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

August 7, 2019

Mr. Michael Yox
Regulatory Affairs Director
Southern Nuclear Operating Company
7825 River Road, Bldg. 302, Vogtle 3&4
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 - NRC INTEGRATED INSPECTION REPORTS 05200025/2019002, 05200026/2019002

Dear Mr. Yox:

On June 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Vogtle Electric Generating Plant, Units 3 and 4. The enclosed inspection report documents the inspection results, which the inspectors discussed on July 15, 2019, with you 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 did not identify any finding or violation of more than minor significance.

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 Code of Federal Regulation (CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

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

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

Enclosure: NRC Inspection Report (IR) 05200025/2019002, 05200026/2019002
w/attachment: Supplemental Information

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Letter to Mr. Michael Yox from Ms. Nicole Coovert dated August 7, 2019.

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 - NRC INTEGRATED INSPECTION REPORTS 05200025/2019002, 05200026/2019002

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200025 5200026
License Numbers:	NPF-91 NPF-92
Report Numbers:	05200025/2019002 05200026/2019002
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Electric Generating Plant, Units 3 and 4
Location:	Waynesboro, GA
Inspection Dates:	April 1, 2019 through June 30, 2019
Inspectors:	A. Artayet, Senior Construction Inspector, DCO P. Carman, Project Manager, DCO K. Carrington, Resident Inspector, DCO L. Castelli, Senior Construction Inspector, DCO G. Galletti, Vendor Inspector, DCIP B. Griman, Construction Inspector, DCO D. Harmon, Construction Inspector, DCO P. Heher, Resident Inspector, DCO N. Karlovich, Resident Inspector, DCO B. Kemker, Senior Resident Inspector, DCO J. Kent, Construction Inspector, DCO G. Khouri, Senior Construction Inspector, DCO A. Lerch, Construction Inspector, DCO J. Lizardi-Barreto, Construction Inspector, DCO R. Mathis, Test Inspector, DCO A. Ponko, Senior Construction Inspector, DCO S. Smith, Senior Construction Inspector, DCO S. Temple, Resident Inspector, DCO D. Terry-Ward, Construction Inspector, DCO J. Vasquez, Construction Inspector, DCO
Approved by:	Nicole C. Coovert, Chief Construction Inspection Branch 1 Division of Construction Oversight

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200025/2019002, 05200026/2019002; 04/01/2019 through 06/30/2019; Vogtle Electric Generating Plant, Units 3 and 4 integrated inspection report.

This report covers a three months period of inspection by regional and resident inspectors, and announced Inspections, Tests, Analysis, and Acceptance Criteria (ITAAC) inspections by regional inspectors. The NRC program for overseeing the construction of commercial nuclear power reactors is described in inspection manual chapter (IMC) 2506, Construction Reactor Oversight Process General Guidance and Basis Document.

A. NRC-Identified and Self Revealed Findings

None

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Construction Status

The following is a summary of the construction status during this reporting period:

Unit 3: In the shield building, the licensee completed installation of the final vertical course and commenced installation of the air baffle module assemblies. In containment, the licensee completed installation of the polar crane and all of the large bore piping for the reactor coolant system (RCS) and passive core cooling system (PXS), and commenced conduit installation and non-safety related (NSR) cables. For the auxiliary building, the licensee continued construction of the structure from the operating deck to the roof; staged and/or set all major electrical equipment; commenced installation of NSR cables; and completed initial energization via the Unit 3 reserve auxiliary transformers.

Unit 4: In the shield building, the licensee completed rebar work for the main steam/main feed lines penetrations, and commenced installation of the reinforced concrete/steel composite transition panel at the interface of the auxiliary building roof. In containment, the licensee installed the operating deck frame work; completed installation of all major RCS vessels/tanks; and commenced installation of large bore piping connecting the RCS to the PXS. For the auxiliary building, the licensee continued with the construction of the structure from grade elevation to the operating deck.

1. CONSTRUCTION REACTOR SAFETY

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

IMC 2503, 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 IPs/sections to perform this inspection:

- 65001.03-02.03 - Installation and Welding
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection

The inspectors performed inspection of in-process welding on the Unit 3 automatic depressurization system (ADS) outlet piping to Sparger A. Specifically, the inspectors observed field welds SV3-RCS-PLW-017-1 and SV3-RCS-PLW-017-6 (American

Society of Mechanical Engineers (ASME) Class 3) on line RCS-L063A. The inspectors observed the amperage on the welding machine for the root and cover pass welds, respectively, to determine if the readings were within the range listed on welding procedure specification (WPS) WPS1-8.8T01. In addition, the inspectors reviewed the weld data sheets (WDSs) for both welds to determine if inspection hold points for Quality Control (QC) were signed-off for material identification markings, cleanliness, and joint fit-up in accordance with the ASME Boiler and Pressure Vessel Code (BPVC), Section III, Subsections NCA-4134.10 and ND-4230.

The inspectors reviewed two certified material test reports (CMTRs) for the weld filler metals being used to determine if they met the requirements for chemical analysis and mechanical properties in accordance with the ASME Code, Section II-Part C, SFA-5.9 for Type ER308L rods. The inspectors also reviewed welder qualification records to determine if the welder was qualified and tested in accordance with the requirements of the ASME Code, Section IX. Finally, the inspectors reviewed the welding material requisitions (WMRs) against the WDS entries to determine if traceability of the welders and welding rods were controlled in accordance with the ASME Code, Section III, Subsection ND-4122 and ND-4300.

The inspectors also reviewed the disposition to a nonconformance related to piping spool SV3-RCS-PLW-017 being too short and field fit-up issues. A new field weld and a 12" spool piece were added in order to make the repair on this line. The inspectors visually inspected heat numbers stamped on piping spool SV3-RCS-PLW-017 and the new 12" spool piece in the field, and reviewed CMTRs for these spool pieces in order to determine if the 12" spool piece was the same nominal pipe size, schedule, and material as piping spool SV3-RCS-PLW-017, which was required by the ASME Code, Section III.

b. Findings

No findings were identified.

1A02 (Unit 3) ITAAC Number 2.1.02.05a.i (19) / Family 14A
(Unit 4) ITAAC Number 2.1.02.05a.i (19) / Family 14A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.05a.i (19). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.E-02.01-Design Basis Requirements
- 65001.E-02.03-Qualification
- 65001.E-02.04-Documentation

The inspectors reviewed documentation of the analysis of the ADS spargers (commodity MW01) to determine if they can withstand seismic design basis dynamic loads without loss of structural integrity. The inspectors reviewed the ADS spargers design specification, design report, and data sheet report to determine if the requirements for seismic analysis were identified and implemented in accordance with the Updated Final Safety Analysis Report (UFSAR) section 3D and Institute of Electrical and Electronics Engineers (IEEE) 344-1987. Specifically, the inspectors reviewed the design specification, design drawings, and the data sheet report to verify if the design conditions and stresses of the ADS spargers were specified and incorporated in to the design report. In addition, the inspectors reviewed the seismic analysis methodology to determine if it was performed in accordance with the methodology described in APP-GW-G1-002 and APP-GW-G1-003.

The inspectors reviewed the design report to determine if the qualification was performed in accordance with the design specification and IEEE 344-1987. Specifically, the inspectors reviewed the analysis to verify if the floor response spectra used to determine acceleration during a seismic event was in accordance with the design specification and APP-1000-S2C-056. The inspectors reviewed the analysis to determine if the requirements for specification information, the qualification report, and the acceptance criteria for the analysis, as stated in IEEE 344-1987 section 10 and the ITAAC, were met. In addition, the inspectors reviewed damping values for welded steel structures used in the seismic analysis to verify if they were in accordance with Regulatory Guidance (RG) 1.61.

The inspectors reviewed the analysis package to verify if it had been completed, approved and reviewed by Southern Nuclear Company (SNC) and its contractor. In addition, the inspectors reviewed the document package to determine if it contained documentation that the ITAAC requirements have been met.

b. Findings

No findings were identified.

1A03 (Unit 3) ITAAC Number 2.1.02.05a.i (19) / Family 14A
(Unit 4) ITAAC Number 2.1.02.05a.i (19) / Family 14A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.05a.i (19). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.E-02.01-Design Basis Requirements
- 65001.E-02.03-Qualification

- 65001.E-02.04-Documentation

The inspectors reviewed documentation of the analysis of the pressurizer (commodity MV20) to determine if it could withstand seismic design basis dynamic loads without loss of structural integrity. The inspectors reviewed the pressurizer design specification, design report, and calculations to determine if the requirements for seismic analysis were identified and implemented in accordance with the UFSAR section 3D, IEEE 344-1987, and ASME BPVC, Section III, Subsection NB - Class 1 Components. The inspectors selected a sample of subcomponents of the pressurizer: pressurizer shell, upper head, lower head, and surge nozzle. The inspectors reviewed the design specification, design reports, design drawings, and calculations to verify if the design conditions and stresses of the pressurizer were specified and incorporated into seismic stress calculations for the subcomponents selected. In addition, the inspectors reviewed the seismic analysis methodology to determine if it was performed in accordance with the methodology described in APP-GW-G1-002 and APP-GW-G1-003.

The inspectors reviewed the pressurizer design specification to determine if load combinations applied to the pressurizer included analyses for the safe shutdown earthquake with other dynamic events in accordance with UFSAR, section 3.9.3.1.1. The inspectors reviewed the design specification to determine if seismic reactions on the surge nozzle from the piping system were included into the load combinations in accordance with the interface control document, APP-RCS-M8-003. The inspectors reviewed the design specification; the generic design report; and specific design reports for the pressurizer shell, upper head, lower head, and surge nozzle to determine if the results of the load combinations met the acceptance criterion in accordance with ASME BPVC, Section III, Subsection NB.

The inspectors reviewed seismic stress calculations for the pressurizer shell, upper head, lower head, and surge nozzle to determine if the seismic qualification was performed in accordance with the design specification and IEEE 344-1987. Specifically, the inspectors reviewed the calculations to verify if the floor response spectra used to determine acceleration during a seismic event was in accordance with the design specification, APP-1000-S2C-056, and APP-1000-S2C-182. The inspectors reviewed damping values for welded steel structures used in the seismic calculations to verify if they were in accordance with Regulatory Guidance (RG) 1.61. The inspectors reviewed the surge nozzle piping analysis to determine if the damping values used for the connecting piping was in accordance with APP-GW-G1-003. The inspectors reviewed seismic calculations to determine if geometric parameters and material properties used as inputs in the seismic analysis were in accordance with design drawings and the design specification. The inspectors reviewed the seismic analysis to determine if the requirements for specification information, the qualification report, and the acceptance criteria for the analysis, as stated in IEEE 344-1987 section 10 and the ITAAC, were met.

The inspectors reviewed the analysis package to verify if it had been completed, approved and reviewed by SNC and its contractor. In addition, the inspectors reviewed the document package to determine if it contained documentation that the ITAAC requirements have been met.

b. Findings

No findings were identified.

1A04 (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:

- 65001.05 - Inspection of ITAAC-Related Installation of Reactor Pressure Vessel and Internals
- 65001.05-02.01 - Purchase and Receipt of Components
- 65001.05-02.05 - Installation and Welding of Reactor Internals
- 65001.05-02.07 - Records Review
- 65001.05-02.08 - Problem Identification and Resolution
- 65001.B- Inspection of the ITAAC-Related Welding Program
- 65001.B-02.03-Welder Qualification
- 65001.B-02.06-Records
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General Quality Assurance (QA) Review

The inspectors reviewed fabrication records for the core barrel of the lower reactor vessel internals to determine if it had been fabricated per the requirements of ASME BPVC Section III, Subsection NG, 1998 Edition 2000 Addenda; the fabrication specification; and the design specification. The inspectors selected the following welds from the core barrel and reviewed fabrication and procurement documents in the QA data package:

- 4: middle barrel long seam;
- 7: lower barrel to lower core support plate girth weld;
- 12-1: 24 degree alignment plate to upper core barrel; and
- 3-04B: 270 degree radial support key to lower core support plate – right.

The inspectors reviewed the CMTRs for the weld filler metal used in the four welds sampled to determine if it had been tested and certified per the requirements of the fabrication specification and ASME Code Sections II and III, Subsection NG. The inspectors reviewed the CMTRs for the base metal used to fabricate the core barrel that was welded in the four welds sampled to determine if the material had been tested and certified per the requirements of the fabrication specification and ASME Code Sections II and III, Subsection NG.

The inspectors reviewed the nondestructive examination (NDE) summary logs and radiography inspection reports to determine if the welds had been examined per the requirements of the fabrication specification and ASME Code Sections V and III, Subsection NG. The inspectors reviewed the post-weld thermal treatment procedure used by the vendor to determine if the material had not been sensitized and that additional procedure qualifications were not required. The inspectors reviewed the radiographic film for welds four and seven to determine if they were free of defects or rejectable indications such as incomplete fusion or cracks.

The inspectors reviewed Nonconformance and Disposition (N&D) SV3-MI01-GNR-144 to determine if damage to the neutron shielding panel was dispositioned and reworked per the fabrication specification requirements and if the material was not made more susceptible to stress corrosion cracking.

b. Findings

No findings were identified.

1A05 (Unit 3) 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:

- 65001.06-02.02 - Component Welding
- 65001.11-02.03 - Installation and Welding
- 65001.11-02.03 - Installation and Welding
- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.F-02.03-Observation of Fabrication Activities

The inspectors observed fit-up and welding of the top head to the upper ring of the containment vessel to determine if it was done per the requirements of the ASME Code Section III, Subsection NE and the applicable welding procedures listed in the

attachment. The inspectors inspected the weld fit-up to determine if the root opening was as described in the welding procedure and the surfaces to be welded were visibly smooth and free from surface defects.

Additionally, the inspectors observed welding periodically during the root and intermediate weld passes on the inside of the containment vessel to determine if welding was being done per ASME Code Section III, Subsection NE and the welding procedures. The inspectors observed welding activities to verify if base metal temperatures were maintained within the welding procedures minimum required preheat and maximum allowable interpass temperatures. The inspectors observed the welding activities to verify if the weld was sufficiently cleaned between weld passes as required by the welding procedures. The inspectors observed welding activities to verify if welding technique and variables such as shielding gas, polarity, filler metal size, stringer or weave, and amperage were controlled and kept within the limits of the welding procedures.

The inspectors reviewed the Daily Welding Material Distribution Log to determine if the records were sufficient to maintain traceability of personnel and materials used in the welding process. The inspectors inspected the weld set up to verify if welding was being protected from environmental conditions, such as wind and rain, and that the weld area was being maintained clean and free of harmful substances as required by the welding procedures. The inspectors reviewed a sample of the welders' qualification records to determine if they had been qualified per ASME Code Section IX. The inspectors reviewed a sample of the weld filler metal CMTRs to determine if the materials were traceable to a CMTR and if they had been tested and met the chemical and physical requirements of ASME Section II, Part C and ASME Section III, Subsection NE.

b. Findings

No findings were identified.

1A06 (Unit 3) 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.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors reviewed fabrication records and design documents for a sample of containment isolation valves to determine if the valves were fabricated in accordance with ASME BPVC, Section III, Class 2, 1998 Edition 2000 Addenda and Westinghouse (WEC) design specifications. The inspectors sampled the following containment isolation valves:

- SV3-CAS-PL-V204, service air supply outside containment isolation valve, serial number E2738;
- SV3-FPS-PL-V050, fire water containment supply isolation valve - outside, serial number 1-55022-G; and
- SV3-VFS-PL-V009, containment purge discharge containment isolation valve - inside reactor containment, serial number 1-55022-Y.

The inspectors reviewed fabrication records to determine if fabrication attributes of the valves and valve parts, such as material type and required tests, were captured in the final as-built condition of the valves in accordance with the ASME Code, WEC design specifications, and design drawings.

The inspectors reviewed ASME NPV-1 Code data reports to determine if the materials specified and hydrostatic tests performed met the requirements of the ASME Code and the WEC design specifications. In addition, the inspectors reviewed the data reports to determine if they were signed by an authorized representative of the N-stamp holder and an Authorized Nuclear Inspector (ANI).

The inspectors reviewed material records associated with the following safety related and pressure retaining valve parts:

- SV3-CAS-PL-V204 (body, bonnet, ball and stem, bonnet studs, and bonnet hex nuts);
- SV3-FPS-PL-V050 (body, disc, clamp ring, and hex cap screws); and
- SV3-VFS-PL-V009 (body, disc, clamp ring).

For the valve parts above, the inspectors reviewed certificates of conformance/compliance and CMTRs to determine if the valve part materials were fabricated in accordance with the requirements of ASME Section III, Section II, and the WEC design specifications. The inspectors reviewed these records to determine if the materials met the following requirements, as applicable:

- chemical composition;
- mechanical testing (tensile strength, yield strength, hardness, stress rupture); and
- heat treatment.

The inspectors reviewed NDE records (radiographic, ultrasonic, and liquid penetrant) for the valves and valve parts sampled to determine if required examinations were performed in accordance with ASME Code and the WEC design specifications, and if the results conformed to the requirements of ASME Code and the WEC design specifications.

