “Auxiliary Building Area 4 Conduit Arrangement Plan at Elevation 66' 6",” Revision 12
SV3-1214-ER-102, “Auxiliary Building Area 4 Conduit Arrangement Plan at Elevation 66' 6" Sections and Details,” Revision 9
SV3-1214-ERW-1018816, “Attachment B — Raceway and Accessories Inspection Record,” dated 3/2/2022
SV3-PMS-EWW-1057583, “U3 AUX TERMINATE PMS-1 CABLES IN SV3-PMS-JD-BCCC01, SV3-PMS-JD-BCCB01, AND ASSOCIATED EQP,” Revision 3
CR 50070956
CR 50109496
CR 50110630
CR 50113168
CR 50121232
CR 70000658
CR 70000665
CR 70001356
CR 70001492
CR 70001532
TE 60033120
TE 60035261

Room 12244 - Lower Annulus Valve Area
SV3-1221-SHW-800029, “U3 AUX BLDG, FAB & INSTALL UNSCHEDULED LIGHTING SUPPORTS ROOM 12244, EL 82' 6", AREA 1,” Revision 0
SV3-1227-ERW-860442, “INSTALL DESIGN ROUTED CABLE TRAY & CABLE TRAY SUPPORTS IN SHIELD ANNULUS TUNNEL. 82'-6" LEVEL,” Revision 0
SV3-1227-ERW-860443, “INSTALL DESIGN ROUTED SAFETY RELATED CONDUIT BOXES & CONDUIT SUPPORTS IN SHIELD ANNULUS TUNNEL, 82,” Revision 0
SV3-1227-ERW-1005635, “U3- Aux Install and Label Class 1 E Conduits - Elev. 82' 6" -Room 12244 - Area 7,” Revision 0
SV3-CVS-EJW-1034213, “U3 - AUX INSTALL- LABEL CVS JUNCTION BOXES AND SUPPORTS- ELEV. 82'-6"- ROOM 12244- AREA 7,” Revision 0
SV3-WLS-EJW-1033073, “U3- AUX INSTALL- LABEL WLS JUNCTION BOXES AND SUPPORTS- ELEV. 82' 6"- ROOM 12244- AREA 7,” Revision 0
SV3-1227-ER-101, “Auxiliary Building Area 7 Lower Annulus Conduit Arrangement Plan at Elevation 82’-6”,” Revision 11

SV3-1227-ER-102, “Auxiliary Building Area 7 Lower Annulus Conduit Arrangement Plan at Elevation 82’-6” Sections and Details,” Revision 8
SV3-CVS-EWW-1045642, “Attachment A — Cable Installation Inspection Record,” dated 3/2/2022
SV3-PXS-EWW-1045413, “Attachment B — Raceway and Accessories Inspection Record,” dated 11/10/2021
CR 50070185
CR 50070189
CR 50075414
CR 50087505
CR 50103985
CR 50108462
CR 50108585
CR 50113675
CR 50121478
TE 60019171
TE 60023816
TE 60026112
TE 60033501
TE 60034444

Room 12354 - Mid Annulus Access Room
SV3-1234-SHW-1010621, “U3 - AUX - INSTALL CONDUIT SUPPORTS RM 12354, EL 100'-0", AREA 4,” Revision 0
SV3-1234-SHW-800001, “U3 FABRICATE RACEWAY SUPPORTS AUX BLDG, AREA 4, ELEV. 100'-0" ROOM 12354 & 12351,” Revision 0
SV3-1234-ER-001, “Auxiliary Building Area 4 Cable Tray Arrangement Plan at Elevation 100’-0”,” Revision 6
SV3-1234-ER-002, “Auxiliary Building Area 4 Class 1E Conduit Arrangement Plan at Elevation 100’-0”,” Revision 8

