UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30303-1257

May 15, 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 05200025/2019001, 05200026/2019001

Dear Mr. Yox:

On March 31, 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 April 15, 2019 with Mr. Joseph Klecha, Vice President of Site Operations – Vogtle 3 and 4, 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.

NRC inspectors documented one finding of very low safety significance (Green) and one Severity Level IV violation in this report. Both of these issues involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

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

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

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any), will be made available electronically for public inspection

in the NRC Public Document Room or from the Publically Available Records (PARS) component of NRC's document system ADAMS. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

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

Sincerely,

/RA/

Nicole 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) 05200025/2019001, 05200026/2019001
w/attachment: Supplemental Information

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Letter to Mr. Michael Yox from Ms. Nicole Coovert dated May 15, 2019.

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 - NRC INTEGRATED INSPECTION REPORTS 05200025/2019001, 05200026/2019001

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200025 5200026
License Numbers:	NPF-91 NPF-92
Report Numbers:	05200025/2019001 05200026/2019001
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Electric Generating Plant, Units 3 and 4
Location:	Waynesboro, GA
Inspection Dates:	January 1, 2019 through March 31, 2019
Inspectors:	A. Artayet, Senior Construction Inspector, DCO P. Carman, Project Manager, DCO K. Carrington, Resident Inspector, DCO J. Christensen, Construction Inspector, DCO G. Crespo, Senior Construction Inspector, DCO J. Eargle, Senior Project Manager, DCO 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. Patel, Reactor Ops Engineer, DIRS R. Patterson, Physical Security Inspector, DRS A. Ponko, Senior Construction Inspector, DCO S. Smith, Senior Construction Inspector, DCO S. Temple, Resident Inspector, DCO J. Vasquez, Construction Inspector, DCO
Accompanying Personnel:	
Approved by:	Nicole Coovert, Branch Chief Construction Inspection Branch 1

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200025/2019001, 05200026/2019001; 01/01/2019 through 03/31/2019; Vogtle Electric Generating Plant, Units 3 and 4, Inspection of ITAAC-related Welding Program.

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

A. NRC-Identified and Self Revealed Findings

(Green) The NRC identified an ITAAC finding of very low safety significance (Green) and associated NCV of Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion XVI, Corrective Action, for the licensee's failure to identify nonconforming radiograph films for the Unit 4 core makeup tank (CMT) B. The licensee failed to identify that density variations for radiograph film sections 8-9 and 14-15 for the CMT B manway to shell weld (CW-035) were nonconforming to ASME Code, Section III, 1998 Edition including 2000 Addenda, Subarticle NB-5100, General Requirements for Examination. The licensee entered this finding into their corrective action program as condition reports (CRs) 50010045 and 50010650 and subsequently performed additional radiographs in order to provide reasonable assurance of ASME Code compliance.

The finding was determined to be more than minor because the performance deficiency represented an adverse condition that rendered the quality of a component indeterminate, and required substantive corrective action. The inspectors determined this finding was associated with the Procurement/Fabrication Cornerstone and was not associated with a security program; it was not associated with an IMC 2504 operational/construction program; and it was not associated with a repetitive, NRC-identified omission of a program critical attribute. Using IMC 2519, Appendix A, AP1000 Construction Significance Determination Process, the inspectors determined that the finding was associated with a system; i.e. the passive core cooling system (PXS), which is assigned to the intermediate risk importance column of the AP1000 Construction Significance Determination Matrix. The licensee was able to provide reasonable assurance that the design function of the applicable system was not adversely affected. Therefore, this finding was of very low safety significance (Green). The inspectors determined

the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Conservative Bias, H.14, in the area of Human Performance. Specifically, the licensee failed to use decision making practices that emphasized prudent choices over those that are simply allowable when condition reports were dispositioned without expanding the scope of review based on known nonconformances and potential issues identified in previous NRC violations, construction experience, and licensee extent of condition reviews. (1A38)

(Severity Level IV) The NRC identified a Severity Level IV NCV as a result of a NRC Office of Investigation (OI Report 2-2017-026) report for the licensee's failure to adequately implement the Fitness For Duty (FFD) testing program. Specifically, a FFD collector working at Vogtle Units 3 and 4 failed to ensure a donor emptied their pockets of all contents before collection of a sample. This failure allowed the donor to subvert a FFD test as required by 10 CFR 26.105(b), The licensee entered this finding into their corrective action program as CR 10366889 and subsequently re-tested all the individuals which were tested on May 8, 2017, by the FFD collector in question. All re-tested individuals passed. The FFD collector and the individual that subverted the FFD test were both removed from the site.

The finding was determined to be more than minor because the issue represented a failure of the licensee to appropriately implement the requirements of 10 CFR 26.105(b) and 10 CFR 26.85(a). Although this violation is willful, it was brought to the NRC's attention by the licensee, it involved isolated acts of low-level individuals, and it was addressed by appropriate remedial actions. The security significance of this violation was determined to be a Severity Level IV, in part, because there were no adverse security impacts to the construction facility, and the individual was precluded from entering the Construction Controlled Area. Violations that involve willfulness or that affect the regulatory process are dispositioned using traditional enforcement and are not subject to IMC 2519, "Construction Significance Determination Process." Traditional enforcement violations are not assessed for cross-cutting aspects. (2P01)

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Construction Status

During this report period in Unit 3 containment, the containment vessel top head was placed and welded onto the containment vessel top ring. In addition, pipe and components that make up the passive core cooling system (PXS) and reactor coolant system (RCS) continued to be installed. The remaining structural modules were installed in containment that make up the rooms inside containment. In the shield building, steel composite transition modules for courses 11 and 12 (189-6 to 209-6) were installed, welded, and concrete was placed. In addition, the first panels for courses 13 and 14 (209-6 to 229-6) were welded and set in the nuclear island. In the auxiliary building, floors at 117'-6" and 135'-3" and walls from 135'-3" to 163'-3" continued to be constructed and floors at 135'-3" (including the main control room roof) were installed.

In Unit 4 containment, the pressurizer was installed. In addition, pipe and components that make up the PXS and RCS continued to be installed. The installation of structural steel columns that support the operating floor began. In the shield building, work continued on the reinforced concrete portion (east side) up to 131'-6". In the auxiliary building, work continued on floors at 100'-0" and 117'-6", including the spent fuel pool floor at 92'-6", and work continued on walls up to 135'-3".