The inspectors reviewed test reports to determine if required tests (hydrostatic shell test, valve closure and seat leakage test, packing leakage test, pneumatic seat test, and minimum wall thickness) were performed in accordance with ASME Code and the WEC design specifications, and if the results conformed to the requirements of ASME Code and the WEC design specifications.

b. Findings

No findings were identified.

1A07 (Unit 3) ITAAC Number 2.2.01.05.i (98) / Family 11A
(Unit 4) ITAAC Number 2.2.01.05.i (98) / Family 11A

a. Inspection Scope

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

- 65001.E-02.01-Design Basis Requirements
- 65001.E-02.03-Qualification
- 65001.E-02.04-Documentation

The inspectors reviewed documentation of the analysis of the fuel transfer tube (FTT) to determine if it can withstand seismic design basis dynamic loads without loss of structural integrity. The inspectors reviewed the FTT design specification and design report to determine if the requirements for seismic analysis were identified and implemented in accordance with the UFSAR Appendix 3D and IEEE 344-1987. Specifically, the inspectors reviewed the design specification to verify if the physical properties of the FTT were specified and incorporated in to the design report. In addition, the inspectors reviewed the seismic analysis methodology to determine if was performed in accordance with the methodology described in APP-GW-G1-002 and APP-GW-G1-003.

The inspectors reviewed the design report to verify if the qualification was performed in accordance with the design specification and IEEE 344-1987. Specifically, the inspectors reviewed the analysis to verify if the floor response spectra used to determine acceleration during a seismic event was in accordance with the design specification and

APP-1000-S2C-056. The inspectors reviewed the analysis to determine if the requirements for specification information, the qualification report, and the acceptance criteria for the analysis, as stated in IEEE 344-1987 section 10 and the ITAAC, were met. In addition, the inspectors reviewed damping values for welded steel structures used in the seismic analysis to verify if they were in accordance with RG 1.61.

The inspectors reviewed ANSYS models to verify if the following mechanical and physical properties of the fuel transfer tube were entered into the model in accordance with the design specification and drawings:

- modulus of elasticity;
- thermal expansion;
- thermal conductivity; and
- physical dimensions of the fuel transfer tube.

Finally, the inspectors reviewed the analysis package to verify if it had been completed, approved and reviewed by the responsible authority. In addition, the inspectors reviewed the analysis to determine if the analysis contains documentation that the ITAAC requirements have been met.

b. Findings

No findings were identified.

1A08 (Unit 3) ITAAC Number 2.2.03.05a.i (165) / Family 14A
(Unit 4) ITAAC Number 2.2.03.05a.i (165) / Family 14A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.05a.i (165). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.E-02.01-Design Basis Requirements
- 65001.E-02.03-Qualification
- 65001.E-02.04-Documentation

The inspectors reviewed documentation of the analysis of the PXS pH adjustment baskets (commodity MY07) to determine if they could withstand seismic design basis dynamic loads without loss of structural integrity. The inspectors reviewed the pH adjustment baskets design specification, design report, and calculations to determine if the requirements for seismic analysis were identified and implemented in accordance with the UFSAR section 3D and IEEE 344-1987. Specifically, the inspectors reviewed the design specification, design drawings, and calculations to verify if the design

conditions and stresses of the pH adjustment baskets were specified and incorporated into seismic stress calculations. In addition, the inspectors reviewed the seismic analysis methodology to determine if it was performed in accordance with the methodology described in APP-GW-G1-002 and APP-GW-G1-003.

The inspectors reviewed the pH adjustment basket evaluation, which contained seismic stress calculations, to determine if the qualification was performed in accordance with the design specification and IEEE 344-1987. Specifically, the inspectors reviewed the analysis to verify if the floor response spectra used to determine acceleration during a seismic event was in accordance with the design specification and APP-1000-S2C-056. The inspectors reviewed the analysis to determine if the requirements for specification information, the qualification report, and the acceptance criteria for the analysis, as stated in IEEE 344-1987 section 10 and the ITAAC, were met. In addition, the inspectors reviewed damping values for welded steel structures used in the seismic analysis to verify if they were in accordance with RG 1.61.

The inspectors reviewed ANSYS models to verify if the material properties of the pH adjustment basket and the required response spectrum were entered into the model in accordance with the design specification, design drawings, and nuclear island seismic floor response spectra.

The inspectors reviewed the analysis package to verify if it had been completed, approved and reviewed by SNC and its contractor. In addition, the inspectors reviewed the document package to determine if it contained documentation that the ITAAC requirements have been met.

The inspectors reviewed documentation of the analysis of the containment recirculation screens and in-containment refueling water storage tank (IRWST) screens (commodity MY03) to determine if they could withstand seismic design basis dynamic loads without loss of structural integrity. The inspectors reviewed the design specification and design report to determine if the requirements for seismic analysis were identified and implemented in accordance with the UFSAR section 3D and IEEE 344-1987. Specifically, the inspectors reviewed the design specification to verify if the physical properties of the containment recirculation screens and IRWST screens were specified and incorporated into the design report. In addition, the inspectors reviewed the seismic analysis methodology to determine if was performed in accordance with the methodology described in APP-GW-G1-002, APP-GW-G1-003, and APP-GW-VP-020.

The inspectors reviewed the design report to verify if the qualification was performed in accordance with the design specification and IEEE 344-1987. Specifically, the inspectors reviewed the acceptance criteria for stresses to determine if the acceptance criteria met the requirements of ASME Section III, Subsection NF and ASME Section III, Appendix F. In addition, the inspectors reviewed the analysis to verify if the floor response spectra used to determine acceleration during a seismic event was in

accordance with the design specification, APP-1000-S2C-056, and APP-1000-S2C-160. The inspectors reviewed the analysis to determine if the requirements for specification information, the qualification report, and the acceptance criteria for the analysis, as stated in IEEE 344-1987 section 10 and the ITAAC, were met. In addition, the inspectors reviewed damping values for welded steel structures used in the seismic analysis to verify if they were in accordance with RG 1.61.

The inspectors reviewed the analysis package to verify if it had been completed, approved and reviewed by SNC and its contractor. In addition, the inspectors reviewed the document package to determine if it contained documentation that the ITAAC requirements have been met.

b. Findings

No findings were identified.

1A09 (Unit 3) ITAAC Number 2.3.05.01 (339) / Family 13A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.3.05.01 (339). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors visually examined the polar crane to determine if it conformed to the mechanical handling system (MHS) as described in the design description of Chapter 2.3.5 and Table 2.3.5-3 of Appendix C of the COL. Specifically, the inspectors independently measured the elevation of the polar crane using a laser measuring device to determine if the elevation was correct according to the general arrangement drawings of containment. The inspectors also selected a sample of polar crane dimensions from detailed drawings and independently measured them in order to determine if they conformed to the drawings.

b. Findings

No findings were identified.

1A10 (Unit 3) ITAAC Number 2.5.02.02.i (522) / Family 10A
(Unit 4) ITAAC Number 2.5.02.02.i (522) / Family 10A

a. Inspection Scope

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

- 65001.E-02.01-Design Basis Requirements
- 65001.E-02.03-Qualification
- 65001.E-02.04-Documentation
- 65001.E-02.06-Problem Identification and Resolution

The inspectors reviewed documents associated with the seismic and environmental qualification of the main control room consoles and panels (JC01), specifically the primary dedicated safety panel (PDSP) console. The inspectors reviewed documentation to verify if qualification activities were controlled, methodologies conformed to applicable regulatory guidance and industry standards, and testing was representative of plant conditions. The inspectors reviewed the Equipment Qualification Data Package (EQDP), Equipment Qualification Summary Report (EQSR), and associated test reports for seismic testing, environmental testing, and electromagnetic compatibility (EMC) testing to determine if requirements for qualification of safety-related (Class 1E) electrical equipment were identified and implemented in accordance with the UFSAR section 3D, IEEE 323-1974, and IEEE 344-1987.

The inspectors reviewed the EQDP, EQSR, and seismic testing reports to determine if the seismic qualification methodology was performed in accordance with the methodology described in APP-GW-G1-002, APP-GW-G1-003, IEEE 323-1974, and IEEE 344-1987. The inspectors reviewed the seismic testing reports to determine if design basis parameters to be used as input for the seismic qualification testing were in accordance with UFSAR section 3D and IEEE 344-1987. The inspectors reviewed the seismic testing reports to verify that the following seismic qualification testing requirements were considered in accordance with IEEE 344-1987:

- earthquake magnitude and number of cycles;
- 10% margin increase to test acceleration;
- 5% damping and test frequency (Hz) range;
- operating-basis earthquake (OBE) test runs at one-half of the safe-shutdown earthquake (SSE) level;
- test response spectrum (TRS); and
- multi-frequency SSE required response spectra (RRS).

The inspectors reviewed seismic testing reports to determine if the requirements for specification information, the qualification report, and the acceptance criteria for the analysis, as stated in IEEE 344-1987 section 10 and the ITAAC, were met.

For environmental conditions, the inspectors reviewed the EQDP and EQSR to verify if the qualification methodology was in accordance with the methodology given in APP-

GW-G1-002, Specifically, the inspectors reviewed the test sequence to verify if it followed the sequence outlined in IEEE 323-1974, section 6.3.2.

The inspectors reviewed the test plan for environmental conditions to verify if the test plan specified the following conditions in accordance with the design specification and APP-GW-VP-030 for both normal and abnormal conditions:

- temperature;
- pressure;
- humidity;
- radiation; and
- duration.

In addition, the inspectors reviewed the margin applied in the test plan for the following properties to verify if it met the requirements of IEEE 323-1974, section 6.3.1.5 and the Westinghouse EQ methodology:

- temperature (including panel heat rise);
- voltage;
- frequency; and
- duration.

Lastly, the inspectors reviewed the test plan to determine if the monitoring for process variables outlined in IEEE 323-1874, section 6.3.1.4 (such as temperature, pressure, voltage) would capture the environmental conditions and equipment response to make a determination if the equipment would be able to perform its safety function after a design basis accident.

The inspectors reviewed the test report to verify if it followed the test plan and met acceptance criteria outlined in methodology and APP-OCS-GMP-001. The inspectors reviewed the completed testing procedure and checklist to verify if testing followed APP-OCS-GMP-001 and NA 11.2. The inspectors reviewed deviations and notice of nonconformances (NONs) that were identified during testing to determine if NONs were resolved and dispositioned per procedure NA 11.2. The inspector reviewed a sample of corrective action program and learnings (CAPAL) created during testing to determine if their resolution was technically addressed and was documented in the EQDP/EQSR.

The inspectors reviewed APP-OCS-VPY-001 to verify changes in main control room (MCR) temperature profile, which occurred after testing, were reconciled and re-testing was performed if the previous test did not demonstrate the environmental conditions shown in the newest revision of APP-GW-VP-030. For CAPAL 100027411, the inspectors reviewed APP-OCS-VPY-002, which was generated from the CAPAL as a result of discrepancies in requirements that the contact chatter. The inspectors reviewed the resolution of APP-OCS-VPY-002 and test records to verify contact chatter was

measured during the qualification tests. Specifically, the inspectors reviewed APP-OCS-VPY-002 to verify if contact chatter was measured to meet the requirement of 2 milliseconds or less in accordance with the design specification.

The inspectors reviewed the qualification package to verify if it had been completed, approved, and reviewed by SNC and its contractor. In addition, the inspectors reviewed the document package to determine if it contained documentation that the ITAAC requirements have been met, including the documentation requirements in IEEE 323-1974, section 8.

The inspectors reviewed the EMC test plan and procedure, and EMC test report to determine if the required industry standard EMC tests required for qualification were performed as required by the WEC EMC program and RG 1.180. The inspectors reviewed the results in the EMC test report to determine if all tests passed, all test deviations were dispositioned appropriately, and re-tests were performed when required in accordance with the WEC EMC program and RG 1.180.

The inspectors reviewed the analysis package to verify if it had been completed, approved and reviewed by SNC and its contractor. In addition, the inspectors reviewed the document package to determine if it contained documentation that the ITAAC requirements have been met.

b. Findings

No findings were identified.

1A11 (Unit 3) ITAAC Number 2.5.02.11 (550) / Family 10F
(Unit 4) ITAAC Number 2.5.02.11 (550) / Family 10F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.11 (550). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.22-A2.03.03-Requirements Phase Documentation
- 65001.22-A3.03.04-Design Phase Documentation
- 65001.22-A4.03.02-Integration Phase Documentation
- 65001.22-A5.03.04 - Documentation

The inspectors reviewed APP-GW-GLR-620, "AP1000 Design Certification ITAAC 2.5.02.11: Protection and Safety Monitoring System Design Process Technical Report," Revision 1, and associated references to determine if it provided a roadmap to the documentation that fulfills the inspections, tests, analyses and acceptance criteria for the

Protection and Safety Monitoring System (PMS) ITAAC 2.5.02.11, parts: b) system definition phase; c) hardware and software development phase, consisting of hardware and software design and implementation; and d) system integration and test phase, in accordance with the guidance in ML163270A070, "Staff Position on AP1000 Digital Instrumentation and Control ITAAC Completion."

The inspectors reviewed APP-GW-GLR-620 to determine if the licensee's vendor, WEC, developed a process to meet the requirements of ITAAC 2.5.02.11 for the system definition phase; hardware and software development phase; and the system integration and test phase. Specifically, the inspectors reviewed the following attributes for each of the lifecycle phases:

- organizational responsibilities;
- configuration management controls; and
- activities.

Organizational Responsibilities

The inspectors reviewed the PMS organizational planning documents to determine if a process was developed in accordance with ITAAC 2.5.02.11. The inspectors reviewed WCAP-16096-P-A, "Software Program Manual for Common Q Systems," Revision 4; WNA-PD-00042-WAPP, "AP1000 Protection and Safety Monitoring System Software Development Plan," Revision 13; and APP-PMS-T5-001, "AP1000 Protection and Safety Monitoring System Test Plan," Revision 5, to determine if the licensee met the guidance of IEEE Standard 1074-1995, "IEEE Standard for Developing Software Life Cycle Processes," Sections 3, "Project Management Processes," Section 5, "Development Processes," and Section 7, "Integral Processes." Specifically, the inspectors reviewed the PMS system definition phase; hardware and software development phase; and system integration and test phase organizational responsibilities to determine if they were defined and implemented as described in the IEEE Standard and the Software Program Manual.

Configuration Management Controls

The inspectors reviewed the PMS system definition phase; hardware and software development phase; and system integration and test phase configuration management controls to determine if they were defined and implemented as described in IEEE 1074-1995 Section 7.2, "Software Configuration Management Process," and in the Software Program Manual. The inspectors reviewed WNA-PC-00005-WAPP, "AP1000 I&C Projects Configuration Management Plan," Revision 6, to verify if configuration management controls were defined in accordance with the requirements of the IEEE Standard. The inspectors reviewed WNA-PC-00005-WAPP to verify if the PMS configuration management process defined the following items to be managed:

- hardware;
- software;

- documentation (analyses, technical and process requirements); and
- software tools.

The inspectors reviewed WNA-PC-00005-WAPP to determine if the process for documenting changes to the configuration items was defined, including roles and responsibilities, process requirements, and deliverables in accordance with IEEE Standard 828-1998, "IEEE Standard for Developing Software Life Cycle Processes," Section 4, "The Software Configuration Management Plan." In addition, the inspectors reviewed APP-PMS-T5-001, "AP1000 Protection and Safety Monitoring System Test Plan," Revision 5, and WNA-PV-00054-WAPP, "AP1000 Protection and Safety Monitoring System Software Verification and Validation Plan," Revision 8, to verify if control of configuration management documentation was defined in accordance with WNA-PC-00005-WAPP.

The inspectors also reviewed the following configuration management implementation documents:

- WNA-RL-05234-WAPP, "AP1000 Protection and Safety Monitoring System Software Configuration Management Release Report," Revision 5;
- APP-PMS-J8R-005, "AP1000 Protection and Safety Monitoring System Functional and System Design Configuration Management Release Report," Revision 1;
- WNA-RL-02532-SV3, "Vogtle Unit 3 AP1000 Protection and Safety Monitoring System Hardware Configuration Management Release Report," Revision 5; and
- WNA-RL-02791-SV4, "Vogtle Unit 4 AP1000 Protection and Safety Monitoring System Hardware Configuration Management Release Report," Revision 5.

The inspectors reviewed these documents to determine if the formal notification of the approved configuration items was documented in accordance with IEEE 828-1998 Section 4.3.3, "Configuration Status Accounting," and the PMS development configuration management identification process was in accordance with IEEE 1074-1995, Section 7.2.4, "Develop Configuration Identification."

The inspectors reviewed APP-GW-GLR-620 to verify if test reports and the independent verification and validation (IV&V) phase summary report listed were identified covering implementation of configuration management controls specifically for the test phase in accordance with the guidance in ML16327A070, "Staff Position on AP1000 Digital Instrumentation and Control ITAAC Completion."