Room 12365 – Waste Monitor Tank Room B
SV3-1236-EJW-800000, “U3 FAB / INSTALL NON 1E JB, AUX BLD, RM 12365 AREA 6 EL 82'6",” Revision 0
SV3-1236-EJW-800001, “U3 FAB AND INSTALL TWO SR JB'S AND SUPPORTS, AUX BLDG, AREA 6, EL 92'6" RM 12365,” Revision 0
SV3-1236-ELW-800000, “U3 AUX BLDG, INSTALL CONDUIT, LIGHTING FIXTURES, RECEPTACLES, ETC., ROOM 12365, EL 92'-6" & 107--2", AREA 6,” Revision 0
SV3-SFS-EWW-1050427, “U3 AUX INSTALL AND CONNECT VENDOR PIGTAIL CABLES FOR TRANSMITTERS SV3-SFS-JE-LT019A, SV3-SFS-JE-LT019B, & SV3-SFS-JE-LT019C EL 100' 0",” Revision 0
SV3-WLS-EJW-1049772, “U3- AUX INSTALL- LABEL NON 1E JUNCTION BOXES AND SUPPORTS- ELEV. 100' 0"- ROOM 12365- AREA 6,” Revision 0
SV3-CA20-ER-419, “Auxiliary Building Area 6 CA20 Module Conduit Arrangement Plan at Elevation 100’ – 0”,” Revision 8
SV3-PMS-EWW-1057583, “U3 AUX TERMINATE PMS-1 CABLES IN SV3-PMS-JD-BCCC01, SV3-PMS-JD-BCCB01, AND ASSOCIATED EQP,” Revision 3

Section 1A16
Room 12154 - Sump Equipment Room

SV3-1214-SHW-800007, “3 - AUX - INSTALL SCHEDULED CONDUIT SUPPORTS -EL 66'6" - ROOM 12152 and 12154 - AREA 4,” Revision 0
SV3-WLS-EJW-1033876, “U3 AUX INSTALL JUNCTION BOXES (SV3-WLS-EJ-LT400A, LT400B) IN AUXILIARY BUILDING, EL. 66' 6", ROOM 12154, AREA 4,” Revision 0
SV3-WLS-EWW-1136292, “U3 AUXILIARY, DE -TERM, REWORK AND RETERM WLS CABLES AT SV3-WLS-JE-LT400A & SV3-WLS-JE-LT400B, ROOM 12154, ELEV 66'-6",” Revision 0
SV3-WRS-EJW-1033903, “U3 AUX INSTALL JUNCTION BOX (SV3-WRS-EJ-LE001) EL. 66' 6" ROOM 12154, AREA 4,” Revision 0
SV3-1214-ER-101, “Auxiliary Building Area 4 Conduit Arrangement Plan at Elevation 66' 6",” Revision 12
SV3-1214-ER-102, “Auxiliary Building Area 4 Conduit Arrangement Plan at Elevation 66' 6" Sections and Details,” Revision 9
SV3-1214-ERW-1018816, “Attachment B — Raceway and Accessories Inspection Record,” dated 3/2/2022
SV3-PMS-EWW-1057583, “U3 AUX TERMINATE PMS-1 CABLES IN SV3-PMS-JD-BCCC01, SV3-PMS-JD-BCCB01, AND ASSOCIATED EQP,” Revision 3
CR 50070956
CR 50109496
CR 50110630
CR 50113168
CR 50121232
CR 70000658
CR 70000665
CR 70001356
CR 70001492
CR 70001532
TE 60033120
TE 60035261