1. CONSTRUCTION REACTOR SAFETY

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

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

1A01 (Unit 3) ITAAC Number 2.1.02.02a (13) / Family 06F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.02a (13). The inspectors used the following Nuclear Regulatory Commission (NRC) Inspection Procedures (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 of the Unit 3 automatic depressurization system (ADS) outlet piping to sparger A. The inspectors observed manual gas tungsten arc welding (GTAW) on two 16" diameter vertical welds (SV3-PXS-PLW-070-3 (pipe to elbow) and SV3-PXS-PLW-070-9 (pipe to pipe) on line PXS-PL-L130A to verify the 304L grade stainless piping was welded in accordance with the Stone & Webster welding procedure WPS1-8.8T01 and the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, 1998 Edition

including 2000 Addenda, Section III, Subsection ND. The inspectors reviewed both weld data sheets (WDSs) with welding material requisition (WMR) 423419 in the field to verify if traceability of the ER308L weld rods and welder ID were controlled in accordance with the ASME Code, Section III, Subsection NCA. The inspectors also observed the voltage and amperage settings on the welding machine to verify the values were within the ranges listed on the welding procedure specification. The inspectors reviewed a nonconformance report to determine if the additional piping material that was added in the line was in accordance with the ASME Code, Section III. The inspectors also reviewed the drawings to verify if the additional weld, SV3-PXS-PLW-070-9, was incorporated into the work package in accordance with SNCs document control program.

b. Findings

No findings were identified.

1A02 (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:

- 65001.06-02.01 - General Installation

The inspectors observed the rigging, lifting, and setting of module 1102-Q6-01 in Unit 3 to determine if the activities were performed in accordance with the licensee's procedures and the ASME Code requirements. Module 1102-Q6-01 is a mechanical module located above the pressurizer (PZR) that contains ADS stage 1, 2, and 3 piping and valves along with associated supports. The inspectors reviewed the design specification for RCS primary equipment supports, and independently inspected the bolting of the module to the PZR ring girder to determine if the bolts were tensioned in accordance with the design specification, as required by Updated Final Safety Analysis Report (UFSAR) 3.7.3.8.3 and the ASME Code, Section III, Subsection NF-4724.

The inspectors reviewed the licensee’s rigging plan for installation of the module. The inspectors selected a sample of parameters from the rigging plan and observed the lift of the module to determine if the selected parameters were within the limits specified in the rigging plan. Specifically, the inspectors reviewed the wind speed and total load to verify if the stresses on the module would not exceed the acceptance criteria in the rigging plan. The inspectors also observed the lift to determine if the crane was lifting the module from the lifting lugs on the module frame as described in the rigging plan. The inspectors 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.

1A03 (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:

- 65001.06 - Inspection of ITAAC-Related Installation of Mechanical Components
- 65001.06-02.05 - Problem Identification and Resolution
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review
- 65001.F-02.04-General QA Review

The inspectors performed an ASME mechanical component design inspection to verify if the licensee met the ITAAC acceptance criteria of "the ASME Code, Section III design reports existed for the as-built components identified in Table 2.1.2-1 [of the Combined License (COL)] as ASME Code, Section III." For the PZR, the inspectors reviewed design documents, including procedures, Westinghouse Electric Company (WEC) design specifications, ASME generic design report, design drawings, system transient analyses, and transient and component calculations. The team also interviewed personnel to verify if these documents defined the final design and arrangement of structures, systems and components (SSCs) in the RCS; and that SSC attributes were identified, documented, reviewed, and approved by responsible engineering personnel.

The inspectors selected specific inspection criteria and critical attributes for the SSC, along with inherent characteristics of engineering programs, to verify that the program controlling design activities had been established and were implemented in accordance with program procedures. In addition, the inspectors reviewed critical attributes to determine if internal and external events or hazards could affect the components performance and if that could result in a more than minimal impact to the conclusions made in the WEC transient analysis and in Chapter 15 of the UFSAR.

The inspectors reviewed a sample of personnel qualification records and job task training matrix for the engineers who performed design activities, specifically for transient analyses. This review was to verify if the design documents were created and verified by qualified engineers, and whether personnel involved in the development of design documents met WEC procedure requirements for approvers, reviewers, and verifiers and met the independent verification requirements of the ASME Code, Section III. The inspectors reviewed Registered Professional Engineer (RPEs) records for the WEC design specifications for the PZR to verify if records met the WEC procedure, the ASME Code, Section III, and ASME Nuclear Quality Assurance Program (NQA-1-1994) requirements.

The inspectors reviewed a sample of as-built component design documents for the Unit 3 PZR and compared them to the ASME Code, Section III, Subsections NCA and NB requirements. The inspectors also reviewed a sample of design requirements in the PZR design specifications to verify if they were translated into the generic and Unit 3 site specific design reports. The documents reviewed included design specifications, generic and site-specific design reports, as-built analysis reports, component sizing calculations, as-built design report and applicable reconciliation documents, design drawings, engineering calculations, and design change documents.

For the PZR, the inspectors selected the following for review:

- a sample of design attributes associated with component classification and ASME service level in accordance with applicable requirements of ASME Section III, Division 1 Subsection NB, Class 1 Components, 1998 Edition including 2000 Addenda;
- component parameters for pressure and temperature during selected UFSAR Chapter 15 accident scenarios and the impacts to allowable stresses for each component to verify the component design maintained its ability to perform its function in accordance with the ASME Section III design requirements;
- software and personnel qualifications for software used for ASME related design work, which included: WESTEMS 4.5.2 Release to perform stress and fatigue evaluation of pressure vessel components per ASME Section III, WES_FRAMES 4.1 used to perform nonductile failure evaluations of pressure vessel components per Nonmandatory Appendix G, “Protection Against Non-Ductile Failure,” of ASME Section III, and implementation of USFAR Section 3.9.1.2, “Computer Programs Used in Analyses;” and
- design specification being incorporated into the design report, including how selected deviations were addressed.