System Definition Phase Activities

The inspectors reviewed NABU-DP-00014-GEN, "Design Process for Common Q Safety Systems," Revision 11, and APP-GW-J1R-001, "Design Process for AP1000 Common Q Safety Systems," Revision 6, to determine if IEEE 1074-1995 Sections 4, "Pre-

development Processes," and 5.1, "Requirements," guidance for development of the following system definition phase output documents were implemented:

- system requirements specification;
- functional design documentation;
- system design documentation; and
- software requirements specification.

Specifically, the inspectors reviewed the mapping of the PMS system definition phase listed in APP-GW-J1R-001 to the output documents listed above using the descriptions in WCAP-16096-P-A, "Software Program Manual for Common Q Systems," Revision 4, and IEEE-1074-1995, Sections 4, "Pre-development Processes," and 5.1, "Requirements," of the software lifecycle phases to verify if the PMS system definition process was consistent with a planned design process as required in UFSAR Chapter 7.1.2.14.1.

The inspectors also reviewed the APP-PMS-GER-003, "AP1000 Software Hazard Analysis Report," of AP1000 Protection and Safety Monitoring System, Revision 3, and DPP-PMS-J0R-001, "AP1000 Protection and Safety Monitoring System Requirements Traceability Matrix," Revision 0, to verify if these documents were developed in accordance with NABU-DP-00014-GEN and IEEE-1074-1995, Sections 4, "Pre-development Processes," and 5.1, "Requirements," of the software lifecycle phases to verify if the PMS system definition process was consistent with a planned design process as required in UFSAR Chapter 7.1.2.14.1.

Hardware and Software Development Phase, Integration and Test Phase Activities

The inspectors reviewed WCAP-16096-P-A, "NABU-DP-00014-GEN, Design Process for Common Q Safety Systems," Revision 11; and WCAP-15927, "Design Process for AP1000 Common Q Safety Systems," Revision 7, to verify if IEEE 1074-1995 Section 5 requirements were included in the design process. Specifically, the inspectors reviewed the mapping of the PMS development and test phases listed in WCAP-15927 to the descriptions in WCAP-16096-P-A and the IEEE-1074-1995 Section 5 lifecycle phases to verify if the PMS design process was consistent with the Software Program Manual and was formally structured in accordance with the IEEE 1074-1995 Section 5 requirements.

The inspectors reviewed WCAP-15927 to verify if the required IEEE-1074-1995 Section 5, "Development Processes," activities, for both hardware and software, were defined and the required development phase outputs for each life cycle activity were listed in accordance with IEEE 1074-1995 Section 5. The inspectors reviewed APP-GW-GLR-620 to verify if the PMS life cycle activities and resultant activity output documents listed were identified covering implementation of the development phase activity in accordance with WCAP-15927. The inspectors review included verifying if system test development phase activities addressed response time testing and analysis under maximum CPU loading in accordance with WCAP-15927.

b. Findings

No findings were identified.

1A12 (Unit 3) ITAAC Number 2.5.02.12 (551) / Family 10F
(Unit 4) ITAAC Number 2.5.02.12 (551) / Family 10F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.12 (551). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.22-A1.03.01-Inspection of Software Management Plan (SMP)
- 65001.22-A1.03.03-Inspection of Software Configuration Management Plan (SCMP)
- 65001.22-A1.03.04-Inspection of Software Verification & Validation Plan (SVVP)
- 65001.22-A3-Appendix 3 - Inspection Guide for System/Software Life Cycle - Design & Implementation Phase
- 65001.22-A4-Appendix 4 - Inspection Guide for System/Software Life Cycle - Integration Phase

The inspectors reviewed APP-GW-GLR-155, “AP1000 Design Certification ITAAC 2.5.02.12: The Process Used to Design, Test, Install and Maintain the Protection and Monitoring System Software Technical Report,” to verify if it provided a roadmap to the documentation that fulfills the inspections, tests, analyses and acceptance criteria for the PMS design and testing requirements of ITAAC 2.5.02.12.

The inspectors reviewed APP-GW-GLR-155 and associated references to verify if the PMS software design and testing incorporated a graded approach to classify the software and provided specific requirements, documentation and reviews for the software management, software configuration management and verification and validation functions.

The inspectors reviewed APP-GW-GLR-155, to verify if the report documented an assessment of the implementation of the life cycle functions in accordance with the guidance in ML163270A070, “Staff Position on AP1000 Digital Instrumentation and Control ITAAC Completion.” Additionally, the inspectors reviewed ND-RA-001-008-F, “ITAAC Principal Closure Document Review Form,” Version 9 to determine if the licensee reviewed APP-GW-GLR-155 to determine whether the ITAAC requirements were met in accordance with ND-RA-001-008, “ITAAC Principal Closure Document Review and Development,” Version 11.1.

Software Classification

The inspectors reviewed WCAP-16096-P-A, Software Program Manual for Common Q Systems, Revision 4, to determine if the process to classify PMS software elements, according to their relative importance to safety and specify requirements for software assigned to each safety classification, met the requirements of IEEE Standard (Std.) 1012-1998, IEEE Standard for Software Verification and Validation, Section 4, "V&V Software Integrity Levels." Specifically, the inspectors reviewed the mapping and definition of software classification categories to match appropriate software integrity levels to verify if they were defined as required in IEEE 1012-1998 Section 4, "V&V Software Integrity Levels."

The inspectors also reviewed APP-PMS-J7X-001, "AP1000 Protection and Safety Monitoring System Equipment Classification List," Revision 4, to determine if software modules were assigned to software classification categories as defined in the Software Program Manual.

Software Management

The inspectors reviewed WCAP-16096-P-A and W2-5.1, "Westinghouse Corrective Action Program," Revision 2 to determine if the software management process included procedures for problem reporting and corrective action in accordance with the ITAAC. The inspectors reviewed SV0-IVV-JQR-021, "Vogtle AP1000 Protection and Safety Monitoring System Independent Verification and Validation Summary Report," Revision 4, to verify review of the software management planning documents was performed in accordance with IEEE 1012-1998. The inspectors also reviewed the mapping of WCAP-16096-P-A Table II, "Information Requirements," to verify the software management implementation activities and design outputs were evaluated in accordance with IEEE 1012-1998.

Software Configuration Management (SCM)

The inspectors reviewed WNA-PC-0005-WAPP, "AP1000 I&C Projects Configuration Management Plan," Revision 6, to verify if it met the requirements of IEEE-828-1998, Section 4, "Software Configuration Management Plan." The inspectors reviewed WNA-PC-0005-WAPP to verify that the PMS configuration management process defined the following items to be managed for software configuration:

- SCM management organization;
- configuration identification, change control, status accounting;
- resources; and
- plan maintenance.

The inspectors reviewed SV0-IVV-JQR-021 to verify if the historical configuration records were generated in accordance IEEE 1074-1995, Section 7.2.6, "Perform Status Accounting" and the independent verification of these items in accordance with IEEE 1012-1998 requirements.

Software Verification and Validation

The inspectors reviewed WNA-PV-00054-WAPP, “AP1000 Protection and Safety Monitoring System Software Verification and Validation Plan, Revision 8, to determine if the plan was in compliance with WCAP-16096-P-A and the guidance from IEEE 1012-1998, Annex C, “Definition of IV&V.” The inspectors specifically reviewed the IV&V requirements mapping in WNA-PV-00054-WAPP of the following documents to determine if the licensee met the guidance of IEEE 1012-1998 Annex C IV&V reviewer independence from the software design team:

- WCAP-16096-P-A organization structure;
- APP-GW-J1R-001, "Design Process for AP1000 Common Q Safety Systems," Revision 6, alternative method for tracking configuration of hardware; and
- IEEE 1012-1998, Annex C, IV&V requirements to include IV&V team independence from the software design team.

b. Findings

No findings were identified.

1A13 (Unit 3) ITAAC Number 2.6.03.02.i (597) / Family 08A
(Unit 4) ITAAC Number 2.6.03.02.i (597) / Family 08A

a. Inspection Scope

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

- 65001.E-02.01-Design Basis Requirements
- 65001.E-02.03-Qualification
- 65001.E-02.04-Documentation
- 65001.E-02.06-Problem Identification and Resolution

The inspectors reviewed documents for seismic qualification of Class 1E Fuse Panels (commodity EA03) for Divisions A, B, C and D to verify if qualification activities were controlled; methodologies conformed to applicable regulatory guidance; and industry standards and testing were representative of plant conditions. The inspectors performed the review to determine if the following components could withstand seismic design basis loads without loss of safety function:

- IDSA-EA-4, Division A Fuse Panel 4, (EA03) Room No. 12301,
- IDSB-EA-4, Division B Fuse Panel 4, (EA03) Room No. 12302,
- IDSB-EA-5, Division B Fuse Panel 5, (EA03) Room No. 12302,
- IDSB-EA-6, Division B Fuse Panel 6, (EA03) Room No. 12302,

- IDSC-EA-4, Division C Fuse Panel 4, (EA03) Room No. 12304,
- IDSC-EA-5, Division C Fuse Panel 5, (EA03) Room No. 12304,
- IDSC-EA-6, Division C Fuse Panel 6, (EA03) Room No. 12304, and
- IDSD-EA-4, Division D Fuse Panel 4, (EA03) Room No. 12305.

The inspectors reviewed one notice of nonconformance, documented during the seismic qualification process, which was related to OBE test runs for each component seismically tested in APP-EA03-VPR-001, to determine if the identified deficiency was resolved through retesting. The inspector reviewed one test deficiency in APP-EA03-VBR-002 to verify if the concern was captured in the corrective action program as required by ND-PI-001. In addition, the inspectors reviewed IR-2019-5352, which was generated during this inspection, to verify if the corrective action document identified the deficiency.

The inspectors reviewed the qualification program documents, such as the EQDP, EQSR, test procedures, test specifications, test reports, calculations, drawings and one work order, to verify if limiting design basis parameters to be used as input for the seismic qualification testing of the components were in compliance with UFSAR Chapter 3, Appendix 3D and Attachment E. In addition, the inspectors reviewed the qualification documents to verify that the following seismic qualification testing requirements were considered per IEEE 344-1987:

- earthquake magnitude and number of cycles;
- 10% margin increase to test acceleration;
- 5% damping and test frequency (Hz) range;
- OBE test runs at one-half of the SSE level;
- TRS; and
- multi-frequency SSE RRS.

The inspectors reviewed seismic design testing methodologies, design basis parameters for seismic qualification type testing sequence and the seismic testing acceptance criteria, to verify if the seismic qualification tests were performed in accordance with IEEE 323-1974, and IEEE 344-1987. Specifically, the inspectors reviewed the seismic testing methodology in APP-GW-G1-002, APP-GW-G1-003 to determine if the seismic qualification test sequence was as stated in IEEE 323-1974, sections 6.3.2, 6.3.5 and the seismic tests were stated in IEEE 344-1987 section 4. The inspectors also reviewed the test report to verify that the test sequence was performed as described in APP-GW-G1-002 and APP-GW-G1-003. In addition, the inspectors reviewed the EQDP to verify if the test specimens met the Class 1E Fuse Panels design specification and construction drawings requirements.

The inspectors reviewed the seismic test results data to verify that the ITAAC acceptance criteria was met and that the seismic testing accurately measured and enveloped the required test response spectrum. The inspectors reviewed document

APP-1000-S2C-181 to verify that the appropriate floor response spectra, for the mounting point of the equipment, was translated into APP-EA03-VBR-002 and included the required testing margins, as specified in the Westinghouse design specifications and IEEE 323, section 6.3.1.5. The inspectors also reviewed EQSR which described the testing facility and test procedure to verify if the set up was in a accordance with APP-GW-G1-002, AP1000 equipment methodology and to verify if seismic qualification testing activities for the components were controlled.

b. Findings

No findings were identified.

1A14 (Unit 3) ITAAC Number 2.6.09.05b (645) / Family 17A
(Unit 4) ITAAC Number 2.6.09.05b (645) / Family 17A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.6.09.05b (645). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.17-02.12-Alarm Stations

This input is security related. See report 05200025/2019401 and 05200026/2019401 for details.

b. Findings

No findings were identified.

1A15 (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:

- 65001.01-02.01 - Procedures
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection

The inspectors observed in-process welding activities and reviewed records associated with construction of the Unit 3 shield building. Specifically, the inspectors sampled the following horizontal welds between courses 12 and 13 at elevation 209'-6" for steel composite (SC) panels:

- 12C/13BC Horiz O;
- 12D/13CD Horiz O;
- 12E/13DE Horiz O;
- 12F/13FG Horiz O;
- 12G/13FG Horiz O; and
- 12M/13LM Horiz O.

The inspectors observed several stages of in-process welding on the horizontal weld joints listed above during assembly of the shield building SC panels to verify the welding activities were conducted in accordance with the requirements of the welding procedures and American Welding Society (AWS) D1.1:2000. For welds 12E/13DE and12F/13FG, the inspectors observed the weld machine setup, including the addition of flux, the replacement of weld wire, the adjustment of machine current, the adjustment of travel speed, and the adjustment of weld wire position. The inspectors also observed QC verify the weld machine amperage and voltage to determine if the machine displays for these parameters were within the machine calibration limits. The inspectors observed these activities to verify the machine was set up and operated within the requirements of WPSs 181816-000-WS-SP-45001, and SV3-1208-Z0-001.

For weld 12C/13BC, the inspectors observed intermediate pass hand and machine welding, including cleanliness between passes. For welds 12D/13CD, 12E/13DE, and 12F/13FG, the inspectors observed cap hand and machine welding, including cleanliness between passes. During in-process welding, the inspectors observed the following attributes to verify the welding was being performed in accordance with the applicable WPS:

- the weld material being used at the work locations, including AWS electrode classification;
- the weld variables, including voltage, amperage, and travel speed;
- the heat input and interpass temperature;
- the joint configuration and weld position; and
- the environmental conditions, including protection from wind and moisture.

The inspectors reviewed the weld traveler for the weld joints listed above to determine if established QC inspection hold points and required visual inspections were signed-off in accordance with 181816-000-WS-SP-45001. The inspectors also reviewed the weld travelers to determine if the traceability of weld filler metals and welders were maintained in accordance with 181816-000-WS-SP-45001. The inspectors reviewed the WPS and supporting procedure qualification records to determine if they were written and qualified

in accordance with the requirements of the AWS Code D1.1-2000, Section 4. The inspectors reviewed the quality inspection reports for the flux and weld wire material to verify the material had been inspected and approved for use in accordance with CMS-720-03-PR-09054 and CMS-720-03-PR-09154.

The inspectors observed the in-process ultrasonic test (UT) of weld 12M/13LM, including equipment set-up, weld surface preparations, the use of the calibration block, and straight and angle-beam testing, to verify the UT was performed in accordance with 181816-000-WS-PR-45054, AWS D1.1 Section 6 and Part F, and ANSI/AISC N690. The inspectors independently assessed the in-process UT inspection data to determine if the weld quality met the acceptance criteria of AWS D1.1 Section 6 and Part F. The inspectors reviewed the UT report to verify the inspection was documented in accordance with 181816-000-WS-PR-45054.

The inspectors performed an independent visual inspection of portions of completed welds 12E/13DE and 12F/13FG and tack welding of weld 12G/13FG to determine whether:

- the quality of the tack welds, weld toes, and cover passes were free from defects such as cracks, lack of fusion, or excessive overlap/undercut/porosity;
- the welds met the type, size, and location requirements of SV3-1208-Z0-001 and the WPSs; and
- the welds met the visual inspection acceptance criteria for 181816-000-WS-PR-45056 and AWS D1.1-2000.

b. Findings

No findings were identified.

1A16 (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:

- 65001.01-02.05 - Steel Structures
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review

- 65001.F-02.04-General QA Review

The inspectors performed an inspection of fabrication activities associated with the Vogtle Unit 3 shield building. Specifically, prior to on-site assembly, the inspectors sampled the following tension ring modules that will be installed between elevations 266'-4" and 271'-6":

- TR01, which will be installed between azimuths 343 degrees and 17 degrees;
- TR03, which will be installed between azimuths 51 degrees and 84 degrees; and
- TR07, which will be installed between azimuths 174 degrees and 208 degrees.

The inspectors reviewed a sample of design drawings to verify they were in accordance with the UFSAR and Vogtle Unit 3 COL. Specifically, the inspectors reviewed the fabrication details (including plate thicknesses and locations, stiffener locations, stud locations, reinforcement locations and sizes, and fabrication dimensions) described in the drawings to verify they incorporated the details from UFSAR Figure 3H.5-11 and Vogtle Unit 3 COL, Appendix C, Section 3.3. The inspectors reviewed these attributes to verify the drawings aligned with:

- the general design description in UFSAR Sections 3.8.4.1.1, 3H.2.2, and 3H.5.6.1;
- the codes specified in UFSAR Sections 3.8.4.2 and 3H.5.6;
- the seismic category 1 structural design and analysis requirements specified in UFSAR Section 3.8.4.4.1;
- the axial load requirements described in UFSAR Section 3.8.4.5.5.1 and Table 3H.5-9; and
- the shear load requirements in UFSAR Sections 3.8.4.5.5.2 and 3.8.4.5.5.3.