Room 12244 - Lower Annulus Valve Area
SV3-1221-SHW-800029, “U3 AUX BLDG, FAB & INSTALL UNSCHEDULED LIGHTING SUPPORTS ROOM 12244, EL 82' 6", AREA 1,” Revision 0
SV3-1227-ERW-860442, “INSTALL DESIGN ROUTED CABLE TRAY & CABLE TRAY SUPPORTS IN SHIELD ANNULUS TUNNEL. 82'-6" LEVEL,” Revision 0
SV3-1227-ERW-860443, “INSTALL DESIGN ROUTED SAFETY RELATED CONDUIT BOXES & CONDUIT SUPPORTS IN SHIELD ANNULUS TUNNEL, 82,” Revision 0
SV3-1227-ERW-1005635, “U3- Aux Install and Label Class 1 E Conduits - Elev. 82' 6" -Room 12244 - Area 7,” Revision 0
SV3-CVS-EJW-1034213, “U3 - AUX INSTALL- LABEL CVS JUNCTION BOXES AND SUPPORTS- ELEV. 82'-6"- ROOM 12244- AREA 7,” Revision 0
SV3-WLS-EJW-1033073, “U3- AUX INSTALL- LABEL WLS JUNCTION BOXES AND SUPPORTS- ELEV. 82' 6"- ROOM 12244- AREA 7,” Revision 0
SV3-1227-ER-101, “Auxiliary Building Area 7 Lower Annulus Conduit Arrangement Plan at Elevation 82’-6”,” Revision 11
SV3-1227-ER-102, “Auxiliary Building Area 7 Lower Annulus Conduit Arrangement Plan at Elevation 82’-6” Sections and Details,” Revision 8
SV3-CVS-EWW-1045642, “Attachment A — Cable Installation Inspection Record,” dated 3/2/2022
SV3-PXS-EWW-1045413, “Attachment B — Raceway and Accessories Inspection Record,” dated 11/10/2021

CR 50070185
CR 50070189
CR 50075414
CR 50087505
CR 50103985
CR 50108462
CR 50108585
CR 50113675
CR 50121478
TE 60019171
TE 60023816
TE 60026112
TE 60033501
TE 60034444

Room 12354 - Mid Annulus Access Room
SV3-1234-SHW-1010621, “U3 - AUX - INSTALL CONDUIT SUPPORTS RM 12354, EL 100'-0", AREA 4,” Revision 0
SV3-1234-SHW-800001, “U3 FABRICATE RACEWAY SUPPORTS AUX BLDG, AREA 4, ELEV. 100'-0" ROOM 12354 & 12351,” Revision 0
SV3-1234-ER-001, “Auxiliary Building Area 4 Cable Tray Arrangement Plan at Elevation 100’-0”,” Revision 6
SV3-1234-ER-002, “Auxiliary Building Area 4 Class 1E Conduit Arrangement Plan at Elevation 100’-0”,” Revision 8

Room 12365 – Waste Monitor Tank Room B
SV3-1236-EJW-800000, “U3 FAB / INSTALL NON 1E JB, AUX BLD, RM 12365 AREA 6 EL 82'6",” Revision 0
SV3-1236-EJW-800001, “U3 FAB AND INSTALL TWO SR JB'S AND SUPPORTS, AUX BLDG, AREA 6, EL 92'6" RM 12365,” Revision 0
SV3-1236-ELW-800000, “U3 AUX BLDG, INSTALL CONDUIT, LIGHTING FIXTURES, RECEPTACLES, ETC., ROOM 12365, EL 92'-6" & 107--2", AREA 6,” Revision 0
SV3-SFS-EWW-1050427, “U3 AUX INSTALL AND CONNECT VENDOR PIGTAIL CABLES FOR TRANSMITTERS SV3-SFS-JE-LT019A, SV3-SFS-JE-LT019B, & SV3-SFS-JE-LT019C EL 100' 0",” Revision 0
SV3-WLS-EJW-1049772, “U3- AUX INSTALL- LABEL NON 1E JUNCTION BOXES AND SUPPORTS- ELEV. 100' 0"- ROOM 12365- AREA 6,” Revision 0
SV3-CA20-ER-419, “Auxiliary Building Area 6 CA20 Module Conduit Arrangement Plan at Elevation 100’ – 0”,” Revision 8
SV3-PMS-EWW-1057583, “U3 AUX TERMINATE PMS-1 CABLES IN SV3-PMS-JD-BCCC01, SV3-PMS-JD-BCCB01, AND ASSOCIATED EQP,” Revision 3

Section 1A17
Room-11104 Reactor Coolant Drain Tank
APP-1110-ER-101, "Conduit Layout Drawing Containment Building 11104 RCDT Room EL 71'-6" - 84'-6" X and Z Conduits," Revision 12
APP-1110-ER-801, "Conduit Layout Sections Drawing Containment Building 11104 RCDT Room EL 71'-6" - 84'-6" X and Z Conduits," Revision 8
SV3-1110-ERW-EL1532, "U3 -CONTAINMENT CONDUIT SUPPORTS ROOM 11104 AND EL 71'6" TO 84'-6"," Revision 0