The inspectors selected a sample of stress and design analyses for subcomponents to verify that the design inputs were identified and documented, and that the subcomponents were designed in accordance with the ASME Section III requirements. Specifically, the inspectors evaluated the PZR design with respect to the following UFSAR Chapter 15 accident analyses: Section 15.3.3, “Reactor Coolant Pump Shaft Seizure (Locked Rotor),” Section 15.4.2, “Uncontrolled Rod Cluster Control Assembly Bank Withdrawal at Power,” and the PZR nozzle for the safety valve and the transient associated with PZR safety valve opening to evaluate the effects on the allowable stresses to the PZR.

The inspectors reviewed a sample of SNC condition reports (CRs) and Westinghouse corrective action program and learnings (CAPALs) to verify if issues were evaluated by the responsible organizations; identified potential affected design; and if the corrective actions associated with ASME design were addressed. The inspectors reviewed the licensee’s and their contractors operating experience/lessons learned evaluations and Corrective Action Program (CAP) documentation with respect to historical design issues associated with the PZR and selected software programs. The inspectors reviewed corrective action documents issued during the inspection to verify that issues were entered into the licensee or applicable contractor corrective action program in accordance with corrective action program requirements.

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
- 65001.05-02.08 - Problem Identification and Resolution
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review
- 65001.F-02.04-General QA Review

The inspectors performed an ASME mechanical component design inspection to verify if the licensee met the ITAAC acceptance criteria of "the ASME Code, Section III design reports existed for the as-built components identified in Table 2.1.3-1 [of the COL] as ASME Code, Section III." For the reactor pressure vessel (RPV), the inspectors reviewed design documents, including procedures, WEC design specifications, ASME generic design report, design drawings, system transient analyses, and transient and component calculations. The team also interviewed personnel to verify if these documents defined the final design and arrangement of SSCs in the RCS; and that SSC attributes were identified, documented, reviewed, and approved by responsible engineering personnel.

The inspectors selected specific inspection criteria and critical attributes for the SSC, along with inherent characteristics of engineering programs, to verify that the program controlling design activities had been established and were implemented in accordance with program procedures. In addition, the inspectors reviewed critical attributes to determine if internal and external events or hazards could affect the components performance and if that could result in a more than minimal impact to the conclusions made in the WEC transient analysis and in Chapter 15 of the UFSAR.

The inspectors reviewed personnel qualification records and job task training matrix for the engineers who performed design activities, specifically for transient analyses. This review was to verify that the design documents were created and verified by qualified engineers, and that personnel involved in the development of design documents met WEC procedure requirements for approvers, reviewers, and verifiers and met the independent verification requirements of ASME Section III. The inspectors reviewed RPEs records for the WEC design specifications for the RPV to verify records met WEC procedure, ASME Section III Code, and ASME NQA-1-1994 requirements.

For the RPV, the inspectors selected the following for review:

- a sample of design attributes associated with component classification and ASME service level in accordance with applicable requirements of ASME Section III, Division 1 Subsection NB, Class 1 Components, 1998 Edition including 2000 Addenda; component parameters for pressure and temperature during selected UFSAR Chapter 15 accident scenarios and the impacts to allowable stresses for each component to verify the component design maintained its ability to perform its function in accordance with the ASME Section III design requirements;
- software and personnel qualifications for software used for ASME related design work, which included: WESTEMS 4.5.2 Release to perform stress and fatigue evaluation of pressure vessel components per ASME Section III, and implementation of USFAR Section 3.9.1.2, “Computer Programs Used in Analyses;” and
- design specification being incorporated into the design report, including how selected deviations were addressed.

The inspectors selected a sample of stress and design analyses for subcomponents to verify that the design inputs were identified and documented, and that the subcomponents were designed in accordance with the ASME Code, Section III requirements. Specifically, the inspectors evaluated the RPV design with respect to the following UFSAR Chapter 15 accident analyses: Section 15.3.3, “Reactor Coolant Pump Shaft Seizure (Locked Rotor),” Section 15.4.2, “Uncontrolled Rod Cluster Control Assembly Bank Withdrawal at Power,” and a containment flood-up event following an associated design basis accident (DBA) and the effects on the allowable stresses to the RPV.

The inspectors reviewed a sample of SNC CRs and Westinghouse CAPALs to verify if issues were evaluated by the responsible organizations; identified potential affected design; and if the corrective actions associated with ASME design were addressed.

The inspectors reviewed the licensee’s contractor and licensee’s operating experience/lessons learned evaluations and CAP documentation with respect to historical design issues associated with the RPV and selected software programs. The inspectors reviewed corrective action documents issued during the inspection to verify that issues were entered into the licensee or applicable contractor corrective action program in accordance with corrective action program requirements.

b. Findings

No findings were identified.

1A05 (Unit 3) ITAAC Number 2.2.01.01 (90) / Family 11A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.01 (90). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors visually examined three containment vessel penetrations to determine if they conformed to the containment system functional arrangement as described in the design description of Chapter 2.2.1 of Appendix C of the COL. Specifically, the inspectors reviewed detailed drawings of penetrations SV3-CAS-PY-C02 (P01, Instrument Air In), SV3-CVS-PY-C01 (P05, Spent Resin Flush Out), and SV3-SGS-PY-C03B (P28, SG Blowdown Out) and the containment vessel shell and compared them to the as-built, installed configuration of the penetrations to determine if they were installed at the correct elevations and azimuths. The inspectors also independently measured a sample of dimensions to determine if they conformed to the drawings.

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.B-02.06-Records

The inspectors reviewed nondestructive examination (NDE) records of Unit 3 two containment penetration pressure boundary welds to verify the completed welds met the acceptance criteria of the ASME Code, Section III, Subsection NE-5320 for radiographic testing (RT). Specifically, the inspectors reviewed film and the associated RT report for penetration weld SV3-CVS-PY-C03-1 (penetration sleeve to flued head) and the computed radiography report and digital film for weld SV3-SGS-PY-C02A-4 (guard pipe to flued head).