The inspectors reviewed coupler and weld sizing requirements described in the drawings to verify they met the requirements in UFSAR 3.8.4.5.1. The inspectors reviewed the mechanical connection between the shield building tension ring and roof assembly shown on the design drawings to verify the connection was in accordance with UFSAR Sections 3.8.4.5.5.6 and 3H.5.6. The inspectors reviewed the concrete design requirements, including strength and aggregate size, described in the drawings to verify the requirements of UFSAR Section 3.8.4.6.1.1 were included. The inspectors reviewed the reinforcing steel material requirements, including mechanical connection material requirements, described in the drawings to verify they encompassed the requirements specified in UFSAR Section 3.8.4.6.1.2.

The inspectors reviewed design calculations APP-1278-CCC-003 and APP-1278-CCC-013 to verify they included the design requirements from the UFSAR sections described above. Additionally, the inspectors reviewed the load combinations used in the two calculations to verify they included the required loads from both American Concrete Institute (ACI) 349-01 and AISC N690-1994. The inspectors reviewed the design

outputs to verify the limiting load was used to determine design margin for each component of the module. The inspectors reviewed the materials and dimensions used in the calculation to verify they were the same as the design drawings and fabrication records. The inspectors reviewed a sample of 13 engineering and design coordination reports (E&DCRs) associated with the modules to verify design changes were conducted in accordance with the requirements of 10 CFR 50 Appendix B, Criterion III and APP-GW-GAP-420. Additionally, the inspectors reviewed the E&DCRs to verify the changes from the original design did not make substantial changes that would require revision of the design calculations.

The inspectors reviewed a sample of Material Receiving Reports to determine whether the licensee's QC organization had performed an inspection of the modules (including dimensions, shipping damage, coatings, and records) prior to approving them for assembly and installation on site in accordance with 10 CFR 50, Appendix B, Criterion X. The inspectors reviewed the reports to verify the licensee had established measures to identify and control the materials and parts to ensure identification of the items and traceability of the items to the applicable records were maintained in accordance with 10 CFR 50, Appendix B, Criterion VIII. Additionally, the inspectors reviewed these reports to determine whether the licensee had established measures to assure the purchased material conformed to the procurement documents in accordance with 10 CFR 50, Appendix B, Criterion VII.

The inspectors reviewed the purchase order for the three tension ring panels listed above to verify they specified the quality and technical requirements of 10 CFR Part 21, 10 CFR 50 Appendix B, and the design specifications. The inspectors reviewed the following fabrication records included in the vendor fabrication packages to verify they were complete and met the quality and technical requirements of the purchase order, the design drawings, ACI 349-01, AISC N690-1994, and AWS D1.1-2000:

- the certificates of conformance;
- quality inspection reports for in process assembly work, the final dimensions of the modules prior to shipping, and the shipping and packaging of the modules;
- the weld records for welding the plates, studs, and couplers, including all essential variables specified by the codes;
- visual, magnetic particle, and ultrasonic NDE reports for the welds and plate thicknesses;
- the calibration information for the measuring & test equipment used by the quality inspectors and NTE technicians;
- material traceability information for the plate, reinforcing studs, couplers, and weld filler material;
- coating application information; and
- tracking information for nonconformances, including repair approvals and statuses.

The inspectors reviewed a sample of CMTRs and commercial grade dedication packages associated with the materials the fabricator used for the tension ring panels listed above to verify they met the requirements of the purchase order and the design specification. The inspectors reviewed the tensile test results and chemical compositions for the materials used to verify they were within the allowable ranges for each material as required by the purchase order. The inspectors reviewed the Charpy V-notch test results to verify the test was performed as required by AISC N690-1994 section Q1.4. The inspectors reviewed the final inspection reports included in the commercial grade dedication to verify the inspections were conducted and documented as required by the purchase order.

The inspectors performed independent inspection and measurements of the modules to verify fabrication was completed in accordance with the purchase order and the as-built configuration was in accordance with the final design, the ITAAC, and the UFSAR. The inspectors examined the size, spacing, locations, and dimensions of reinforcement, studs, plates, angles, cutouts, and mechanical couplers to determine whether they were in accordance with specifications SV3-1208-Z0-001 and SV3-VL52-Z0-572 and the applicable drawings. The inspectors reviewed tagging and markings on the submodules to determine whether the marking system identified the material and inspection status during storage and installation in accordance with 10 CFR 50, Appendix B, Criterion VIII. The inspectors observed the storage of the submodules to determine whether the submodules were stored and maintained in accordance with ASME NQA-1-1994, Part II, Subpart 2.2. The inspectors performed independent inspection and measurements of the welds to determine whether they met the design drawings, including type, size, and location. Additionally, the inspectors performed independent inspection of the welds to verify they met visual inspection acceptance criteria for AWS D1.1-2000, including cracks, lack of fusion, undercut, porosity, weld size, and other visual defects. The inspectors reviewed a sample of weld records provided by the fabricator to determine whether the following were in accordance with AWS D1.1-2000:

- records provided traceability to the welding activities;
- the records documented weld material certifications, weld data or process records, weld inspection records, and NDE records;
- required inspections were identified with hold points as required by the design codes; and
- accepted, rejected, and repaired items were documented.

The inspectors reviewed a sample of four condition reports (CRs) associated with the tension ring modules to verify the evaluations and corrective actions were conducted in accordance with the licensee's corrective action program (CAP), the issues were completely and accurately identified and documented in a timely manner, and the resolutions were prioritized commensurate with safety significance. The inspectors reviewed the associated fabrication records, including nonconformance reports and weld records, to verify the records were complete and correctly referenced each other in

accordance with ND-AD-002. The inspectors reviewed a sample of eight N&D reports associated with the modules to verify the dispositions met the requirements of APP-GW-GAP-428. Additionally, the inspectors reviewed the nonconformance dispositions to verify the changes from the original design did not make substantial changes that would require reevaluation of the design calculations. The inspectors performed independent inspection and measurements of the modules to verify the CAP issues and nonconformances had been captured and the corrective actions had been implemented.

b. Findings

No findings were identified.

1A17 (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:

- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.02 - Laboratory Testing
- 65001.02-02.03 - Special Considerations
- 65001.02-02.06 - Record Review
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors observed concrete placement activities, observed testing activities, reviewed quality records, and performed independent inspection of Vogtle Unit 3 shield building steel composite panel courses 15 and 16 between elevations 228'-6" and 247'-6 1/2".

The inspectors independently assessed the placement area prior to concrete placement to determine whether it was secure, leak tight, and free from debris or excess water as required by ACI 349-01 and SV3-CC01-Z0-031. The inspectors reviewed the concrete placement plan included in the work package to determine whether pre-placement planning had been completed, including considerations for weather, mass concrete, and unexpected events.

The inspectors observed concrete placement activities to determine whether approved work instructions, procedures, and specifications were available in the work area and were followed throughout the concrete placement as required by the licensee's quality

assurance program and 10 CFR 50, Appendix B, Criterion 5. The inspectors observed concrete placement activities to verify the placement did not result in mix segregation as specified in ACI 349-01 and SV3-CC01-Z0-031. The inspectors observed the concrete trucks in use during the placement to verify the time interval between mixing and placing was less than 90 minutes and the truck had less than 300 revolutions for each batch of concrete in accordance with SV3-CC01-Z0-026 and SV3-CC01-Z0-031. The inspectors observed the concrete in the concrete trucks and at the point of placement to verify it was uniformly mixed in accordance with ACI 349-01. The inspectors evaluated a sample of the placement's batch tickets as they were being filled out and signed by the concrete truck drivers, field engineers, and QC inspectors to verify each batch ticket was reviewed for transport time and truck rotations, verification of proper mix, and placement location in accordance with SV3-CC01-Z0-031. The inspectors observed field engineering and quality control inspections throughout the concrete placement to verify inspection was performed during placement as required by ACI 349-01 and SV3-CC01-Z0-031. The inspectors reviewed the QC inspection report for the concrete placement to verify the inspection was documented and the activities were accepted in accordance with SV3-CC01-Z0-031.

During the placement, the inspectors observed in-process concrete testing to determine whether:

- concrete temperature, slump, air content, and unit weight were determined at the proper location and frequency as required by ACI 349-01, SV3-CC01-Z0-027, and the applicable American Society of Testing and Materials (ASTM) standards;
- sample collection, testing techniques, and testing equipment conformed to ACI 349-01, SV3-CC01-Z0-027, and the applicable ASTM standards;
- test results were evaluated against applicable quantitative and qualitative acceptance criteria in accordance with 10 CFR 50, Appendix B, Criterion V; and
- concrete strength test sample cylinders were made at the required location and frequency and were cured in accordance with ACI 349-01, SV3-CC01-Z0-027, and the applicable ASTM standards.

The inspectors reviewed a sample of batch tickets and test reports, including the concrete cylinder strength testing, to verify the records were complete, accurate, and contained the required information in accordance with ACI 349-01, SV3-CC01-Z0-027, and the applicable ASTM standards. Additionally, the inspectors reviewed the concrete cylinder break test results to verify the concrete tested met the strength requirements for the specified concrete mix in accordance with specification SV3-CC01-Z0-026.

The inspectors observed concrete curing activities to determine whether curing was in accordance with ACI 349-01 and SV3-CC01-Z0-031 with regard to the method, materials, duration, and temperature. The inspectors performed independent inspection and measurements of the as-built concrete, including finishes and dimensions, to determine whether the as-built configuration was in accordance with ACI 349-01, SV3-

CC01-Z0-031, and the work package. Additionally, the inspectors observed the concrete placement, reviewed the work package, reviewed inspection and test results, and performed independent inspection on the as-built concrete to verify there were no deviations or nonconformances identified.

b. Findings

No findings were identified.

1A18 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.c (762). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review

The inspectors observed the section of wall along column L between the shield building and column line 11 from elevation 135'-3" to 154'-3". For this section of wall, the inspectors reviewed the size, spacing, material designation, grade, and layout of the main horizontal and vertical reinforcing bars, trim bars, and shear reinforcement, to verify installation of the reinforcing steel was consistent with the applicable design drawings, E&DCRs, construction specification SV3-CC01-ZO-31, and the applicable provisions of ACI 349-01, Chapters 1, 2, 3, 6, 7, 10, 11, 12, 14, 18, and 21. The inspectors also reviewed the lap splices and hooked bars to verify they met the lengths and dimensions specified in the concrete general notes provided on drawing SV3-0000-C9-001 and were installed in accordance with design specification SV3-CC01-Z0-31 and ACI 349-01.

The inspectors reviewed a sample of four E&DCRs to verify design changes were performed in accordance with 10 CFR Part 50 Appendix B, Criterion III, "Design Control." Specifically, the inspectors verified that the design changes were implemented using the design change process documented in procedure APP-GW-GAP-420. This procedure established control measures commensurate with those applied to the original design and were approved by the organization that performed the original design or the designated responsible organization. The inspectors also reviewed the E&DCRs to verify if a technical justification was provided for the design change; deviations from applicable quality standards such ACI 349-01 were controlled; and the revised design was correctly translated into the updated design output documents.

b. Findings

No findings were identified.

1A19 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.c (762). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed inspection of construction activities associated with Wall 11, between column lines M and P, from elevation 135'-3" to 153'-3" of the Unit 3 auxiliary building. The inspectors observed ongoing reinforcement installation, and reviewed licensee records including design drawings, specifications, and E&DCRs.

The inspectors reviewed design drawings associated with a segment of wall 11, located between column lines M and P, at elevation 135'-3" to determine whether reinforcement configuration was installed in accordance with section 3H.5.1.4 of the UFSAR. The inspectors also observed reinforcement installation activities to verify field configuration was in accordance with the approved design changes and design drawings.

The inspectors performed independent measurements of installed steel reinforcement. Specifically, the inspectors measured installed reinforcement steel to verify the size, spacing, concrete clear cover, and lap splice length were in accordance with ACI 349-01. The inspectors also measured reinforcement around mechanical and electrical penetrations to verify the configuration was in accordance with Section 14.3 of ACI 349-01.

The inspectors sampled a total of eight E&DCRs associated with wall 11. Specifically, the inspectors verified design changes were subject to control measures commensurate with those applied to the original design and were approved by the organization that performed the original design. The inspectors reviewed the E&DCRs to verify a technical justification was provided for the design changes; deviations from applicable quality standards such ACI 349-01 were controlled; and the revised design was translated into the updated design drawings.

b. Findings

No findings were identified.

1A20 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.c (762). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.06 - Record Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed inspection of concrete placement activities associated with wall L, located in the non-rad area of the auxiliary building, between column line 11 and the shield building, from elevation 135'-3" to 153'-3". The inspectors observed concrete placement activities, and reviewed design specifications and quality control documents.

The inspectors reviewed pour card 4922 to determine whether concrete mix design requirements were translated into quality assurance documents in accordance with design specification SV3-CC01-Z0-026. During the placement, the inspectors also compared the pour card to the batch tickets to verify concrete delivered to the site had the appropriate concrete mix type.

The inspectors reviewed batch tickets during the placement to verify transport time was completed within the time allowed by section 4.2.5 in SV3-CC01-Z0-031 and the delivery was intended for the proper location in accordance with the pour card. The inspectors observed concrete testing activities to determine if the process for testing self-consolidated concrete met the requirements of design specification SV4-CC01-Z0-027. The inspectors also observed testing of fresh concrete to verify mix characteristics such as slump range, air content, mix temperature, and target wet density met the requirements of SV3-CC01-Z0-027.

The inspectors observed the concrete placement to determine whether placement for safety related structures met the requirements of design specification SV3-CC01-Z0-031. The inspectors also observed the use of concrete vibrators to verify they were inserted and withdrawn in a consistent pattern, inserted to penetrate at least six inches into the previous layer before it began to set, and the concrete mix was placed through congested reinforcement to avoid segregation of the aggregate in accordance with section 4.2.11 of SV3-CC01-Z0-031.

The inspectors evaluated the conditions of the wall after the forms were removed to verify the cured concrete was free of surface conditions such as rock pockets, honeycomb, voids, cracks, spalling, delamination or deterioration. The inspectors reviewed condition report 70000237 to determine if non-conforming conditions were brought to the attention of the engineer for resolution in accordance with Section 4.2 of SV3-CC01-Z0-031.

b. Findings

No findings were identified.

1A21 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.c (762). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors observed construction activities associated with walls P and Q, located in the auxiliary building, between the shield building and column line 11, and between elevations 135'-3" and 153'-3". The inspectors observed ongoing reinforcement installation activities and quality control inspections; and reviewed design drawings, design deviations, and a nonconformance report.

The inspectors observed reinforcement installation activities to verify they were performed using the latest-approved design changes, design drawings, and design specifications, as required by licensee procedures. Specifically, the inspectors reviewed work order package SV3-1251-CRW-1005399/ND-CS-VNP-007-F01, Version 1.0, to determine if the latest-approved design documents were included in the package. The inspectors also reviewed five E&DCRs to verify the design control process was performed in accordance with APP-GW-GAP-420, and the reinforcement configuration of the wall reflected the approved changes described on the E&DCRs. The inspectors also reviewed a nonconformance evaluation to verify it was dispositioned in accordance with ACI-117.

The inspectors performed independent measurements of installed reinforcing bars within the wall. Specifically, the inspectors measured installed reinforcing steel to verify the bar size, spacing requirements, minimum concrete cover, and lap splices were in

accordance with drawing SV4-0000-C9-001, along with other design drawings. The inspectors also evaluated the condition of reinforcing bars, mechanical splices and couplings to determine whether they were free of excessive rust, concrete, or grease in accordance with Section 4.2.4.1 of specification SV4-CC01-Z0-031. The inspectors independently measured concrete clear cover and spacing in steel reinforcement congested areas to verify compliance with the requirements of Sections 3.3.2 and 7.5.2 of ACI 349-01.

b. Findings

No findings were identified.

1A22 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.d (763). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review

The inspectors observed the section of wall along column 4 between column lines I and J-1 from the floor at elevation 135'-3" to the top of the bridge crane support corbel at elevation 160'-9". For this section of wall, the inspectors reviewed the size, spacing, material designation, grade, and layout of the main horizontal and vertical reinforcing bars and shear ties to verify if installation of the reinforcing steel was consistent with the applicable design drawings, E&DCRs, construction specification SV3-CC01-ZO-31, and the applicable provisions of ACI 349-01, Chapters 1, 2, 3, 6, 7, 10, 11, 12, 14, 18, and 21. The inspectors also reviewed the size, spacing, and layout of the corbel reinforcing steel to verify if it was consistent with E&DCR APP-1260-GEF-850011. Additionally, the inspectors reviewed the lap splices between the vertical and horizontal bars, respectively, to verify if they met the lengths specified in the concrete general notes provided on drawing SV3-0000-C9-001 and were installed in accordance with design specification SV3-CC01-Z0-31 and ACI 349-01.

The inspectors reviewed a sample of five E&DCRs to verify if design changes were performed in accordance with 10 CFR Part 50 Appendix B, Criterion III, Design Control. Specifically, the inspectors verified that the design changes were implemented using the design change process documented in procedure APP-GW-GAP-420. This procedure established control measures commensurate with those applied to the original design and were approved by the organization that performed the original design or the

designated responsible organization. The inspectors reviewed the E&DCRs to verify if a technical justification was provided for the design change, deviations from applicable quality standards such ACI 349-01 were controlled, and the revised design was correctly translated into the updated design output documents.

b. Findings

No findings were identified.