SV3-1110-SHW-800002, "U3 CONTAINMENT BLDG, FAB & INSTALL SUPPORTS ASSOCIATED WITH LIGHTING FIXTURES, RECEPTACLES, ETC., ROOM 11104, EL 66' 6", AREAS 2 & 3, PKG 01," Revision 0
SV3-1112-SHW-1132655, "U3 - CT - FABRICATE / INSTALL / MODIFY / DELETE ELECTRICAL SUPPORTS IAW ESR 50076590 - EL 71'-6" /84'-6" - AREA 2 [WLS-1]," Revision 0
SV3-1112-SHW-1139130, "U3 CT - FAB / INSTALL ADDED ELECTRICAL SUPPORT IN CONTAINMENT, EL. 71' 6", ROOM 11104, AREA 2," Revision 0
SV3-1112-SHW-1148463, "U3 CT, REMOVE TYPICAL SUPPORTS and FAB / INSTALL NEW SUPPORT - Room 11104 - AREA 2. EDCR SV3-1112-GEF-000001," Revision 0
APP-JE61-V0-002, "AP1000 Class 1E Magnetic Level Sensors Containment Flood-Up Envelope Dimensions," Revision 3
ESR 50116821
APP-JE61-J0M-010, "AP1000 Class 1E Containment Floodup Level Transmitters - Technical Manual," Revision 5
CR 50095595
CR 50112754
CR 50094676

Room-11105 Reactor Vessel Cavity
SV3-1100-ER-200, "Containment Building EX Core Instrumentation Embedded Conduit Plan, Sections and Details," Revision 7
SV3-1100-ERW-1096785, "U3 - CT INSTALL- LABEL 1E 4" 304 SS CONDUIT - ELEV. 71' 6" - ROOM 11105 (REACTOR VESSEL CAVITY)," Revision 0
SV3-1100-ERW-EL1589, "Install 6" Ex Core Embedded Conduit and Associated Construction Aids," Revision 0
SV3-RXS-EWW-1118405, "U3 NI – TERMINATE NIC SOURCE RANGE NEUTRON DETECTOR SYSTEM CABLES," Revision 0
SV3-RXS-EWW-1118406, "U3 NI – TERMINATE NIC INTERMEDIATE RANGE NEUTRON DETECTOR SYSTEM CABLES," Revision 0
CR 50087519
CR 50090201
CR 50102652

Room 11301 - Steam Generator 1 Lower Manway Area
SV3-1100-SHW-1127968, “U3-CT-FAB-INSTALL SCHEDULED CONDUIT SUPPORTS - EL 107'-2" / 118' -6" -ROOMS 11301 AND 11401 -AREA 1 SGI,” Revision 0
SV3-1130-ER-101, “Conduit Layout Containment Building SG West Compartment EL 107’-2” – 116’-0”,” Revision 10
SV3-1130-ER-520, “Containment Building Room 11301 SG1 EL 107’-2” Conduit Supports Plan View (Sheet 1),” Revision 2
SV3-1130-ER-521, “Containment Building Room 11301 SG1 EL 107’-2” Conduit Supports Plan View (Sheet 2),” Revision 2
SV3-1131-EJW-1003997, “U3 - CT - INSTALL AND LABEL SAFETY CLASS 1E JUNCTION BOXES AND SUPPORTS - ELEV. 107' 2" -Room 11301 - Area 1,” Revision 0
SV3-1131-EJW-1004001, “U3 - CT FABRICATE/ INSTALL SUPPORTS AND CLASS NON-IE JUNCTION BOX - ELEV. 107' 2" - Room 11301 - Area 1,” Revision 0
SV3-1131-ERW-1020413, “3 - CT - Install and Label 1E Conduit - EL 107'2 – Room 11301 – Area 1,” Revision 0
SV3-1131-SHW-1012084, “3 - CT - Install Scheduled Conduit Supports - EL 107'2" Room 11301 - Area 1,” Revision 0