The inspectors reviewed the film and RT reports to determine if radiographic indications were characterized in accordance with the MISTRAS NDE procedures and with the ASME Code, Section III, Subsection NC. The inspectors also reviewed the film to determine if the image quality indicators (IQI) were correctly placed and the density ranges were in accordance with the MISTRAS procedure and the ASME Code, Section III. For weld SV3-CVS-PY-C03-1, the inspectors reviewed the weld data sheet to verify traceability of the welder was controlled in accordance with the ASME Code, Section III, Subsection NCA-4134.

b. Findings

No findings were identified.

1A07 (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:

- 65001.03-02.03 - Installation and Welding
- 65001.03-02.06 - Nondestructive Examination (NDE)

The inspectors reviewed installation records of piping and supports for the spent fuel pool cooling system (SFS) suction from containment line (SV3-SFS-PL-L038) to verify the installation of the piping was controlled in accordance with the ASME Code, Section III, Subsection NC, for Class 2 piping. Specifically, the inspectors reviewed WDS to verify quality control (QC) hold points, sign-offs for material identification, preheat, and fit-up were controlled in accordance with the requirements of the ASME Code, Section III, NCA-4134.10. The inspectors examined the installed piping to verify if the installation, including the slope and clearances from other piping and obstructions were in accordance with the construction isometric drawings. The inspectors observed the welds to verify if the weld reinforcement values were within the limits specified in the ASME Code, Section III, NC-4426.2. The inspectors also observed the welder identification stamps on the pipe to verify traceability of the weld to the welder was maintained as required by the ASME Code, Section III, NC-4322.1.

The inspectors observed installation of the pipe supports in this line to determine if the installation, including location, orientation, and clearance, were within tolerances specified in the isometric drawings. The inspectors reviewed the WDS to verify if hold points for pre-heat, fit-up/location, and final visual examinations were signed off by QC personnel as required by the site construction welding program.

The inspectors reviewed the NDE reports for the piping and pipe supports to determine if the required examinations were performed in accordance with the ASME Code, Section III, NC-5000, and if the results were found to be acceptable in accordance with ASME Section III, NC-5300 and NF-5200.

The inspectors reviewed engineering and design coordination report (E&DCR) SV3-SFS-GEF-000030, "Modify Pipe Support SV3-SFS-PH-12R0306," Revision (Rev.) 0 to verify if the modification made to the support satisfied the requirements of APP-PH02-Z0-001, "ASME Pipe Support Design Specification", Rev. 3. Specifically, the inspectors reviewed the extra tube and plate steel that were added to the base of the support to verify if the additional material would keep the overall support length within tolerance of the isometric drawing while maintaining the length of the support strut within tolerance of the pipe support design specification.

b. Findings

No findings were identified.

1A08 (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.B-02.05-Inspection
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed Aecon Industrial fabrication inspection records for two Unit 3 containment isolation valves (SV3-WLS-PL-V055 and SV3-WLS-PL-V067) in the liquid radioactive waste system to verify the stainless steel piping was fabricated in accordance with the ASME Code, Section III, Subsection NC, for Class 2 components. The inspectors reviewed two Aecon ASME Form N-5 data reports for piping subassemblies of components and supports to verify the listing of both valves, their supports, and nuclear class designations, and signature by the authorized nuclear inspector (ANI) were in accordance with the ASME Code, Section III, NCA-8400. The inspectors reviewed two Aecon Liquid Penetrant Examination Reports for the outlet side weld of both valves to verify the final NDE liquid penetrant (NDE-PT) on the circumferential welds were performed by a SNT-TC-1A Level II examiner, and the dwell times for cleaning, penetrant, and developer were in accordance with the ASME Code, Section V, Article 6. The inspectors reviewed two Acuren radiographic examination reports to verify the final NDE-RT on the circumferential welds was performed by a SNT-TC-1A Level II examiner and the geometric unsharpness was in accordance with the ASME Code, Section V, Article 2.

b. Findings

No findings were identified.

1A09 (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:

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

- 65001.B-02.05-Inspection

The inspectors conducted a welding inspection on line VFS-PL-L203 that joins a 90 degree elbow fitting to a 14"-diameter standard wall thickness carbon steel pipe for the Unit 3 containment air filtration system. Specifically, the inspectors observed manual GTAW and reviewed the WDS for field weld SV3-VFS-PLW-045-6 to determine whether welding and inspection activities were performed in accordance with the requirements of the ASME Code, Section III, Subsection NC.

The inspectors observed welding of an intermediate weld pass in the vertical position to verify if the amperage used to melt the welding rods and sidewalls was in accordance with the WPS 1-1.1C21. The inspectors reviewed the WDS to verify if ANI hold points were signed-off for acceptance of material identification markings, internal cleanliness, and fit-up tolerances in accordance with the ASME Code, Section III, Subsections NCA-4134.10 and NC-4230. The inspectors reviewed WMR-423892 against the WDS entries to verify traceability of the welding rods and welder's identification were controlled in accordance with the ASME Code, Section III, Subsections NC-4122 and NC-4300. The inspectors reviewed two certified material test report (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-5.18 specification for carbon steel rods. The inspectors also reviewed two welder qualification records to determine if the welder was qualified and tested in accordance with the requirements of the ASME Code, Section IX for the production weld.

b. Findings

No findings were identified.

1A10 (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.B-02.04-Production Controls
- 65001.B-02.05-Inspection

The inspectors observed welding on a pressure boundary weld joining the plate end ring to the outside surface of the Unit 3 fuel transfer tube in the transfer canal. Specifically, the inspectors observed manual GTAW and reviewed the PCI weld process traveler for fillet weld FW-SV3-FTT-05 to determine whether welding and

inspection activities were performed in accordance with the requirements of the ASME Code, Section III, NE, Class MC, 2001 Edition through 2002 Addenda.

The inspectors observed in-process welding of the fillet weld to verify the amperage used to melt the welding rods and adjacent walls was in accordance with PCI welding procedure 8-MN-GTAW. The inspectors reviewed the weld traveler to verify QC and ANI hold points were sequentially signed-off for acceptance of material identification markings, internal cleanliness, and fit-up tolerances in accordance with NCA-4134.10 and NC-4230. The inspectors reviewed the PCI weld material withdrawal slip against the weld process traveler entries to verify traceability of the welding rods and the welder's identification were controlled in accordance with NC-4122 and NC-4300.