1A23 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.d (763). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed inspection of construction activities associated with the installation of reinforcing steel from elevation 153'-3" to 180'-0" for wall N between column line 1 and the shield building. The inspectors observed ongoing reinforcement installation activities, and reviewed licensee records including inspection reports, design specifications, drawings, and E&DCRs.

The inspectors observed installed reinforcement to verify reinforcing steel was installed in accordance with the latest approved E&DCRs and within the requirements Section 3.3.2 and 7.5.2 of ACI 349-01. The inspectors performed in-field measurements of installed reinforcing steel to verify they were the correct size, met spacing requirements, had minimum concrete clear cover, lap splices met the minimum length, and the walls had the required thickness in accordance with design drawings and specification SV3-CC01-Z0-031.

The inspectors sampled a total of four E&DCRs associated with wall N. Specifically, the inspectors verified design changes were subject to control measures commensurate with those applied to the original design and were approved by the organization that performed the original design. The inspectors reviewed the E&DCRs to verify a technical justification was provided for the design changes and was in accordance with ACI 349-01, and the revised design was translated into design drawings.

b. Findings

No findings were identified.

1A24 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.d (763). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed inspection of construction activities associated with the installation of reinforcing steel from elevation 135'-3" to 153'-3" for wall I between column lines 1 and 4 of the auxiliary building. The inspectors observed ongoing reinforced concrete activities and quality control inspections, and reviewed design drawings and E&DCRs.

The inspectors observed reinforcement installation activities to verify they were performed using the latest-approved design changes, design drawings, and design specifications, as required by licensee procedures. The inspectors reviewed four E&DCRs to verify the design control process was performed in accordance with APP-GW-GAP-420, and the reinforcement configuration of the wall reflected the approved changes described on the E&DCRs.

The inspectors performed independent measurements of installed reinforcing bars within the wall. Specifically, the inspectors measured installed reinforcing steel to verify the bar size, spacing requirements, minimum concrete cover, and lap splices were in accordance with drawing SV4-0000-C9-001, along with other design drawings. The inspectors also evaluated the condition of reinforcing bars, mechanical splices and couplings to determine whether they were free of excessive rust, concrete, or grease in accordance with Section 4.2.4.1 of specification SV4-CC01-Z0-031. The inspectors independently measured concrete clear cover and spacing in steel reinforcement congested areas to verify compliance with the requirements of Sections 3.3.2 and 7.5.2 of ACI 349-01.

The inspectors sampled a total of four E&DCRs associated with wall I. Specifically, the inspectors verified design changes were subject to control measures commensurate with those applied to the original design and were approved by the organization that performed the original design. The inspectors also reviewed the E&DCRs to verify

technical justification was provided for the design changes; deviations from applicable quality standards such ACI 349-01 were controlled; and the revised design was translated into the updated design drawings.

b. Findings

No findings were identified.

1A25 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.d (763). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review

The inspectors observed the section of wall along column 1 between column lines I and N from elevation 155'-0" to approximately elevation 163'-0". For this section of wall, the inspectors reviewed the size, spacing, material designation, grade, and layout of the main horizontal, vertical and corbel reinforcing bars to verify if installation of this reinforcing steel was consistent with the applicable design drawings, E&DCRs, construction specification SV3-CC01-Z0-31, and ACI 349-01. The inspectors also reviewed the lap splices between the vertical and horizontal bars, respectively, to verify if they met the lengths specified in the concrete general notes provided on drawing SV3-0000-C9-001 and were installed in accordance with design specification SV3-CC01-Z0-31 and ACI 349-01.

The inspectors reviewed a sample of nine E&DCRs to verify if design changes were performed in accordance with 10 CFR Part 50 Appendix B, Criterion III, Design Control. Specifically, that the design changes were subject to control measures commensurate with those applied to the original design and were approved by the organization that performed the original design or the designated responsible organization. The inspectors reviewed the E&DCRs to verify if a technical justification was provided for the design change; deviations from applicable quality standards such ACI 349-01 were controlled; and the revised design was correctly translated into the updated design output documents.

b. Findings

No findings were identified.

1A26 (Unit 3) ITAAC Number 3.3.00.02g (775) / Family 11A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02g (775). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors observed an in-process survey conducted for the maximum inside height of the containment vessel from the operating deck. The inspectors witnessed the licensee's measurement of the maximum inside containment height to determine if the survey was conducted in accordance with construction survey procedures. The inspectors also observed the equipment set up and interviewed the personnel performing the survey to determine if the set up was in accordance with the survey procedure and user guide. The inspectors reviewed the calibration records and the datasheet for the survey equipment used to determine if the equipment was calibrated within the last six months as stated in the construction survey procedure and was capable of performing the survey measurement with appropriate accuracy for this ITAAC.

The inspectors reviewed the licensee's principal closure document for this ITAAC, including the survey results, to determine if the results and methods used met the ITAAC acceptance criteria. Specifically, the inspectors reviewed the survey results to determine if the containment vessel maximum inside height from the operating deck was within the range of 146'-1" to 147'-7" as defined by the acceptance criteria. The inspectors also reviewed the survey results to determine if the containment inside diameter was within the range of 129'-6" to 131'-0" as defined by the acceptance criteria. The inspectors calculated the maximum inside containment vessel height and containment inside diameter by a combination of independent measurements taken in the field and dimensions shown on drawings to determine if they were within the ranges specified in the acceptance criteria.

b. Findings

No findings were identified.

1A27 (Unit 3) ITAAC Number 3.3.00.07ab (790) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07ab (790). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.02 - Attributes of Electrical Cable installation
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors performed an inspection to verify Class 1E electrical raceways that route cables associated with only one division in the non-radiologically controlled area of the Unit 3 auxiliary building were identified by the appropriate color code as specified by the ITAAC. Specifically, the inspectors performed inspection of in-process labeling of raceways in Rooms 12101 (Division A 24-hour battery room) and 12102 (Division C 24-hour battery room) to verify:

- labels were adhesive markers installed less than 15 feet apart in accordance with UFSAR Section 8.3.2.3 and Westinghouse Design Specification APP-G1-V8-001, "AP1000 Electrical Installation Specification;"
- labels were in accordance with the division color schemes specified in UFSAR Section 8.3.2.3 and APP-G1-V8-001; and
- label identification numbering of Class 1E electrical raceways were in accordance with approved design drawings.

Additionally, the inspectors reviewed material requisition reports and purchase orders for the labels to determine whether the material installed met the requirements of the electrical installation specification.

b. Findings

No findings were identified.

1A28 (Unit 3) ITAAC Number 3.3.00.13 (819) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.13 (819). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.07 - Identification and Resolution of Problem

The inspectors performed an inspection to verify the minimum horizontal clearance between structural elements of the Unit 3 nuclear island and turbine building from floor elevations 100' 0" to 135' 3" was greater than or equal to 3 inches as specified in Table 3.3-6 of Appendix C of the Vogtle Combined License.

Specifically, the inspectors reviewed the survey test report, construction survey procedure, and construction drawings for survey data taken between the 100' 0" and 135' 3" elevations, along the north face of the Unit 3 auxiliary building (column line 11) and the south face of the Unit 3 turbine building first bay wall W01 (column line 11.05) to verify:

- no more than 25 feet of horizontal separation existed between survey point measurements in accordance with APP-GW-IT-001, “Guidelines for Concrete Wall and Slab Thickness Measurements;”
- the minimum horizontal clearance between the Unit 3 turbine building and nuclear island structures was greater than or equal to 3 inches;
- survey measurement techniques with Total Station survey equipment and radiographic test (RT) attachment tool were described and performed in accordance with procedure 26139-000-4MP-T81C-N3201, “Construction Survey;”
- survey tools and instruments/equipment were calibrated within the specified calibration frequency in accordance with 26139-000-4MP-T81C-N7102, “Control of Measuring and Testing Equipment;”
- survey measurements within 1/16 of an inch of the acceptance criteria were applied a stricter tolerance; and
- survey measurements were performed using as-built construction layout drawings.

b. Findings

No findings were identified.

1A29 (Unit 3) ITAAC Number C.2.6.09.08a (668) / Family 17A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number C.2.6.09.08a (668). The inspectors used the following NRC IPs/sections to perform this inspection:

This input is security related. See report 05200025/2019401 and 05200026/2019401 for details

b. Findings

No findings were identified.

1A30 (Unit 4) ITAAC Number 2.1.02.02a (13) / Family 06F

a. Inspection Scope

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

- 65001.06 - Inspection of ITAAC-Related Installation of Mechanical Components
- 65001.06-02.02 - Component Welding
- 65001.06-02.04 - Testing and Verification
- 65001.06-02.05 - Problem Identification and Resolution
- 65001.B- Inspection of the ITAAC-Related Welding Program
- 65001.B-02.04-Production Controls
- 65001.B-02.06-Records
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors inspected the pressurizer (S/N 4590) to determine if it was fabricated in accordance with the requirements of ASME BPVC Section III, Subsection NB, 1998 Edition 2000 Addenda; WEC design and material specifications; and the UFSAR Chapter 5. The inspectors reviewed fabrication and procurement records for the following welds and the adjoining materials:

- CW-001 (upper head to upper shell);
- CW-003 (lower shell to middle shell);
- CW-005 (manway pad to upper shell);
- CW-048 (surge nozzle to surge nozzle sage end);
- CW-059/7 (heater to heater sleeve); and
- NZ-51/16 (heater sleeve to lower head).

The inspectors reviewed ASME N-1 and N-2 Code data reports and certificates of conformance from the vendor to determine if the materials specified and hydrostatic tests performed met the requirements of the ASME Code and the design specification. In addition, the inspectors reviewed the data reports to verify if they were signed by an authorized representative of the N-stamp holder and an ANI.

The inspectors reviewed fabrication records to determine if the base and weld materials were fabricated in accordance with the requirements of ASME Section III, Section II, and the WEC material specifications. For the weld filler metals, the inspectors reviewed CMTRs to determine if the filler metal met the following requirements:

- chemical composition;
- tensile strength;
- yield strength;
- impact testing;
- drop weight testing; and
- heat treatment.

For the base metal, the inspectors reviewed fabrication plans to determine if the plans outlined the requirements of ASME Section III for material fabrication and testing. The inspectors reviewed CMTRs to determine if the base metal met the following requirements:

- chemical composition;
- tensile strength;
- yield strength;
- impact testing; and
- drop weight testing.

In addition, the inspectors reviewed the following reports associated with the CMTRs to determine if the component fabrication was performed in accordance with ASME Section III and the WEC design and material specifications:

- heat treatment records;
- NDE records; and
- post-weld heat treatment.

The inspectors reviewed fabrication plans for the welds above to determine if fabrication activities were performed in accordance with ASME Code and WEC fabrication specification requirements. The inspectors reviewed the fabrication plans to determine if fabrication activities, such as weld preparation, welding, weld buttering, post weld heat treatment (PWHT), NDE, and additional tests were performed, and if the sequence of these activities was conducted in accordance with ASME Code and the WEC fabrication specification. Additionally, the inspectors reviewed the fabrication plans to determine if the records provided traceability to all aspects of the fabrication activities, including traceability to materials, weld records, NDE reports, and nonconformance reports, as applicable.

The inspectors reviewed NDE records (radiographic, ultrasonic, magnetic particle, and liquid penetrant) for the welds sampled to determine if both in-process and completed weld inspections were performed. The inspectors reviewed the NDE records to determine if required examinations were performed in accordance with ASME Code and the WEC fabrication specification, and if the results conform to the requirements of ASME Code and the WEC fabrication specification. The inspectors reviewed a sample of radiograph films and digital radiography for the weld samples selected. The inspectors reviewed radiograph attributes, such as weld defects, film quality, film density, and image quality indicator (IQI) selection and location to determine if the radiographs were conducted and evaluated in accordance ASME Code requirements. Additionally, the inspectors reviewed heat treatment records for the welds sampled to determine if PWHT time and temperature was performed in accordance with ASME Code requirements.

The inspectors reviewed welding monitoring records for the welds sampled to determine if the weld process was applicable for the situation, and in accordance with ASME Code and the WEC fabrication specification. The inspectors reviewed the welding monitoring records to determine if the base material and weld filler metals type and size used was in accordance with the approved WPSs, ASME Code, the UFSAR, and WEC fabrication specification. The inspectors reviewed the welding monitoring records to ensure weld attributes such as weld process, weld joint, preheat temperature, interpass temperature, weld speed, weld machine amps, and weld machine volts were in accordance with the approved WPS.

The inspectors reviewed a sample of nonconformance reports, E&DCRs, and corrective action documents related to the fabrication of the pressurizer. The inspectors reviewed these documents to determine if the conditions were evaluated, received the required amount of review, and that ASME related work was conducted in accordance with ASME Code requirements.

b. Findings

No findings were identified.

1A31 (Unit 4) 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:

- 65001.05 - Inspection of ITAAC-Related Installation of Reactor Pressure Vessel and Internals

- 65001.05-02.01 - Purchase and Receipt of Components
- 65001.05-02.05 - Installation and Welding of Reactor Internals
- 65001.05-02.07 - Records Review
- 65001.05-02.08 - Problem Identification and Resolution
- 65001.B- Inspection of the ITAAC-Related Welding Program
- 65001.B-02.03-Welder Qualification
- 65001.B-02.06-Records
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors reviewed fabrication records for the core barrel of the lower reactor vessel internals to determine if it had been fabricated per the requirements of ASME BPVC Section III, Subsection NG, 1998 Edition 2000 Addenda, the fabrication specification, and the design specification. The inspectors selected the following welds from the core barrel and reviewed fabrication and procurement documents in the QA data package.

- 1: flange to upper barrel girth;
- 3: upper barrel to middle barrel girth;
- 6: middle barrel long seam;
- 1-03: 180 degree radial support key to lower core support plate top; and
- 2-02: 90 degree radial support key to lower core support plate – bottom.

The inspectors reviewed the CMTRs for the weld filler metal used in the five welds sampled to determine if it had been tested and certified per the requirements of the fabrication specification and ASME Code Sections II and III, Subsection NG. The inspectors reviewed the CMTRs for the base metal used to fabricate the core barrel that was welded in the five welds sampled to determine if the material had been tested and certified per the requirements of the fabrication specification and ASME Code Sections II and III, Subsection NG.

The inspectors reviewed the NDE summary logs and radiography inspection reports to determine if the welds had been examined per the requirements of the fabrication specification and ASME Code Sections V and III, Subsection NG. The inspectors reviewed the post-weld thermal treatment procedure used by the vendor to determine if the material had not been sensitized and that additional procedure qualifications were not required. The inspectors reviewed the radiographic film for welds one, three, and six to determine if they were free of defects or rejectable indications such as incomplete fusion or cracks.

The inspectors reviewed E&DCR SV4-MI01-GEF-001 to determine if changes made to the weld edge prep design met the requirements of ASME Code Section III, Subsection NG.

b. Findings

No findings were identified.

1A32 (Unit 4) 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:

- 65001.05 - Inspection of ITAAC-Related Installation of Reactor Pressure Vessel and Internals
- 65001.05-02.05 - Installation and Welding of Reactor Internals
- 65001.05-02.07 - Records Review
- 65001.B- Inspection of the ITAAC-Related Welding Program
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed a sample of NDE records on the reactor pressure vessel to determine if the records met the requirements of the UFSAR. Specifically, the inspectors reviewed the following NDE records to verify that the requirement for additional NDE, as specified by UFSAR Section 5.3.2.3, was performed in accordance with the requirements of ASME Section III, Subsection NB and ASME Section V:

- three UT reports prior to final PXS (joints 102-21A, 103-21B, 201-40);
- two UT reports after hydro test (joints 101-51, 101-21C, 401-20A);
- four penetrant test (PT) reports of partial penetration welds between CRDMs and reactor vessel closure head (CRDM K10, G05, D08, D04, L13);
- five PT reports of the core support block attachment welds (joint 103-40);
- one magnetic particle test (MT) report of the exterior of the reactor vessel and head after hydrostatic test; and
- three MT reports of the inside diameters of the transition ring, closure head, and inlet nozzle (B).

The inspectors reviewed the UT reports to verify if the exams were performed in accordance with the ASME Code, Section V, Article 5. Specifically, the inspectors reviewed the use of calibration blocks, size of transducers, couplant, straight and angle beams, frequencies, and screen height linearity. In addition, the inspectors reviewed the calibration of the probes before the NDE exams to verify if they were performed in accordance with the ASME Code, Section V, Article 5. The inspectors reviewed the results of the examinations to determine if they meet the acceptance criteria in accordance with the ASME Code, Section III. The inspectors reviewed a sample of UT reports performed after weld repairs. The inspectors reviewed these reports to determine if a UT was reperformed after the weld repair, and if the results meet the acceptance criteria in accordance with the ASME Code, Section III.