SV3-RCS-EJW-1053380, “U3 -CT -INSTALL -LABEL RCS NON -1E JUNCTION BOXES AND SUPPORTS, CONTAINMENT BUILDING EL 107-6", 116'-0"AREA 1 ROOM 11301,” Revision 0
SV3-RCS-EJW-1098923, “U3 - CT - INSTALL & LABEL NON -1E RCS JUNCTION BOXES & SUPPORTS, EL 107'-2", AREAS 2 & 3, ROOMS 11301 & 11302,” Revision 0
SV3-VCS-EJW-1031937, “U3 - CT INSTALL- LABEL NON-1E VCS JUNCTION BOXES AND SUPPORTS, ELEV. 99' 0 " TO 135' 3" ROOMS 11209, 11301, 11302, AREAS 1,2,4,” Revision 0

Room 11304 - Steam Generator 1 Access Room
SV3-1132-ER-104, “Conduit Layout Containment Building Area 2 EL 107’-2” – 118’-6”,” Revision 10
SV3-1132-SHW-1013894, “U3- CT, FABRICATE / INSTALL SCHEDULED CONDUIT SUPPORTS, EL 105, AREA 2, ROOM 11304, 11303,” Revision 0
SV3-1132-SHW-800004, “U3 Fabricate Install Scheduled Conduit Supports EL 107'2" Area 2 Containment PK 003,” Revision 0
SV3-CVS-EWW-1046116, “U3 CT TERMINATE SYS CVS-1E CABLES IN SV3-CVS-EJ-PLV084, SV3-CVS-EJ-PLV084-1 AND ASSOCIATED EQP,” Revision 0
SV3-CVS-EWW-1046118, “U3 CT TERMINATE / INSTALL VENDOR PIGTAILS, SYS CVS-1E CABLES IN SV3-CVS-EJ-PLV084, SV3-CVS-EJ-PLV084-1 AND ASSOCIATED EQUIPMENT,” Revision 0

Section 1A18
Room 12154 - Sump Equipment Room
SV3-1214-SHW-800007, “3 - AUX - INSTALL SCHEDULED CONDUIT SUPPORTS -EL 66'6" - ROOM 12152 and 12154 - AREA 4,” Revision 0
SV3-WLS-EJW-1033876, “U3 AUX INSTALL JUNCTION BOXES (SV3-WLS-EJ-LT400A, LT400B) IN AUXILIARY BUILDING, EL. 66' 6", ROOM 12154, AREA 4,” Revision 0
SV3-WLS-EWW-1136292, “U3 AUXILIARY, DE -TERM, REWORK AND RETERM WLS CABLES AT SV3-WLS-JE-LT400A & SV3-WLS-JE-LT400B, ROOM 12154, ELEV 66'-6",” Revision 0
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Room 12244 - Lower Annulus Valve Area
SV3-1221-SHW-800029, “U3 AUX BLDG, FAB & INSTALL UNSCHEDULED LIGHTING SUPPORTS ROOM 12244, EL 82' 6", AREA 1,” Revision 0
SV3-1227-ERW-860442, “INSTALL DESIGN ROUTED CABLE TRAY & CABLE TRAY SUPPORTS IN SHIELD ANNULUS TUNNEL. 82'-6" LEVEL,” Revision 0
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TE 60023816
TE 60026112
TE 60033501
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Room 12354 - Mid Annulus Access Room
SV3-1234-SHW-1010621, “U3 - AUX - INSTALL CONDUIT SUPPORTS RM 12354, EL 100'-0", AREA 4,” Revision 0
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Room 12365 – Waste Monitor Tank Room B
SV3-1236-EJW-800000, “U3 FAB / INSTALL NON 1E JB, AUX BLD, RM 12365 AREA 6 EL 82'-6",” Revision 0

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Section 1A19
VEGP Units 3 and 4 Physical Security Plan, Revision 6
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Section 1A20
VEGP Units 3 and 4 Physical Security Plan, Revision 6
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Section 1A21
VEGP Units 3 and 4 Physical Security Plan, Revision 6
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Section 1A22
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Section 1A23
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Section 1A25
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Section 1A26
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SV4-1232-ER-001, "Auxiliary Building Area 2 Class 1E Cable Tray Arrangement Plan at Elevation 100'-0"", Revision 9
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LIST OF ACRONYMS