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-Part C, SFA-5.9 specification for bare stainless steel 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.

b. Findings

No findings were identified.

1A11 (Unit 3) 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.F-02.02-Fabrication Records Review

The inspectors reviewed the final fabrication and testing records of electrical penetration assemblies (EPAs) created by Westinghouse Electric Company and Mirion Technologies (Conax Nuclear), Inc. to verify if penetrations followed design specifications as evidenced by acceptance testing. Specifically, the inspectors reviewed Data Sheet A in Appendix A of Mirion Technologies' IPS-2412 Rev. 1, Electrical Penetration Assemblies, that contained the test records for pressure testing, voltage testing, resistance tests, and general composition of the materials used in the fabrication to verify if any tests did not meet acceptance standards outlined in SV3-EY01-VQQ-001 and SV3-EY01-VQQ-003. The inspectors reviewed these tests to determine if the fabrication testing of the EPAs supported the ability to perform their safety function once installed. The following electrical penetrations were sampled:

- SV3-ECS-EY-P06Y, low voltage control penetration
- SV3-ECS-EY-P09W, medium voltage power penetration
- SV3-IDSC-EY-P27Z, instrumentation penetration
- SV3-IDSC-EY-P29Y, low voltage power penetration

b. Findings

No findings were identified.

1A12 (Unit 3) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

- 65001.06-02.02 - Component Welding
- 65001.B-02.04-Production Controls

The inspectors observed manual GTAW of Unit 3 14" diameter motor operated valve PXS-PL-V101 to line RCS-PL-L134 to verify if the 316LN grade stainless steel piping was welded in accordance with the Stone & Webster welding procedure WPS1-8.8T01 and the ASME Code, Section III, Subsection NB. The inspectors reviewed WDS SV3-RCS-PLW-034-1 with WMR 423418 in the field to verify if traceability of the ER316L weld rods and welder ID were controlled and hold points for the ANI inspection were signed off in accordance with the ASME Code, Section III, Subsection NCA-4134.8 through -4134.10. In addition, the inspectors observed the voltage and amperage settings on the welding machine to verify the values were within the ranges allowed in the welding procedure specification. The inspectors also observed the installation of the valve to verify if the flow direction and closed position of the valve were in accordance with the vendor manual.

b. Findings

No findings were identified.

1A13 (Unit 3) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

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

The inspectors performed an inspection of the Unit 3 passive residual heat removal (PRHR) heat exchanger (HX) lower support assembly to verify it was installed in

accordance with the ASME Code, Section III, Article NF-4000. The inspectors independently measured the fillet welds on the lower support assembly to verify the weld dimensions were within the tolerances specified on the construction design drawings and the ASME Code, Section III, Figure NF-4427-1. The inspectors also compared the as-built configuration of the lower support assembly to the approved engineering design change to verify the required stiffener plate and flange support welds were added and the weld dimensions were in accordance with the design change.

b. Findings

No findings were identified.

1A14 (Unit 3) 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:

- 65001.10-02.02 - Inspection Activities
- 65001.F-02.03-Observation of Fabrication Activities
- 65001.F-02.04-General QA Review

The inspectors observed hardware changes made to the protection and monitoring system (PMS) Division B and C cabinets to verify the work was accomplished in accordance with field change notices (FCN) SV3-GW-GCW-335 and SV3-GW-GCW-337.

For Division B, the inspectors observed the termination/determination of wiring in PMS cabinets SV3-PMS-JD-ILCB01, SV3-PMS-JD-ILCB02, SV3-and PMS-JD-ILCB03 using FCN SV3-GW-GCW-337, Rev. 0, Attachment 7. The inspectors observed the licensee’s technicians performing the termination/determination of the wiring to assess whether the activity was done in accordance with the FCN instructions. Specifically, the inspectors observed wiring to verify if it was de-terminated and labeled such that the wiring could be correctly re-terminated in accordance with the FCN. The inspectors observed wiring to verify if it was not pulled or bent in a manner that would damage the wiring in accordance with the FCN and all terminations of wiring was witnessed and verified by the licensee's QC personnel in accordance with quality control instruction 26139-00-2QI-Q07C-N3304.

For Division C, the inspectors observed replacement of the side panel on cabinet SV3-PMS-JD-ILCC01 using FCN SV3-GW-GCW-335, Rev. 0, Attachment 5. The inspectors observed craftsmen torqueing the fasteners on the side panel to verify the new panel was installed in accordance with the FCN instructions. The inspectors observed a QC inspector verifying material traceability and torqueing of fasteners on the side panel to determine whether QC was inspecting the implementation of the

work instructions in accordance with Appendix B of the FCN. The inspectors inspected the torque wrench used to verify the calibration sticker date was still in service in accordance with Sections 6.1.6 and 6.8.3.1 of Instruction N6 of the Bechtel Project Nuclear Quality Control Manual. The inspectors also observed craftsmen updating labels in cabinet SV3-PMS-JD-BCC02 to determine whether they were positioning the labels in accordance with Attachment 2 of the FCN. The inspectors reviewed the drawings in work package SV3-PMS-JDW-1015670 to verify the drawings matched what was in the FCN.

The inspectors reviewed the qualification records for two technicians performing work to determine if they were qualified in accordance with the licensee's training procedures. The inspectors reviewed the qualification records of the QC inspector to verify the qualifications were in accordance with the FCNs and Instruction N10 of the Bechtel Project Nuclear Quality Control Manual.

b. Findings

No findings were identified.

1A15 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors performed inspections of structural steel connections inside the Unit 3 containment building at elevation 107'-2" for the columns that support the operating floor at elevation 135'-3".

The inspectors observed the installation of connections 4070, 4020, and 4007 for SPL 18 Sequence 4 to verify A490 bolts were installed using the direct tension indicator method in accordance with Section 6.7.7 of NCSP 03-40, "Structural Steel Erection." The inspectors also observed the installation of connections 3048 and 3049 for SPL 18 Sequence 3, using the turn-of-the-nut method, to verify A490 bolts were installed with the configuration described in Section 8.2.1 of the Research Council on Structural Connections.

The inspectors reviewed the quality control report on SPL 18, Sequence III, to verify a final inspection on bolted connections was performed in accordance with procedure 26139-000-4MP-T81C-N3221.