The inspectors reviewed the PT reports to verify if the exams were performed in accordance with the ASME Code, Section V, Article 6. Specifically, the inspectors reviewed penetrant and developer dwell times, temperature conditions, and minimum lighting conditions. The inspectors reviewed the results of the examinations to determine if they meet the acceptance criteria in accordance with the ASME Code, Section III.

The inspectors reviewed MT reports to verify if the exams were performed in accordance with the ASME Code, Section V, Article 7. Specifically, the inspectors reviewed the lifting power of the yoke, calibration date of equipment, and minimum lighting conditions. The inspectors reviewed the results of the examinations to determine if they meet the acceptance criteria in accordance with the ASME Code, Section III.

b. Findings

No findings were identified.

1A33 (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:

- 65001.06-02.02 - Component Welding
- 65001.11-02.03 - Installation and Welding
- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection

The inspectors performed an inspection on two fillet welds of the primary containment pressure boundary for two electrical penetration assemblies (EPA) (SV4-IDSC-EY-P27Z and SV4-IDSB-EY-P30Z-P30Z) joining the stainless steel weldment ring to the carbon steel pipe canister to determine if installation was performed in accordance with the ASME Code, Section III, Subsection NE, for Class MC. Specifically, the inspectors reviewed Stone & Webster (S&W) weld data sheets for fillet weld numbers 3 and 4 on each EPA to determine if QC hold points were signed for acceptance of material identification, cleanliness, and fit-up tolerances in accordance with NCA-4134.10 and NE-4610. The inspectors reviewed S&W welding material requisitions against the WDS entries for all four fillet welds to determine if traceability of the welding rods and welder identifications were controlled in accordance with NE-4122 and NE-4300. For EPA P27Z, the inspectors observed in-process manual gas tungsten arc welding (GTAW) to determine if the welders appropriately deposited weld metal in accordance with the welding procedure. For EPA P30Z, the inspectors physically measured the convex fillet weld sizes at completion of welding to determine if the fillet weld profile met the requirements of NE-4427.

The inspectors also performed an inspection on the weld of the extension sleeve to the weldment ring for EPA SV4-ECS-EY-P26W to determine if installation was performed in accordance with the ASME Code, Section III, Subsection NE, for Class MC. The inspectors reviewed S&W welding material requisitions against the WDS entries for weld SV4-ECS-EY-P26W-4 to determine if traceability of the welding rods 1243S and 1332K, and welder identifications were controlled in accordance with NE-4122 and NE-4300. For EPA P26W, the inspectors observed in-process manual GTAW to determine if the welders appropriately deposited sound weld metal in accordance with the welding procedure.

The inspectors reviewed S&W WPS1-1.8.T20 and supporting Chicago Bridge and Iron (CB&I) PQRs to determine if essential and nonessential variables from managed affiliates and predecessor organizations were in accordance with the requirements of the ASME Code, Section IX (QW-201); the S&W Quality Assurance Manual, Section 10.12; and S&W PQ-1, Section 5.0, for effective operational control. Finally, the inspectors reviewed two welder performance qualification test records to determine if the welders were qualified and certified for the process, materials, and position in the field in accordance with the requirements of the ASME Code, Section IX, Article III.

b. Findings

No findings were identified.

1A34 (Unit 4) ITAAC Number 2.2.01.08 (109) / Family 08F

a. Inspection Scope

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

- 65001.08-02.04 - Inspection of Containment Electrical Penetration Assemblies (EPAs)
- 65001.F-02.04-General QA Review

The inspectors performed an inspection to verify Unit 4 low and medium voltage EPAs, which extend from inside the containment building, through the shield building, and into the auxiliary building, were handled and installed in the proper configuration to ensure protection against currents exceeding allowable limits. The inspection included observations of various portions of EPA installation activities such as rigging, lifting, positioning, inserting, anchor bolt torqueing, enclosure mounting, and inspection of cables to verify the activities were performed in accordance with the installation manual, design specification data sheets, and design drawings.

The inspectors observed the uncrating of EPAs 14, 15, 16, 17, 19, 21, 22, 23, 24, 25, 26, 28, 29, 30, 31, and 32. During uncrating of the EPAs, the inspectors inspected each one to determine whether serial numbers matched the design drawings, cables remained undamaged, and cables were installed in their correct locations and were correctly oriented within the penetrations in accordance with the specification datasheets and design drawings.

The inspectors observed the rigging and lifting of EPAs 14, 15, 16, 19, 29, 30, and 31 and verified rigging and lifting were conducted using appropriate lifting lugs or rigging tools, cable bend radii were not violated during handling and transport, and the EPAs did not sustain any physical damage in accordance with the installation manual.

The inspectors observed the torqueing of anchor bolts for EPAs 14, 15, 16, 24, 25, 26, 29, 30, and 31. The inspectors verified the torque wrench setting for each bolt and the bolt torque pattern practices were in accordance with the installation manual and verified the wrench used had valid calibration dates per the Bechtel Project Nuclear Quality Control Manual.

The inspectors observed the installation of enclosures for EPAs 19, 23, 25, 26, 29 and 30 from the containment and auxiliary building. The inspectors observed mounting of the EPA enclosures in their respective locations and torqueing of the bolts connecting the enclosures to the EPA flanges. The inspectors also verified torque wrench setting for each EPA enclosure was in accordance with the installation manual and verified the

wrench used had valid calibration dates per the Bechtel Project Nuclear Quality Control Manual. In addition, the inspectors observed the entrainment of cables into the enclosures to verify the bend radius of each cable was maintained in accordance with the installation manual. The inspectors also verified the enclosures were sized for the respective penetrations and enclosure locations in accordance with the specification datasheets and design drawings.

b. Findings

No findings were identified.

1A35 (Unit 4) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

- 65001.03-02.03 - Installation and Welding
- 65001.B-02.04-Production Controls

The inspectors performed inspection of in-process welding for the Unit 4 IRWST injection piping to direct vessel injection (DVI) line B. Specifically, the inspectors observed vertical weld SV4-PXS-PLW-02L-8-C on line PXS-L127B (ASME class 1). The inspectors observed manual GTAW to verify if the piping was welded in accordance with Stone & Webster welding procedure WPS1-8.8T01 and the ASME Code, Section III, Subsection NB. The inspectors reviewed the WDS with WMR 441534 in the field to verify if traceability of the ER316L weld rods and welder ID were controlled in accordance with the ASME Code, Section III, Subsection NCA. The inspectors reviewed two CMTRs for the weld filler metals being used to determine if they met the requirements for chemical analysis and mechanical properties in accordance with the ASME Code, Section II-C, SFA-5.9 specification for bare stainless steel rods. The inspectors also observed the amperage setting on the welding machine to verify if the value was within the range listed in the WPS. Finally, the inspectors reviewed weld SV4-PXS-PLW-02L-8-C, which was added due to E&DCR, to determine if the changes made in the field to pipe spool SV4-PXS-PLW-02L for lateral adjustments during final installation were done in accordance with the ASME Code, Section III.

b. Findings

No findings were identified.

1A36 (Unit 4) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

- 65001.06-02.01 - General Installation
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors observed the rigging, lifting, and setting of the Unit 4 core makeup tank (CMT) B to determine if the activities were performed in accordance with the licensee's procedures and ASME Code requirements. The inspectors reviewed the design specification to determine if it contained instructions for installation in accordance with the ASME Code, Section III, NCA-3250 and the VEGP 3&4 UFSAR, Section 5.2.1.1. The inspectors reviewed the technical manual prepared by the designer (Westinghouse) to determine if it included installation requirements and restrictions in accordance with the design specification, Section 1.3.4. The inspectors observed the lifting of the CMT to ensure all three lifting lugs, and no other attachments to the CMT, were used to accomplish the lift in accordance with the technical manual, Section 2.2.

The inspectors reviewed the licensee's rigging plan to determine if it was developed in accordance with the technical manual. The inspectors also selected a sample of parameters from the rigging plan and observed the lift of the CMT to determine if the selected parameters were within the limits listed in the rigging plan. Specifically, the inspectors reviewed the wind speed, ambient temperature, and total load to verify the stresses on the lifting lugs were not exceeded in accordance with the rigging plan and were within the limits specified in the CMT lifting lug analysis. The inspectors also reviewed the completed rigging plan to determine if all steps were met and signed off by appropriate, qualified personnel.

b. Findings

No findings were identified.

1A37 (Unit 4) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

- 65001.04-02.01 - General Installation
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed a walkdown of pipe supports for the Unit 4 PXS system to determine if they were fabricated and installed in accordance with the ASME Code, Section III, Subsection NF for Class 1 and 3 piping. The inspectors performed an inspection of the following pipe supports associated with piping identified in Table 2.2.3-2 of Appendix C to the COL:

- SV4-PXS-PH-11R0009 (associated with line number PXS-L029A);
- SV4-PXS-PH-11R0046 (associated with line number PXS-L132A);
- SV4-PXS-PH-11R0127 (associated with line number PXS-L117B);
- SV4-PXS-PH-11R0366 (associated with line number PXS-L017A); and
- SV4-PXS-PH-11R0581 (associated with line number PXS-L113B).

The inspection was conducted to determine if the supports were the correct type, installed at the correct location, orientation, and the materials and dimensions met the requirements of the support and piping isometrics drawings. Where applicable, the inspectors reviewed the gap between the process piping and the opposing sides of the support steel to ensure the gap was within the tolerances as specified in the support drawing. For the portions of the supports that were welded, the inspectors performed a visual inspection of the welds to verify if they were of the size, length, location, as required by the design drawings and free of rejectable surface defects such as cracks, lack of fusion, and excessive porosity as required by ASME Code, Section III, Subsubarticle NF-5360. The inspectors reviewed two E&DCRs to verify if design deviations and nonconformances were captured, processed, reviewed, dispositioned, and closed per site procedures.

b. Findings

No findings were identified.

1A38 (Unit 4) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

- 65001.06 - Inspection of ITAAC-Related Installation of Mechanical Components
- 65001.06-02.02 - Component Welding
- 65001.06-02.04 - Testing and Verification

- 65001.06-02.05 - Problem Identification and Resolution
- 65001.B- Inspection of the ITAAC-Related Welding Program
- 65001.B-02.04-Production Controls
- 65001.B-02.06-Records
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors inspected the passive residual heat removal heat exchanger (PRHR HX; S/N 4608) to determine if it was fabricated in accordance with the requirements of the ASME Code, Section III, Subsection NB, 1998 Edition 2000 Addenda, WEC design and material specifications, and the UFSAR Chapter 5. The inspectors reviewed fabrication and procurement records for the following welds and the adjoining materials:

- CW-006/1 (upper tubesheet to upper support plate);
- CW-006/2 (lower tubesheet to lower support plate);
- CW-029/1 (upper tubesheet to upper channel head);
- CW-029/2 (lower tubesheet to lower channel head);;
- CW-035/1 (vent line J-groove)
- NZ-001/1 (upper channel head to safe end) RT film review only;
- NZ-001/2 (lower channel head to safe end); and
- CL-020/1 (nozzle cladding).

The inspectors reviewed ASME N-1, N-2, and NS-1 Code data reports and certificates of conformance from the vendor to determine if the materials specified and hydrostatic tests performed met the requirements of the ASME Code and the design specification. In addition, the inspectors reviewed the data reports to verify if they were signed by an authorized representative of the N-stamp holder and an ANI.

The inspectors reviewed fabrication records to determine if the base and weld materials were fabricated in accordance with the requirements of ASME Section III, Section II, and the WEC material specifications. For the weld filler metals, the inspectors reviewed CMTRs to determine if the filler metal met the following requirements:

- chemical composition;
- tensile strength;
- yield strength; and
- impact testing.

For the base metal, the inspectors reviewed the fabrication plan to determine if the plan outlined the requirements of ASME Section III for material fabrication and testing. The inspectors reviewed CMTRs to determine if the base metal met the following requirements:

- chemical composition;
- tensile strength;
- yield strength;
- impact testing;
- drop weight testing;
- nil-ductility transition curve.

In addition, the inspectors reviewed the following reports associated with the CMTRs to determine if the component fabrication was performed in accordance with ASME Section III and the WEC design and material specifications:

- heat treatment records;
- NDE records;
- post-weld heat treatment, and;
- dimensional checks.

The inspectors reviewed welding records and NDE records to determine if welding of the sampled components of the PRHR HX was performed in accordance with ASME Section III, Subsection NB, ASME Section V, and ASME Section IX. The inspectors reviewed weld monitoring sheets (weld travelers) to determine if the welding was performed in accordance with the applicable WPS. Specifically, the inspectors reviewed the weld monitoring sheets for the welder ID, type of weld process, welding parameters (i.e. amps, voltage, speed, preheat, and interpass temperature) to determine if the parameters recorded were in accordance with the WPS.

The inspectors reviewed NDE records of the welds to determine if the NDE followed the methods and met the acceptance criteria described in ASME Section III and ASME Section V. Specifically, the inspectors reviewed PT, MT, VT, UT, and RT reports to determine if required examinations were performed in accordance with ASME Code and the WEC fabrication specification, and if the results conformed to the requirements of ASME Code and the WEC fabrication specification. The inspectors reviewed a sample of radiograph films for the weld samples selected. The inspectors reviewed radiograph attributes, such as weld defects, film quality, film density, and IQI selection and location to determine if the radiographs were conducted and evaluated in accordance ASME Code requirements. In addition, the inspectors independently reviewed RT film and RT reports to determine if the film met the density, geometric unsharpness, and IQI type and placement requirements in ASME Section V.

The inspectors reviewed a sample of deviation notices, non-conformance reports, and corrective action documents related to the fabrication of the PRHR HX. The inspectors reviewed these documents to determine if the conditions were evaluated; received the appropriate amount of review; and that ASME related work was conducted in accordance with ASME Code requirements.

b. Findings

No findings were identified.

1A39 (Unit 4) ITAAC Number 2.2.03.08c.iv.01 (183) / Family 03A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.iv.01 (183). 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
- 65001.06-02.01 - General Installation
- 65001.06-02.05 - Problem Identification and Resolution
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.02 - Installation Records Review

The inspectors observed licensee survey activities and reviewed survey records to verify the elevation of the bottom inside surface of the IRWST was greater than or equal to 3.4 feet higher than the centerline of the DVI nozzles as specified in Table 2.2.3-4 of Appendix C of the Vogtle Unit 4 Combined License. The inspectors observed the survey verification of the bottom inside surface of the IRWST to determine whether verified equipment was used and the surveying was done in accordance with procedures. Additionally, the inspectors observed surveying of the bottom inside surface of the IRWST to verify the selection of survey points included the minimum elevations for the tank in accordance with the acceptance criteria. The inspectors reviewed the survey results to verify the data was correctly recorded and translated into quality records. The inspectors reviewed the survey records for the elevations of the DVI nozzles to verify the survey results were correctly translated to the as-built elevation drawings and the survey results indicated compliance with the ITAAC acceptance requirements. The inspectors reviewed condition report 50014284, which was written by the licensee to evaluate preliminary survey data to determine if it was dispositioned satisfactorily. The condition report concluded the actual survey records met the acceptance criteria for this ITAAC.

b. Findings

No findings were identified.

1A40 (Unit 4) ITAAC Number 2.2.03.08c.v.01 (187) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.v.01 (187). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.06-02.01 - General Installation
- 65001.06-02.05 - Problem Identification and Resolution
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed an inspection to verify the elevation of the bottom inside surface of each Unit 4 CMT is higher than the reactor pressure vessel DVI nozzle centerline by at least 7.5 feet as specified in the acceptance criteria for this ITAAC. The inspectors observed the licensee perform elevation surveys of the bottom of each CMT nozzle with respect to a reference elevation in the PXS compartments and observed the licensee perform measurements from the bottom inside surface of each CMT to the bottom of the outlet nozzle. The inspectors also performed independent measurements of the tank bottom inside surface to the end of the outlet nozzle for each CMT to verify the as-built dimensions were consistent with the survey reports and as-built elevation drawings to validate this key dimensional input to the licensee's calculations. The inspectors reviewed the licensee's elevation surveys for each DVI nozzle centerline and each CMT outlet nozzle to verify the survey results were correctly translated to the as-built elevation drawings. The inspectors reviewed condition report 50018760, that was written by the licensee to evaluate preliminary survey data. Inspectors reviewed the closure for this condition report which concluded that the actual survey records met the acceptance criteria for this ITAAC.

b. Findings

No findings were identified.

1A41 (Unit 4) 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:

- 65001.02-02.06 - Record Review
- 65001.B-02.06-Records

- 65001.F-02.02-Fabrication Records Review

The acceptance criteria for ITAAC 3.3.00.02a.i.b (761) states that a report exists which reconciles deviations during construction 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.

The purpose of this inspection was to perform a review of the fabrication records and conduct independent measurements for the Unit 4 Shield Building steel composite panels to identify any potential deviations and to verify that deviations were identified and appropriately addressed.