ADS	Automatic Depressurization System
ANI	Authorized Nuclear Inspector
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
COL	Combined License
CR	Condition Report
CRDM	Control Rod Drive Mechanism
cROP	Construction Reactor Oversight Process
CV	Containment Vessel
CVS	Chemical and Volume Control System
DVI	Direct Vessel Injection
EMC	Electromagnetic Compatibility
EPA	Electrical Penetration Assembly
EQRR	Equipment Qualification Reconciliation Report
E&DCR	Engineering & Design Coordination Report
ICN	ITAAC Closure Notice
IDS	Class 1E dc and Uninterruptible Power Supply System
IEEE	Institute of Electrical and Electronic Engineers
IHP	Integrated Head Package
IMC	Inspection Manual Chapter
IP	Inspection Procedures
IR	Inspection Report
IRWST	In-Containment Refueling Water Storage Tank
ITAAC	Inspections, Tests, Analysis, and Inspection Criteria
LBB	Leak Before Break
MCR	Main Control Room
MT	magnetic particle examination
NCV	Noncited Violation
NRC	Nuclear Regulatory Commission
NSR	Nonsafety-Related
N&D	Nonconformance and Disposition Report
PCCWST	Passive Containment Cooling Water Storage Tank
PCS	Passive Containment Cooling System
PMS	Protection and Safety Monitoring System
PT	Liquid Penetrant Examination
PXS	Passive Core Cooling System
P&ID	Piping and Instrumentation Diagrams
QC	Quality Control
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RNS	Normal Residual Heat Removal System
RPV	Reactor Pressure Vessel
RSR	Remote Shutdown Room
RXS	Reactor System
SG	Steam Generator
SIT	Structural Integrity Test
SNC	Southern Nuclear Company

SR	Safety-Related
SSC	Structure, System, and Component
S&W	Stone & Webster
UFSAR	Updated Final Safety Analysis Report
UPS	Uninterruptible Power Supply
UT	Ultrasonic Examination
VEGP	Vogtle Electric Generating Plant
VT	Visual Examination
WEC	Westinghouse Electric Company