The inspectors also reviewed Condition Report 50010799 associated with the installation of SPL-18 connections to determine if noncompliances were processed in

accordance with Quality Policy VGT-16.1, Corrective Action, Section 4.2 of the Bechtel Nuclear Project Quality Assurance Manual.

b. Findings

No findings were identified.

1A16 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review

The inspectors performed inspection of construction activities associated with concrete placement of the operating deck located inside the containment building at elevation 135'-3". The inspectors reviewed quality records and observed concrete placement and testing activities.

The inspectors reviewed concrete pour card No. 4718 and batch tickets 78425 and 78442 to determine whether concrete mix design requirements were translated from specification SV3-CC01-Z0-026 as required by NQA-1 1994, Basic Requirements 3 and 5. The inspectors reviewed the batch tickets during the concrete placement to verify transport time was completed within the time allowed by the American Concrete Institute (ACI) 349-01 and the delivery was intended for the proper location in accordance with the pour card.

The inspectors observed concrete testing activities to determine whether the processes for testing self-consolidated concrete met the requirements of 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 specification SV4-CC01-Z0-027.

The inspectors observed concrete placement activities to determine whether placement drop distances met the requirements specified in Section 4.2.4 of specification SV3-CC01-Z0-031. The inspectors also observed the use of concrete vibrators to verify they were handled and operated to ensure adequate consolidation of the mix in accordance with Section 4.2.9 of SV3-CC01-Z0-031.

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.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.03-Observation of Fabrication Activities

The inspectors observed in-process welding activities and reviewed records associated with the Unit 3 shield building. Specifically, the inspectors sampled the following welds for the conical roof:

- G3-R02H-71 to G3-R02 Girder G05 (inside of Block) (bottom flange and web);
- Repair joint at R09/C03-G18-TF; and
- Repair joint at R14/C01-G28-TF.

The inspectors observed several stages of in-process SMAW on the weld joints during assembly of the conical roof module to verify if the weld preparations, including preheat and cleanliness; weld joint alignment; fit-up, root opening, and tack welding; and initial and interpass weld cleanliness were performed in accordance with the requirements of the Chicago Bridge and Iron (CB&I) general welding procedure and the American Welding Society (AWS) Code D1.1:2000, "Structural Welding Code Steel".

The inspectors observed the handling of SMAW electrodes to verify if energized portable ovens and proper AWS electrode classification were used at each work location. The inspectors observed the use of SMAW electrodes to verify if welding amperage and techniques were consistent with the CB&I qualified WPS for use of E8018-C1 electrodes. The inspectors reviewed three weld/repair travelers for weld joint assemblies to determine if established QC inspection hold points were signed-off, and the traceability of weld filler metals and welders were maintained in accordance with the CB&I general repair procedure. The inspectors reviewed five weld repair travelers/spreadsheets for joint-IDs R09/C03-G18-TF and R14/C01-G28-TF to determine if QC inspection hold points were established to perform visual inspection and magnetic particle testing prior to re-welding repair cavities in accordance with the CB&I general welding procedure.

For weld G3-R02H-71 to G3-R02 Girder G05, the inspectors observed the fit-up, two root passes, and two of intermediate passes to verify the weld was fit up and welded in accordance with the fabrication drawings. The inspectors performed an independent visual inspection of completed welds R09/C03-G18-TF and R14/C01-G28-TF prior to flat toping the surface before final ultrasonic testing to determine whether the quality of the weld toes and cover pass were free from defects such as cracks, lack of fusion, or excessive overlap/undercut/porosity in accordance with the visual inspection acceptance criteria in 181816-000-WS-PR-45056. The inspectors also reviewed these completed welds to verify if their type, size, and location were in accordance with the design drawings.

The inspectors reviewed the WPS and supporting procedure qualification records to determine if they were written and qualified in accordance with the requirements of AWS D1.1:2000, Section 4. The inspectors reviewed eight welder performance qualification records for shielded metal arc welding (SMAW) and flux cored arc welding (FCAW) to verify they were tested and certified in accordance with the requirements of AWS D1.1:2000, Section 4-Part C, including paragraph 4.1.2.1. The inspectors reviewed four ultrasonic test reports to verify the inspections/evaluations were performed by an American Society of Nondestructive Testing (ASNT) SNT-TC-1A Level II inspector using a calibration block for straight and angle-beam testing in accordance with procedure 181816-000-WS-PR-45054, AWS D1.1 Section 6 and Part F, and ANSI/AISC N690.

The inspectors reviewed a sample of fabrication drawings to verify if the weld details and dimensions were in accordance with the shield building roof design drawings. The inspectors reviewed a sample of design drawings to verify they incorporated the dimensions and weld details from UFSAR Section 3H.5.6.1, UFSAR Figure 3H.5-11, and the acceptance criteria of the ITAAC. The inspectors reviewed a sample of eight design changes associated with the modules to verify design changes were conducted in accordance with the requirements of APP-GW-GAP-420. Additionally, the inspectors reviewed the dispositions to the design changes to verify the changes from the original design did not make substantial changes that would require reevaluation of the design calculations.

b. Findings

No findings were identified.

1A18 (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

- 65001.02-02.06 - Record Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.03-Observation of Fabrication Activities

The inspectors observed In-process welding activities and reviewed records associated with the Vogtle Unit 3 shield building. Specifically, the inspectors sampled the following welds for the air inlet modules between elevations 248'-6" and 266'-4":

- U3-AI-32/33 Vert I (inside vertical seam between panels AI-32 and AI-33, approximately at azimuth 265 degrees);
- U3-AI-34/35 Vert I (inside vertical seam between panels AI-34 and AI-35, approximately at azimuth 282 degrees);
- U3-AI-35/36 Vert I (inside vertical seam between panels AI-35 and AI-36, approximately at azimuth 290 degrees);
- U3-AI-37/38 Vert I (inside vertical seam between panels AI-37 and AI-38, approximately at azimuth 307 degrees); and
- U3-AI-38/39 Vert I/O (inside and outside vertical seam between panels AI-38 and AI-39, approximately at azimuth 315 degrees).