Specifically, inspectors looked at the documentations packages for panels 12B and 12E, which once placed, will be located between elevations 199-6 and 209-6. Inspection activities included review of:

- visual weld log documentation for tie-bars to verify that 100% visual inspection was performed and that if rejectable indications were identified, that they were repaired and re-inspected as required per AWS D1.1 2000;
- visual weld documentation for studs to verify that 100% visual inspection was performed and that if rejected, studs were repaired and re-inspected as required per AWS D1.1 2000;
- magnetic test results for tie-bar welds to the faceplate to verify that if any rejectable indications were identified, that they were repaired and re-inspected as required per AWS D1.1 2000; and
- radiographic test results for faceplate seams to verify that if any rejectable indications were identified, that they were repaired and re-inspected as required per AWS D1.1 2000.

Inspectors also reviewed certified material test reports for the:

- steel composite faceplate material to verify that that the material met the mechanical and chemical properties as required per ASTM A572-07 and AISC N690-1994;
- stud material to verify that the material met the mechanical and chemical properties as required per ASTM A496-07 and ASTM A29-12; and
- tie-bar material to verify that the material met the mechanical and chemical properties as required per ASTM A496-07 and ASTM A29-12

In addition, inspectors verified that the number and spacing for the studs and tie bars, and the inner and outer faceplates met Westinghouse approved fabrication drawings..

Finally, inspectors reviewed nonconformance and disposition reports APP-1208-GNR-850807, Rev. 0 and APP-1208-GNR-850825, Rev. 0, associated with fabrication activities, to verify that issues identified by the fabricator were addressed.

b. Findings

No findings were identified.

1A42 (Unit 4) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.c (762). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed inspection of construction activities associated with Wall Q, between the shield building and column line 11, from elevation 117'-6" to 135'-3" of the non-radiation area of the auxiliary building. The inspectors observed ongoing reinforcement installation, and reviewed licensee records including design drawings, specifications, and E&DCRs.

The inspectors sampled a total of four E&DCRs associated with wall Q. Specifically, the inspectors verified design changes were subject to control measures commensurate with those applied to the original design and were approved by the organization that performed the original design or the designated responsible organization. The inspectors also reviewed the E&DCRs to verify a technical justification was provided for the design changes; deviations from applicable quality standards such ACI 349-01 were controlled; and the revised design was translated into the updated design drawings.

The inspectors reviewed design drawings associated with a segment of wall Q to determine whether reinforcement configuration was in accordance with specification SV4-CC01-Z0-031 and ACI 349-01. The inspectors observed reinforcement installation activities to verify steel reinforcement was installed in accordance with the latest-approved design changes and design drawings.

The inspectors performed independent measurements of installed steel reinforcement. Specifically, the inspectors measured installed reinforcement steel to verify the size, spacing, concrete clear cover, and lap splice length were in accordance with ACI 349-

01. The inspectors also verified the configuration of mechanical splices to determine if they were installed in accordance with section 12.14.3.7 of ACI 349-01.

b. Findings

No findings were identified.

1A43 (Unit 4) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.c (762). 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
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review

The inspectors observed the section of wall along column 11 between column lines I to K from elevation 117'-6" to approximately elevation 135'-3". For this section of wall, the inspectors reviewed the size, spacing, material designation, grade, and layout of the main horizontal and vertical reinforcing bars to verify if installation of this reinforcing steel was consistent with the applicable design drawings, E&DCRs, construction specification SV4-CC01-Z0-31, and the applicable provisions of ACI 349-01, Chapters 1, 2, 3, 6, 7, 10, 11, 12, 14, 18, and 21. The inspectors also reviewed the lap splices between the vertical and horizontal bars, respectively, to verify if they met the lengths specified in the concrete general notes provided on drawing SV4-0000-C9-001 and were installed in accordance with design specification SV4-CC01-Z0-31 and AC349-01.

The inspectors reviewed a sample of three E&DCRs to verify if design changes were performed in accordance with 10 CFR Part 50 Appendix B, Criterion III, Design Control. Specifically, the inspectors verified that the design changes were subject to control measures commensurate with those applied to the original design and were approved by the organization that performed the original design or the designated responsible organization. The inspectors reviewed the E&DCRs to verify if a technical justification was provided for the design change; deviations from applicable quality standards such ACI 349-01 were controlled; and the revised design was correctly translated into the updated design output documents.

The inspectors reviewed N&D Report SV4-CR01-GNR-000528 to verify if the nonconforming condition observed during the inspection was documented in the corrective action program. Additionally, the inspectors reviewed the disposition of the nonconforming condition to verify if the repair was consistent with the requirements of ACI 349-01, Chapter 12 and complied with the final design.

b. Findings

No findings were identified.

1A44 (Unit 4) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.d (763). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.05 - Steel Structures
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review

The inspectors observed the floor in corridor 12361 located between column lines 2 and 4 and J-1 and I at elevation 100'-0". For this section of floor, the inspectors reviewed the size and layout of the steel beams supporting the concrete floor to verify if they were consistent with the framing plan provided on drawing SV4-1230-SS-563-R5. The inspectors reviewed the size, spacing, material designation, grade, and layout of the reinforcing bars to verify if installation of these structural items was consistent with the applicable design drawings, E&DCRs, construction specification SV4-CC01-ZO-31, and the applicable provisions of ACI 349-01, Chapters 1, 2, 3, 6, 7, 10, 11, 12, 14, 18, and 21. Additionally, the inspectors reviewed the lap splices between the reinforcing bars to verify if they met the lengths specified in the concrete general notes provided on drawing SV4-0000-C9-001 and were installed in accordance with design specification SV4-CC01-Z0-31 and ACI 349-01.

The inspectors reviewed a sample of three E&DCRs to verify if design changes were performed in accordance with 10 CFR Part 50 Appendix B, Criterion III, Design Control. Specifically, the inspectors verified that the design changes were implemented using the design change process documented in procedure APP-GW-GAP-420. This procedure established control measures commensurate with those applied to the original design and were approved by the organization that performed the original design or the designated responsible organization. The inspectors also reviewed the E&DCRs to

verify if technical justification was provided for the design change; deviations from applicable quality standards such ACI 349-01 were controlled; and the revised design was correctly translated into the updated design output documents.

b. Findings

No findings were identified.

1A45 (Unit 4) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.d (763). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed inspection of construction activities associated with the installation of reinforcing steel from elevation 100'-0" to 107'-2" for wall 4 between column lines I and J-1 located in the radiologically controlled area of the auxiliary building. The inspectors observed ongoing reinforcement installation activities and reviewed licensee records, including design drawings, design specifications, and E&DCRs.

The inspectors performed in-field measurements of installed reinforcing steel to verify it was the correct size; met spacing requirements; had minimum concrete clear cover; lap splices met the minimum length; and the wall had the required thickness in accordance with design drawings, specification SV3-CC01-Z0-031 and ACI 349-01.

The inspectors independently measured spacing in reinforcement congested areas to verify it met the minimum clear spacing requirements of section 3.3.2 of ACI 349-01. The inspectors also measured the spacing between embedded items that were installed parallel to reinforcing steel to verify they were secured and maintained minimum clear spacing as required by section 4.2.3.6 of specification SV4-CC01-Z0-031.

The inspectors sampled two E&DCRs to verify design changes were dispositioned within the requirements of ACI 349-01. The inspectors compared approved design drawings to the installed reinforcement bars to determine whether the reinforcement configuration was installed in accordance with the latest approved design changes.

b. Findings

No findings were identified.

1A46 (Unit 4) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.d (763). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review

The inspectors observed the section of wall along column I between column lines 2 and 4 from elevation 117'-6" to approximately elevation 135'-3". For this section of wall, the inspectors reviewed the size, spacing, material designation, grade, and layout of the main horizontal and vertical reinforcing bars to verify if installation of this reinforcing steel was consistent with the applicable design drawings, E&DCRs, construction specification SV4-CC01-Z0-31, and the applicable provisions of ACI 349-01, Chapters 1, 2, 3, 6, 7, 10, 11, 12, 14, 18, and 21. The inspectors reviewed the lap splices between the vertical and horizontal bars, respectively, to verify if they met the lengths specified in the concrete general notes provided on drawing SV4-0000-C9-001 and were installed in accordance with design specification SV4-CC01-Z0-31 and AC349-01.

The inspectors reviewed structural calculations and design drawings to verify that the design basis was correctly translated in design output documents as required by 10 CFR Part 50 Appendix B, Criterion III, Design Control. Specifically, the inspectors verified if the required horizontal, vertical, and shear reinforcement determined by structural analysis were correctly translated into the design drawings used for construction of the wall. The inspectors also determined if the concrete and reinforcement material properties used in the calculation for the analysis and design of the wall were consistent with UFSAR Sections 3.8.4.6.1.1 and 3.8.4.6.1.2, respectively. Additionally, the inspectors verified if the load combinations used in the analysis were consistent with UFSAR Table 3.8.4-2 and Westinghouse design guides and criteria documents.

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

Quarterly Resident Inspector CAP Routine Review

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 included regulatory required non-safety related SSCs. The inspectors periodically attended the licensee's CAP review meetings, held discussions with licensee and contractor personnel, and performed reviews of CAP activities during the conduct of other baseline inspection procedures. The inspectors reviewed conditions entered into the licensee's CAP to determine whether the issues were classified in accordance with the licensee's quality assurance program and CAP implementing procedures. The inspectors reviewed corrective actions associated with conditions entered into the CAP to determine whether actions to correct the issues were identified and implemented, 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 a threshold and entered into the CAP as required by licensee's CAP implementing procedures.

b. Findings

No findings were identified.

1P02 Construction QA Criterion 16

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

a. Inspection Scope

Resident Inspector Follow-Up of Selected Issue

The inspectors selected one issue that was entered into the licensee's corrective action program for additional follow-up inspection. Four related CRs were written associated with floor modules and concrete that were installed outside of design tolerances. The inspectors reviewed the CRs to verify the licensee identified the cause of the problem in a timely manner commensurate with its safety significance and ease of discovery. The inspectors reviewed the licensee's evaluations and corrective actions to verify classification and prioritization of the resolution of the items were commensurate with their safety significance. Additionally, the inspectors reviewed the licensee's evaluations and corrective actions to verify consideration of the extent of condition, generic implications, common cause, and previous occurrences was in accordance with ND-AD-002-025, "Issue Identification, Screening, and Dispatching." The inspectors reviewed the trending codes applied to each item to verify they were correctly identified, tracked, and trended in accordance with ND-AD-002-025.

The inspectors reviewed the associated N&D reports to verify the hardware nonconformances were evaluated in accordance with APP-GW-GAP-428, "Nonconformance and Disposition Report." Where repairs or modifications were made, the inspectors observed the work in the field to verify the work was performed in accordance with the work instructions included in the N&D. The inspectors also reviewed the resulting design changes to verify they had been evaluated by engineering as required by APP-GW-GAP-420, "Engineering and Design Coordination Reports." The inspectors conducted a field walkdown of the floor modules to verify the issue had been completely captured and the corrective actions had been implemented.

b. Findings

No findings were identified.

1P03 Construction QA Criterion 3

- 35007-A3.04 - Inspection Requirements and Guidance
- 35007-A3.04.01 - Inspection of QA Implementing Documents
- 35007-A3.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed Units 3 and 4 Tier 2* design changes to determine if SNC's QA implementing documents for design control were consistent with the NRC-approved NDQAP (including ASME NQA-1-1994, Supplement 3S-1) and commitments in the UFSAR. The inspectors reviewed design documents to verify if the licensee implemented its design control program in accordance with 10 CFR 50, Appendix B, Criterion III, Design Control. Specifically, the inspectors reviewed design changes associated with the PMS watchdog timer (WDT) usage and how the PMS failure modes and effects analysis (FMEA) were referenced in the licensing basis.

The inspectors reviewed E&DCR APP-FSAR-GEF-045 to determine if the design control process was implemented in accordance with procedure APP-GW-GAP-420, as required by the Westinghouse Quality Management System (QMS). Specifically, the inspectors reviewed aspects of design changes related to the usage of the WDTs and window of the WDT cycle time in the PMS. The inspectors also reviewed E&DCR APP-FSAR-GEF-045 to verify if the description of the change, reason for the change, technical justification, impact assessments, and required reviews/approvals were documented for using the window WDT instead of using the processing section of the central processing unit WDT.

The inspectors reviewed E&DCR APP-FSAR-GEF-008 to determine if the design control process was implemented in accordance with procedure APP-GW-GAP-420, as required by the Westinghouse QMS. Specifically, the inspectors reviewed planned changes to WCAP-17179 to verify if the current PMS design was reflected by including the plant-specific DCD as the source for the PMS FMEA instead of WCAP-16438.

The inspectors conducted a review of two licensing document change requests (LDCR)-2018-107 and LDCR-2019-006 to determine if design changes were dispositioned and screened in accordance with procedure ND-LI-VNP-002. Specifically, the inspectors reviewed the applicability determinations, 10 CFR 50.59 screenings, and Tier 2* departure evaluations to verify if changes to Tier 2* design documents did not require a license amendment request. The inspectors also reviewed LDCR-2018-107 and LDCR-2019-006 to verify if the determinations, screenings, and evaluations for E&DCRs APP-FSAR-GEF-045 and APP-FSAR-GEF-008, respectively, were conducted in accordance with 10 CFR 50.59, License Condition 2.D.(13) and 10 CFR 52, Appendix D, Paragraph VIII.B.5.

The inspectors reviewed F-APP-GW-GAP-147-5 for E&DCRs APP-FSAR-GEF-045 and APP-FSAR-GEF-008 to determine if design changes that impact the licensing basis were processed by WEC to the licensee in accordance with procedure APP-GW-GAP-147. The inspectors also reviewed LDCR-2018-107 to determine if changes to Tier 2* licensing documents were done in accordance with design control implementing procedure ND-LI-VNP-007. Specifically, the inspectors reviewed the planned changes to WCAP-15927, WCAP-17179, and Vogtle 3 & 4 UFSAR documents to verify that Tier 2* documents were in the process of being updated to reflect the design changes.

The inspectors reviewed training and qualifications records to determine if the licensee staff members who prepared, reviewed, and approved applicability determinations, departure screenings, and LDCRs met the personnel requirements of procedure ND-LI-VNP-007. The inspectors also conducted interviews with licensee staff members to determine if they understood the requirements and their responsibilities related to design control.

In addition, the inspectors reviewed 11 N&Ds and five E&DCRs to verify if the processing of repair, rework, or use-as-is engineering dispositions and justifications were reviewed for design control by an independent engineer verifier (not the responsible engineer) and approvals were performed by WEC (the original design organization) in accordance with the applicable requirements of WEC procedures APP-GW-GAP-420 and -428. Specifically, the inspectors reviewed these N&Ds and E&DCRs for piping subassemblies and supports to verify if engineering dispositions and justifications were prepared and approved in accordance with WEC procedures for maintaining configuration control. The inspectors also reviewed documentation exchanges between two pipe fabrication vendors and WEC to determine if the interfaces between organizations and affected document revisions for design control were implemented in accordance with WEC procedures APP-GW-GAP-420 and -428.

The inspectors reviewed an open N&D APP-Q305-GNR-850040 and E&DCR APP-WLS-GEF-850016 for a 2" diameter isolation plug valve that was identified leaking in the closed position during hydrostatic testing by Aecon to determine if the engineering disposition and justification included replacing the internal parts, performing additional pressure testing to verify the original design valve isolation capability, and updating the ASME Section III Data Report.

b. Findings

No findings were identified.

1P04 ITAAC Management

- 40600-02.04 - ITAAC Maintenance Controls

a. Inspection Scope

The inspectors performed an inspection of ITAAC maintenance for Unit 3 ITAAC 2.1.03.14 (COL Index Number 89) that was submitted to the NRC for closure on May 31, 2017 (ML17152A201), to verify the licensee was maintaining the integrity of completed ITAAC. Specifically, the inspectors reviewed the licensee's evaluation of Condition Report 50016225, which documented the licensee receipt and review of a Westinghouse Electric Company ITAAC Preservation/Maintenance Evaluation associated with the maintenance and/or preservation of Unit 3 ITAAC 2.1.03.14. The inspectors reviewed the licensee's ITAAC Closure Notification, the Westinghouse Evaluation, and the licensee's technical evaluation to verify ITAAC closure and ITAAC maintenance controls were implemented and the ITAAC notification process conformed to the regulatory requirements of 10 CFR 52.99(c). The inspectors utilized NEI 08-01 as endorsed by the NRC in Regulatory Guide 1.215 for guidance to verify ITAAC closure package controls were in place, which included programmatic controls for ITAAC completion, documentation, records verification, quality assurance, and notification to the NRC.

b. Findings

No findings were identified.

2. SAFEGUARDS PROGRAMS

Cornerstones: Security Programs for Construction Inspection and Operations

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

2P01 Security (operational)

a. Inspection Scope

This input is security related. See report 05200025/2019401 and 05200026/2019401 for details.

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4OA6 Meetings, Including Exit

.1 Exit Meeting.