ITAAC INSPECTED

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria

Enclosure

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 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.	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 a line break is provided.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
36	2.1.02.08d.v	8.d) The RCS provides automatic depressurization during design basis events.	v) Inspections of the elevation of the ADS stage 4 valve discharge will be conducted. vi) Inspections of the ADS stage 4 valve discharge will be conducted. viii) Inspection of the elevation of each ADS sparger will be conducted.	v) The minimum elevation of the bottom inside surface of the outlet of these valves is greater than plant elevation 110 feet. vi) The discharge of the ADS stage 4 valves is directed into the steam generator compartments. viii) The centerline of the connection of the sparger arms to the sparger hub is < 11.5 feet below the IRWST overflow level.
72	2.1.03.03	3. The components identified in Table 2.1.3-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 4. Pressure boundary welds in components identified in Table 2.1.3-1 as ASME Code Section III meet ASME Code Section III requirements. 5. The pressure boundary components (RV, CRDMs, and incore instrument QuickLoc assemblies) identified in Table 2.1.3-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	Inspection will be conducted of the as-built components as documented in the ASME design reports. Inspection of 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 of the RXS required by the ASME Code Section III to be hydrostatically tested.	The ASME Code Section III design reports exist for the as-built components identified in Table 2.1.3-1 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 pressure boundary components (RV, CRDMs, and incore instrument QuickLoc assemblies) conform with the requirements of the ASME Code Section III.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
75	2.1.03.06.i	6. The seismic Category I equipment identified in Table 2.1.3-1 can withstand seismic design basis loads without loss of safety function. 9.a) The Class 1E equipment identified in Table 2.1.3-1 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.	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 2.1.3-1 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. i) Type tests, analysis, or a combination of type tests and analysis will be performed on Class 1E equipment located in a harsh environment. ii) Inspection will be performed of the as-built Class 1E equipment and the associated wiring, cables, and terminations located in a harsh environment.	i) The seismic Category I equipment identified in Table 2.1.3-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) A report exists and concludes that the Class 1E equipment identified in Table 2.1.3-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. ii) A report exists and concludes that the as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.1.3-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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 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.	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 III to be pressure tested.	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 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.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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 withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of containment pressure boundary integrity.	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 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.	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 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.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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 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.	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 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.	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 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.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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 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 the indicated loss of motive power position.	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 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.	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 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 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.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
			. iii) Tests of the motor-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.	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 is coated with an inorganic zinc coating above the operating deck. Flow paths exist at each of the following locations: – Air inlets – Base of the outer annulus – Base of the inner annulus – Discharge structure With a water level within the upper annulus 10" + 1" above the annulus drain inlet, the flow rate through each drain is greater than or equal to 525 gpm.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
				ii) With a water supply connected to the PCS long-term makeup connection, 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.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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. 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.	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 a line break is provided.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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 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.	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 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.	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, 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.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
597	2.6.03.02.i	2. The seismic Category I equipment identified in Table 2.6.3-1 can withstand seismic design basis loads without loss of safety function.	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 2.6.3-1 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.	i) The seismic Category I equipment identified in Table 2.6.3-1 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.
761	3.3.00.02a.i.b	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions. 3.) Walls and floors of the nuclear island structures as defined on Table 3.3-1 except for designed openings or penetrations, provide shielding during normal operations.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads, and for radiation shielding.	i.b) A report exists which reconciles deviations during construction, including Table 3.3-1 wall and floor thicknesses, and concludes that the as-built shield building 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.
770	3.3.00.02b	2.b) Site grade level is located relative to floor elevation 100'-0" per Table 3.3-5.	Inspection of the as-built site grade will be conducted.	Site grade is consistent with design plant grade within the dimension defined on Table 3.3-5.
786	3.3.00.05c	5.c) The boundaries between the following rooms, which contain safety-related equipment – PXS valve/accumulator room A (11206), PXS valve/accumulator room B (11207), and CVS room (11209) – are designed to prevent flooding between these rooms.	An inspection of the boundaries between the following rooms which contain safety-related equipment – PXS Valve/ Accumulator Room A (11206), PXS Valve/Accumulator Room B (11207), and CVS Room (11209) – will be performed.	A report exists that confirms that flooding of the PXS Valve/ Accumulator Room A (11206), and the PXS Valve/Accumulator Room B (11207) is prevented to a maximum flood level as follows: PXS A 110'-2", PXS B 110'-1"; and of the CVS room (11209) to a maximum flood level of 110'-0".