The inspectors reviewed a sample of design drawings to verify they contained the details from UFSAR Section 3H.5.6.1, UFSAR Figure 3H.5-11, and Vogtle Unit 3 COL, Appendix C, Section 3.3. The inspectors reviewed design calculations APP-1278-CCC-003 and APP-1278-CCC-013 to verify they were in accordance with the UFSAR sections listed above and the load combinations used included the required loads from both ACI 349-01 and AISC N690-1994. The inspectors reviewed the design outputs that the limiting load was used to verify adequate design margin for each component of the module. The inspectors reviewed the materials and dimensions used in the calculations to verify they were the same as the design drawings and fabrication records. The inspectors reviewed a sample of three engineering and design coordination reports E&DCRs associated with the modules to verify design changes were conducted in accordance with the requirements of APP-GW-GAP-420. Additionally, the inspectors reviewed the E&DCRs for dispositions of design changes to verify the changes from the original design did not make substantial changes that would require reevaluation of the design calculations.

The inspectors observed several stages of in-process welding on the weld joints during assembly of the air inlet modules to verify the fabrication activities were applied in accordance with the requirements of the CB&I procedures, drawings, and AWS D1.1:2000, "Structural Welding Code Steel." For U3-AI-32/33 Vert I, the inspectors observed weld preparations and cleanliness. For U3-AI-38/39 Vert I, the inspectors

observed weld fit-up and tack welding, including joint alignment, root opening, and attaching the backing bar. For U3-AI-37/38 Vert I, the inspectors observed root pass hand welding and intermediate pass machine welding, including cleanliness between passes. For U3-AI-35/36 Vert I, the inspectors observed intermediate pass hand welding of the lower portion of the weld seam. For U3-AI-34/35 Vert I, the inspectors observed final pass hand welding of the top portion of the weld seam. For U3-AI-38/39 Vert O, the inspectors observed weld preparations and cleanliness, weld fit-up and tack welding, machine and hand welding of intermediate passes, and cleanliness between passes. For in-process welding, the inspectors observed the following attributes to verify the welding was being performed in accordance with the applicable WPS:

- the SMAW and FCAW weld material being used at the work locations, including AWS electrode classification;
- the weld variables, including volts, amps, 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.

Additionally, the inspectors observed the QC final visual inspection of U3-AI-37/38 Vert I. The inspectors performed an independent visual inspection of portions of completed welds U3-AI-35/36 Vert I and U3-AI-38/39 Vert I/O to determine whether:

- the quality of the weld toes and cover pass were free from defects such as cracks, lack of fusion, or excessive overlap/undercut/porosity;
- the welds met the design drawings, including type, size, and location; and
- the welds met the visual inspection acceptance criteria for 181816-000-WS-PR-45056, Visual Inspection Procedure AWS D1.1 Shield Wall Work, and AWS D1.1-2000.

The inspectors reviewed five weld travelers for the welds listed above to determine if established QC inspection hold points were signed-off; the traceability of weld filler metals was maintained; and the traceability of the welders was 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 eleven welder performance qualification records to verify the welders were tested and certified in accordance with the requirements of AWS D1.1, Section 4-Part C, including Paragraph 4.2.2.1. The inspectors reviewed two ultrasonic test reports to verify the inspections/evaluations were performed by an ASNT SNT-TC-1A Level II inspector using a calibration block for straight and angle-beam testing in accordance with procedure 181816-000-WS-PR-45054, AWS D1.1 Section 6 and Part F, and ANSI/AISC N690.

b. Findings

No findings were identified.

1A19 (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.B-02.05-Inspection

The inspectors performed inspection activities associated with the assembly of shield building panels located between elevations 199'-6" and 209'-6". The inspectors observed in-process welding activities, and reviewed design drawings, welders qualifications records, NDE reports, and welding procedure specifications.

The inspectors performed welding inspections on two vertical seam welds between panels 1112B and 1112C and between panels 1112C and 1112D. The inspectors evaluated the configuration of these vertical weld joints to determine if the as-built configuration was in conformance with design specification SV3-1208-Z0-001. The inspectors reviewed the welding procedure specification and the procedure qualification records to verify the documents contained the type of base and filler metal, and process parameters such as current, voltage and travel speed were in accordance with the requirements of ASME Section IX, as permitted by AWS D1.1:2000.

The inspectors observed FCAW welding of the vertical seams to verify the welding progression, base metal and filler metal type, and process parameters such as current, voltage, and travel speed were performed in accordance with the WPS. The inspectors also reviewed welder qualification records to verify if the welders were qualified for the welding processes used to assemble the shield building panels in accordance with Section 22.0 of specification SV3-1208-Z0-001.

The inspectors reviewed NDE reports for the two vertical seam welds. Specifically, the inspectors reviewed weld traveler documents to determine the welds were visually inspected for acceptance. The inspectors also reviewed magnetic particle examination reports and ultrasonic testing reports to determine if the quality of the welds met the acceptance criteria described in Clause 6 of AWS D1.1 2000.

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
- 65001.02-02.02 - Laboratory Testing
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors performed inspection of concrete placement of wall L located in the Unit 3 auxiliary building between column line 11 and the shield building from elevation 117'-6" to 135'-3". The inspectors observed concrete placement activities, reviewed design specifications, and quality control documents.

The inspectors reviewed pour card 4554 to determine whether concrete mix design requirements were translated into quality assurance documents in accordance with design specification SV3-CC01-Z0-026. During placement, the inspectors 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 concrete placement to verify transport time was completed within the time allowed by ACI 349-01 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 processes for testing self-consolidated concrete met the requirements of design specification SV3-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 concrete placement to determine whether placement for the safety related structure met the requirements of design specification SV3-CC01-Z0-031. The inspectors observed the use of concrete vibrators to verify they were inserted and withdrawn in a consistent pattern, inserted to penetrate at least 6 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.

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- As-Built Attributes for SSCs associated with ITAAC
- 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 floor-slab for the main control room (MCR) ceiling, located between column lines I to L and column lines 9.2 to 11, and the floor-slab for the operations work area (tagging room) ceiling, located between column lines J and K and column lines 9 and 9.2, both at elevation 135'-3" in the auxiliary building. The inspectors observed ongoing reinforcement installation activities and reviewed licensee documents including design specifications, design drawings, and E&DCRs.