On July 15, 2019, the inspectors presented the inspection results to Mr. M. Yox, Site Regulatory Affairs Director, and other licensee and contractor staff members. 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

J. Cabaup, Stone & Webster QA NDE Level III
C. Castell, SNC Licensing Engineer
G. Glenn, Westinghouse Licensing
K. Stacy, SNC Licensing Supervisor
G. Scott, SNC Licensing Engineer
D. Craigo, SNC Engineering
L. Grissom, SNC Licensing Engineer
J. Hurst, WEC ASME
M. Yox, SNC Regulatory Affairs Director
W. Cheeks, SNC Night Shift Electrical LFE NI 4
J. Baines, SNC Sr. Inventory Specialist
B. Leber, WEC Resource Manager
M. Gray, WEC Engineer
E. Johnson, WEC Principal Engineer
M. Corletti, WEC Director of Licensing
C. Zozula, WEC Safety Review Committee Secretary
M. Senock, WEC Pressurizer Subject Matter Expert (SME)
J. Loy, WEC Reactor Pressure Vessel SME
G. Demitri, WEC Reactor Pressure Vessel SME
M. Skozik, WEC Pressurizer SME
A. Harkness, WEC Consulting Engineer
B. Chamberlain, SNC Engineer
J. Monahan, WEC Licensing
K. Roberts, SNC, Licensing Manager
B. Hirmanpour, I&C Manager
R. Beilke, ITAAC Project Manager
L. Pritchett, SNC Licensing Engineer
B. Bennett, Security Supervisor
L. Meert, Reactor Engineer, MC&A Custodian
A. Wichman, Systems and Reactor Engineering Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
None			

LIST OF DOCUMENTS REVIEWED

[2503 Documents]

Section 1A01
SV3-RCS-PLW-017, "Reactor Coolant System Containment BLDG Room 11601 Piping to Sparger A", Revision (Rev.) 1
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APP-RCS-PLW-015, "Reactor Coolant System Containment Building Room 11703 Upper Tier ADS 2nd Stage ADS Piping," Rev. 5
APP-SGS-PLW-141, "Steam Generator System Auxiliary Building Room 12404/12504 Main Steam PORV Discharge Line to Silencer," Rev. 3 and 4
APP-WLS-PLW-010, "Liquid Radwaste Containment Building Room 11300 Piping in Module 1132-Q3-05," Rev. 2
LDCRs:
LDCR-2018-107, "Protection and Safety Monitoring System Watchdog Timer and Common Q Design Description Changes," Version 1.0, November 2018
LDCR-2019-006, "PMS Changes Related to the MTP DVD Drive, Cable Access Control, the FMEA, Component Level Control, and Nonsafety-Related Interfaces," Version 1.0, April 2019
N&Ds (with attachments):
SV3-CR01-GNR-000904, "1 line wall "d" dimension non-conformance above El 100'-0"," Rev. 0
APP-PCS-GNR-850026, "Turner to WEC_NCR-18-037_Bend Degree and Off-Set between Bends Out of Tolerance," Rev. 0
APP-PCS-GNR-850027, "Turner to WEC_NCR-18-038_ Off-Set between Bends Out of Tolerance," Rev. 0
APP-PCS-GNR-850028, "Turner to WEC_NCR-18-057_Base Material Damage on 4 STD P11 Pipe," Rev. 0
APP-PXS-GNR-850032, "Bend Dimension out-of-tolerance (CBIL NCR-2017-751)," Rev. 0

APP-Q305-GNR-850040, "NCR A00002-000-0569 SV3-Q305 (X05) WLS-PL-V055 valve leakage during hydro," Rev. 0
APP-Q601-GNR-850100, "[Aecon to WEC] (SV3-Q601) 4 spools OOT: SV3-RCS-PLW-015-1/2B, SV3-RCS-PLW-01E-1/2B," Rev. 0
APP-Q601-GNR-850112, "[Aecon to WEC] OOT of SV3-RCS-PLW-01C-1 and SV3-RCS-PLW-012-1; SV3-Q601," Rev. 0
APP-Q601-GNR-850140, "Correction of OOT Piping on SV3-RCS-PLW-015 and SV3-RCS-PLW-01E," Rev. 0
APP-Q601-GNR-850141, "Supports SV3/SV4-RCS-PH-11A0070 item 14 [SV3-Q601 and SV4-Q601]," Rev. 0
APP-SGS-GNR-850029, "SV3-SGS-PLW-141-3 Rework," Rev. 0
E&DCRs (with attachments):
APP-FSAR-GEF-008, "PMS Changes Related to the MTP DVD Drive, Cable Access Control, the FMEA, Component Level Control, and Nonsafety-Related Interfaces," Rev. 0
APP-FSAR-GEF-045, "PMS Watchdog Timer Change and Additional Common Q Design Description Changes," Rev. 0
APP-RCS-GEF-850056, "APP-RCS-PLW-015 Conditioning," Rev. 0
APP-RCS-GEF-850057, "APP-RCS-PLW-01E Conditioning," Rev. 0
APP-RCS-GEF-850155, "Remove OLP From APP-RCS-PH-11R05571," Rev. 0
APP-SGS-GEF-850274, "ASME Section III OLP or DW for SGS Pipe Supports APP-SGS-PH-11A0917 & APP-SGS-PH-11R0918," Rev. 0
APP-WLS-GEF-850016, "APP-WLS-PLW-010 Conditioning," Rev. 0
Calculations:
APP-CA01-SAC-034, "Non-Standard Direct Weld Generic Calculation (GC-1) ," Rev. 0
APP-Q601-S3C-003, "AP1000 Design and Analysis of Q601 (RCS Stages 1, 2, 3 ADS Module) for Transportation and Lifting," Rev. 0
APP-RCS-PHC-11R0557, "Pipe Support Calculation for APP-RCS-PH-11R0557," Rev. 1
QADPs:
132176-SMS-021, "ASME Section III, Division 1 Safety Related Primary Equipment Supports," 1/9/2019
132175-SMS-028, "ASME Section III, Division 1 Safety Related Primary Equipment Supports," 1/9/2019

Section 1P04
Westinghouse Electric Company Letter SVP-SV0-005432, "Submittal of ITAAC Maintenance Evaluations for Unit 3 ITAAC 2.1.03.14 (COL Index Number 89)," 3/20/19
Southern Nuclear Operating Company Letter ND-17-0875, "Southern Nuclear Operating Company Vogtle Electric Generating Plant Unit 3 and 4 ITAAC Closure Notification on Completion of ITAAC 2.1.03.14 [Index Number 89]," 5/31/17
Condition Report 50016225, "WEC Letter on ITAAC 89 - Materiality (SVP-SV0-005432)," 3/22/19
Technical Evaluation 60002703, "Perform ITAAC Maintenance Screen on CAP Record 50016225," 3/22/19
NEI 08-01, "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52," Rev. 5 Corrected
Regulatory Guide 1.215, "Guidance for ITAAC Closure Under 10 CFR Part 52," Rev. 2

[2504 Documents]
Section 2P01
This input is security related. See report 05200025/2019401 and 05200026/2019401 for details.

LIST OF ACRONYMS

ACI	American Concrete Institute
ADS	automatic depressurization system
ANI	Authorized Nuclear Inspector
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWS	American Welding Society
BPVC	Boiler and Pressure Vessel Code
CAPAL	corrective action program and learnings
CAP	corrective action program
CB&I	Chicago Bridge and Iron
CFR	Code of Federal Regulations
CMT	core makeup tank
CMTR	certified material test report
COL	Combined License
CR	condition report
DVI	direct vessel injection
E&DCR	engineering and design coordination report
EMC	electromagnetic compatibility
EPA	electrical penetration assemblies
EQDP	Equipment Qualification Data Package
EQSR	Equipment Qualification Summary Report
FMEA	failure modes and effects analysis
FTT	fuel transfer tube
GTAW	gas tungsten arc welding
IEEE	Institute of Electrical and Electronics Engineers
IMC	inspection manual chapter
IQI	image quality indicator
IRWST	in-containment refueling water storage tank
ITAAC	Inspections, Tests, Analysis, and Acceptance Criteria
IV&V	independent verification and validation
LDCR	licensing document change requests
MCR	main control room
MHS	mechanical handling system
MT	magnetic particle examination
N&D	nonconformance and disposition
NCR	nonconformance report
NDE	nondestructive examination
NON	nonconformances
NRC	Nuclear Regulatory Commission
NSR	non-safety related
OBE	operating-basis earthquake
PDSP	primary dedicated safety panel
PMS	protection and safety monitoring system
PRHRHX	passive residual heat removal heat exchanger
PT	liquid penetrant examination
PWHT	post weld heat treatment
PXS	passive core cooling system
QA	quality assurance
QC	quality control
RCS	reactor coolant system

RG	Regulatory Guidance
RRS	required response spectra
RT	radiographic examination
SCM	Software Configuration Management
SMAW	shielded metal arc welding
SNC	Southern Nuclear Company
SSC	structures, systems, and components
SSE	safe-shutdown earthquake
S&W	Stone & Webster Inc.
TRS	test response spectrum
UFSAR	Updated Final Safety Analysis Report
UT	ultrasonic examination
VT	visual examination
WDS	weld data sheet
WDT	watchdog timer
WEC	Westinghouse Electric Company
WMR	welding material requisition
WPS	welding procedure specifications

ITAACs INSPECTED

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	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

		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.		the dynamic effects of a line break is provided.

19	2.1.02.05a.i	5.a) The seismic Category I equipment identified in Table 2.1.2□1 can withstand seismic design basis loads without loss of safety function. 7.a) The Class 1E equipment identified in Table 2.1.2-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	i) Inspection will be performed to verify that the seismic Category I equipment and valves identified in Table 2.1.2-1 are located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) Type tests, analyses, or a combination of type tests and analyses will be performed on Class 1E equipment located in a harsh environment. ii) Inspection will be performed of the as-built Class 1E equipment and the associated wiring, cables, and terminations located in a harsh environment.	i) The seismic Category I equipment identified in Table 2.1.2□1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) A report exists and concludes that the Class 1E equipment identified in Table 2.1.2-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. ii) A report exists and concludes that the as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.1.2□1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

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.

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.

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	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

			environment. ii) Inspection will be performed of the as-built non-Class 1E electrical penetrations located in a harsh environment.	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.

109	2.2.01.08	8. Containment electrical penetration assemblies are protected against currents that are greater than the continuous ratings.	An analysis for the as-built containment electrical penetration assemblies will be performed to demonstrate (1) that the maximum current of the circuits does not exceed the continuous rating of the containment electrical penetration assembly, or (2) that the circuits have redundant protection devices in series and that the redundant current protection devices are coordinated with the containment electrical penetration assembly's rated short circuit thermal capacity data and prevent current from exceeding the continuous current rating of the containment electrical penetration assembly.	Analysis exists for the as-built containment electrical penetration assemblies and concludes that the penetrations are protected against currents which are greater than their continuous ratings.

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	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

		combined normal and seismic design basis loads without a loss of its functional capability. 6. Each of the as-built lines identified in Table 2.2.3-2 as designed for LBB meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.		a line break is provided.

165	2.2.03.05a.i	5.a) The seismic Category I equipment identified in Table 2.2.3□1 can withstand seismic design basis loads without loss of safety function. 7.a) The Class 1E equipment identified in Table 2.2.3-1 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 and valves identified in Table 2.2.3-1 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) The seismic Category I equipment identified in Table 2.2.3-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of safety function. For the PXS containment recirculation and IRWST screens, a report exists and concludes that the screens can withstand seismic dynamic loads and also post-accident operating loads, including head loss and debris weights. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. For the PXS containment recirculation and IRWST screens, a report exists and concludes that the as-built screens including their anchorage are bounded by the seismic loads and also post-accident operating loads, including head loss and debris weights. i) A report exists and concludes that the Class 1E equipment identified in Table 2.2.3-1 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 2.2.3□1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.
183	2.2.03.08c.iv.01	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	iv) Inspections of the elevation of the following pipe lines will be conducted: 1. IRWST injection lines; IRWST connection to DVI nozzles v) Inspections of the elevation of the following tanks will be conducted: 2. IRWST	iv) The maximum elevation of the top inside surface of these lines is less than the elevation of: 1. IRWST bottom inside surface v) The elevation of the bottom inside tank surface is higher than the direct vessel injection nozzle centerline by the following: 2. IRWST ≥ 3.4 ft
187	2.2.03.08c.v.01	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	v) Inspections of the elevation of the following tanks will be conducted: 1. CMTs	v) The elevation of the bottom inside tank surface is higher than the direct vessel injection nozzle centerline by the following: 1. CMTs ≥ 7.5 ft

339	2.3.05.01	1. The functional arrangement of the MHS is as described in the Design Description of this Section 2.3.5.	Inspection of the as-built system will be performed.	The as-built MHS conforms with the functional arrangement as described in the Design Description of this Section 2.3.5.

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.
550	2.5.02.11	11. The PMS hardware and software is developed using a planned design process which provides for specific design documentation and reviews during the following life cycle stages: a) Not used b) System definition phase c) Hardware and software development phase, consisting of hardware and software design and implementation d) System integration and test phase e) Installation phase	Inspection will be performed of the process used to design the hardware and software.	A report exists and concludes that the process defines the organizational responsibilities, activities, and configuration management controls for the following: a) Not used. b) Specification of functional requirements. c) Documentation and review of hardware and software. d) Performance of system tests and the documentation of system test results, including a response time test performed under maximum CPU loading to demonstrate that the PMS can fulfill its response time criteria. e) Performance of installation tests and inspections.

551	2.5.02.12	12. The PMS software is designed, tested, installed, and maintained using a process which incorporates a graded approach according to the relative importance of the software to safety and specifies requirements for: a) Software management including documentation requirements, standards, review requirements, and procedures for problem reporting and corrective action. b) Software configuration management including historical records of software and control of software changes. c) Verification and validation including requirements for reviewer independence.	Inspection will be performed of the process used to design, test, install, and maintain the PMS software.	A report exists and concludes that the process establishes a method for classifying the PMS software elements according to their relative importance to safety and specifies requirements for software assigned to each safety classification. The report also concludes that requirements are provided for the following software development functions: a) Software management including documentation requirements, standards, review requirements, and procedures for problem reporting and corrective action. Software management requirements may be documented in the software quality assurance plan, software management plan, software development plan, software safety plan, and software operation and maintenance plan; or these requirements may be combined into a single software management plan. b) Software configuration management including historical records of software and control of software changes.

				Software configuration management requirements are provided in the software configuration management plan. c) Verification and validation including requirements for reviewer independence. Verification and validation requirements are provided in the verification and validation plan.
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.
645	2.6.09.05b	5.b) The central and secondary alarm stations are located inside the protected area and the interior of each alarm station is not visible from the perimeter of the protected area.	Inspections of the central and secondary alarm stations will be performed.	The central and secondary alarm stations are located inside the protected area and the interior of each alarm station is not visible from the perimeter of the protected area.

668	C.2.6.09.08a	8.a) Penetrations through the protected area barrier are secured and monitored. 8.b) Unattended openings (such as underground pathways) that intersect the protected area boundary or vital area boundary will be protected by a physical barrier and monitored by intrusion detection equipment or provided surveillance at a frequency sufficient to detect exploitation.	Inspections will be performed of penetrations through the protected area barrier. Inspections will be performed of unattended openings that intersect the protected area boundary or vital area boundary.	Penetrations and openings through the protected area barrier are secured and monitored. Unattended openings (such as underground pathways) that intersect the protected area boundary or vital area boundary are protected by a physical barrier and monitored by intrusion detection equipment or provided surveillance at a frequency sufficient to detect exploitation.
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.	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.	i.b) A report exists which reconciles deviations during construction 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.

762	3.3.00.02a.i.c	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.	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.	i.c) A report exists which reconciles deviations during construction and concludes that the as-built structures in the non-radiologically controlled area of the auxiliary building, 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.
763	3.3.00.02a.i.d	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.	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.	i.d) A report exists which reconciles deviations during construction and concludes that the as-built structures in the radiologically controlled area of the auxiliary building, 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.
775	3.3.00.02g	2.g) The containment vessel above the operating deck provides a heat transfer surface. A free volume exists inside the containment shell above the operating deck.	The maximum containment vessel inside height from the operating deck is measured and the inner radius below the spring line is measured at two orthogonal radial directions at one elevation.	The containment vessel maximum inside height from the operating deck is 146'-7" (with tolerance of +12", -6"), and the inside diameter is 130 feet nominal (with tolerance of +12", -6").

790	3.3.00.07ab	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.	b) Class 1E electrical cables, and communication cables associated with only one division, and the raceways that route these cables in the non-radiologically controlled area of the auxiliary building are identified by the appropriate color code.
819	3.3.00.13	13. Separation is provided between the structural elements of the turbine and annex buildings and the nuclear island structure. This separation permits horizontal motion of the buildings in the safe shutdown earthquake without impact between structural elements of the buildings.	An inspection of the separation of the nuclear island from the annex and turbine building structures will be performed. The inspection will verify the specified horizontal clearance between structural elements of the adjacent buildings, consisting of the reinforced concrete walls and slabs, structural steel columns and floor beams.	The minimum horizontal clearance above floor elevation 100′-0″ between the structural elements of the annex building and the nuclear island is 3 inches. The minimum horizontal clearance above floor elevation 100′-0″ between the structural elements of the turbine building and the nuclear island is 3 inches.