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
789	3.3.00.07aa	7.a) Class 1E electrical cables, communication cables associated with only one division, and raceways that route the Class 1E electrical cables and the communication cables are identified according to applicable color-coded Class 1E divisions.	Inspections of the as-built Class 1E cables and the as-built raceways that route the Class 1E cables will be conducted.	a) Class 1E electrical cables, and communication cables associated with only one division, and the raceways that route these cables inside containment are identified by the appropriate color code.
791	3.3.00.07ac	7.a) Class 1E electrical cables, communication cables associated with only one division, and raceways that route the Class 1E electrical cables and the communication cables are identified according to applicable color-coded Class 1E divisions.	Inspections of the as-built Class 1E cables and the as-built raceways that route the Class 1E cables will be conducted.	c) Class 1E electrical cables, and communication cables associated with only one division, and the raceways that route these cables in the radiologically controlled area of the auxiliary building are identified by the appropriate color code.
792	3.3.00.07ba	7.b) Class 1E divisional electrical cables and communication cables associated with only one division are routed in their respective divisional raceways.	Inspections of the as-built Class 1E divisional cables and the as-built raceways that route the Class 1E cables will be conducted.	a) Class 1E electrical cables and communication cables inside containment associated with only one division are routed in raceways assigned to the same division. There are no other safety division electrical cables in a raceway assigned to a different division.
793	3.3.00.07bb	7.b) Class 1E divisional electrical cables and communication cables associated with only one division are routed in their respective divisional raceways.	Inspections of the as-built Class 1E divisional cables and the as-built raceways that route the Class 1E cables will be conducted.	b) Class 1E electrical cables and communication cables in the non-radiologically controlled area of the auxiliary building associated with only one division are routed in raceways assigned to the same division. There are no other safety division electrical cables in a raceway assigned to a different division.
794	3.3.00.07bc	7.b) Class 1E divisional electrical cables and communication cables associated with only one division are routed in their respective divisional raceways.	Inspections of the as-built Class 1E divisional cables and the as-built raceways that route the Class 1E cables will be conducted.	c) Class 1E electrical cables and communication cables in the radiologically controlled area of the auxiliary building associated with only one division are routed in raceways assigned to the same division. There are no other safety division electrical cables in a raceway assigned to a different division.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
796	3.3.00.07c.i.b	7.c) Separation is maintained between Class 1E divisions in accordance with the fire areas as identified in Table 3.3-3.	i) Inspections of the as-built Class 1E division electrical cables, as-built communication cables associated with only one division, and the as-built raceways that route the Class 1E divisional electrical cables and communication cables located in the fire areas identified in Table 3.3-3 will be conducted.	i.b) Results of the inspection will confirm that the separation between Class 1E divisions in the radiologically controlled area of the auxiliary building is consistent with Table 3.3-3.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
800	3.3.00.07d.ii.a	7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.	Inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: ii.a) Within other plant areas (hazard areas), the minimum separation is defined by one of the following: 1) The minimum vertical separation is 5 feet and the minimum horizontal separation is 3 feet. 2) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables ≤2/0 AWG. This minimum vertical separation is 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees. 3) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low- voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation is 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees with a non-safety conduit and a free air safety cable with low-voltage power cables and below.	Results of the inspection will confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: ii.a) Within other plant areas inside containment (hazard areas), the separation meets one of the following: 1) The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more. 2) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables ≤2/0 AWG. This minimum vertical separation may be reduced to 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees. 3) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low-voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation may be reduced to 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees. 4) For configurations that involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
			4) For configurations that involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch. 5) For configurations involving an enclosed raceway and an open raceway with low-voltage power cables, the . minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway. 6) For configuration involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions. 7) The minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.	5) For configurations that involve an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway. 6) For configurations that involve enclosed raceways, the minimum vertical and horizontal separation is 1 inch. 7) The minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
802	3.3.00.07d.ii.c	7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.	Inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: ii.c) Within other plant areas (limited hazard areas), the minimum separation is defined by one of the following: 1) The minimum vertical separation is 5 feet and the minimum horizontal separation is 3 feet. 2) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables ≤2/0 AWG. This minimum vertical separation is 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees. 3) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low-voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation is 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees	Results of the inspection will confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: ii.c) Within other plant areas inside the radiologically controlled area of the auxiliary building (limited hazard areas), the separation meets one of the following: 1) The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more. 2) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables ≤ 2/0 AWG. This minimum vertical separation may be reduced to 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees. 3) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low- voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation may be reduced to 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
			4) For configurations that involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch. 5) For configurations involving an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway. 6) For configuration involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions. 7) The minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.	. 4) For configurations that involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch. 5) For configurations that involve an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway. 6) For configurations that involve enclosed raceways, the minimum vertical and horizontal separation is 1 inch. 7) The minimum vertical separation is 1 inch and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.
820	3.3.00.14	14. The external walls, doors, ceiling, and floors in the main control room, the central alarm station, and the secondary alarm station are bullet-resistant to at least Underwriters Laboratory Ballistic Standard 752, level 4. 15. Deleted	Type test, analysis, or a combination of type test and analysis will be performed for the external walls, doors, ceilings, and floors in the main control room, the central alarm station, and the secondary alarm station.	A report exists and concludes that the external walls, doors, ceilings, and floors in the main control room, the central alarm station, and the secondary alarm station are bullet-resistant to at least Underwriters Laboratory Ballistic Standard 752, level 4.
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.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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 loss of safety function for the time required to perform the safety function.	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 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.	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 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.