The inspectors reviewed design drawings for the ceilings of the MCR and the tagging room finned-floor modules to determine whether the reinforcement configuration in the UFSAR, section 3H.5 was translated to the drawings.

The inspectors sampled five E&DCRs to verify the design control process was performed in accordance with procedure APP-GW-GAP-420, and the reinforcement configuration of the wall reflected the approved design changes described on the E&DCRs. The inspectors also reviewed the E&DCRs to verify whether their disposition was within the requirements of ACI 349-01.

The inspectors observed reinforcement installation activities to verify they were performed using the latest-approved design changes and design drawings in accordance with NQA-1 1994. The inspectors performed independent measurements of steel reinforcement bars in the floor to verify they were installed in accordance with ACI 349-01. Specifically, the inspectors conducted in-field measurements of installed top and bottom layers of reinforcing steel to verify they were the right size, met spacing requirements, had minimum concrete clear cover, lap splices met the minimum length, and the floor had the required thickness per the design drawings.

b. Findings

No findings were identified.

1A22 (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:

- 65001.01-02.06 - Records

- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.02 - Laboratory Testing
- 65001.02-02.06 - Record Review
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors observed ongoing work and reviewed records associated with construction of the following reinforced concrete floor sections at elevation 135'-3" of the Unit 3 auxiliary building:

- from column line 9.2 to 11 and I to L, including the finned floor modules comprising the main control room ceiling;
- from column line 9 to 9.2 and J to K, including the precast panel floor module comprising the operations work area (tagging room) ceiling; and
- from column line 7.3 to 9.2 and J to approximately 8' west of column line I, including the floor slab on metal decking comprising the corridor ceiling.

The inspectors reviewed a sample of design drawings, specifically the concrete details and thicknesses, to determine whether they defined the final design and arrangement of these floor sections, and whether the design implemented was consistent with the descriptions in UFSAR Section 3H.5(6) (8), UFSAR Section 3H.5.3.1, UFSAR Section 3H.5.4, UFSAR Figure 3H.5-8, UFSAR Figure 3H.5-9, and the Vogtle Unit 3 COL, Appendix C, Table 3.3-1. The inspectors reviewed E&DCRs associated with the concrete placement to verify the design change was conducted in accordance with the requirements of APP-GW-GAP-420. Additionally, the inspectors reviewed the E&DCRs for dispositions of design changes to verify the changes from the original design did not make substantial changes that would require reevaluation of the design calculations.

Prior to the concrete placement, the inspectors independently assessed the formwork and placement area to verity it was leak tight, secure, and free from debris or excess water as required by ACI 349-01, Section 5.7, " ACI 349-01, Paragraph 11.7.9; and SV3-CC01-Z0-031, Section 4.2.4,." The inspectors observed the concrete construction joint preparations for the top surfaces of the precast panels and the wall sections included in the placement to verify the surface had the required quarter inch amplitude of roughness specified in ACI 349-01, Paragraph 11.7.9, and SV3-CC01-Z0-031, Section 4.2.3.1. The inspectors also observed the formwork and construction joints to verify they had been dampened and standing water was removed in accordance with ACI 349-01, Section 6.4, and SV3-CC01-Z0-031, Section 4.2.3.1. The inspectors observed the final concrete pre-placement inspection to verify it was performed by QC inspectors before any concrete was placed as required by SV3-CC01-Z0-031, Section 4.5.

Prior to the concrete placement, the inspectors reviewed the mix specified on the pour card to verify:

- the mix selected met the design strength requirements in UFSAR Section 3.8.4.6.1.1;

- the workability and consistency of the mix selected was suitable for the weather and placement configuration without segregation or excessive bleeding in accordance with ACI 349-01, Section 5.2;
- the mix had been prequalified in accordance with ACI 349-01, Section 5.2, and SV3-CC01-Z0-026, Section 4.2.2;
- the mix proportions specified were consistent with the selected prequalified mix from SV3-CC01-Z0-026, Section 4.2.10; and
- the batching instructions were in accordance with the American Society of Testing and Materials (ASTM) C94 and SV3-CC01-Z0-026, Section 4.2.3.

The inspectors observed concrete placement activities to verify 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. The inspectors observed concrete placement activities to verify the placement did not result in mix segregation as specified in ACI 349-01, Section 5.10, and SV3-CC01-Z0-031, Section 4.2.11, Additionally, the inspectors observed concrete lift heights and placement practices to verify they followed SV3-CC01-Z0-031, Section 4.2.4, and met the requirements of ACI 349-01, Section 5.10. The inspectors observed the use of vibrators to verify they were handled and operated to ensure adequate consolidation, to prevent voiding or honeycombing, and to prevent concrete segregation in accordance with SV3-CC01-Z0-031, Section 4.2.9, and SV3-CC01-Z0-031, Section 4.2.12.

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, Section 4.2.4, and SV3-CC01-Z0-031, Section 4.2.5, 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, Section 5.8.

During the concrete placement, the inspectors evaluated two 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, Section 4.5. The inspectors observed the in-process QC inspection during the placement to verify it was conducted in accordance with SV3-CC01-Z0-031, Section 4.5, and the QC inspection plan. The inspectors reviewed the QC inspection report for the pre-placement and concrete placement activities to verify the inspection was documented and the activities were accepted in accordance with SV3-CC01-Z0-031, Section 4.5.

During the concrete placement, the inspectors observed in-process concrete testing of four concrete batches, including concrete temperature, slump, air content, and unit weight to verify testing was completed and conducted in accordance with ACI 349-01, Section 5.6.1 and SV3-CC01-Z0-027, Section 6.1.12. The inspectors observed the concrete sampling for testing to verify representative samples were obtained and testing was performed within the allowable times from sampling in accordance with ASTM C172. Additionally, the inspectors observed the testing to determine if test results were evaluated against applicable quantitative and qualitative acceptance criteria in accordance with 10 CFR 50, Appendix B, Criterion 5.

The inspectors observed the temperature testing and that the thermometer was calibrated to verify the activities were conducted in accordance with ASTM C1064. The inspectors observed the testing apparatus and tamping rod used for slump testing to verify they met the material, dimensional, calibration, and preparation requirements of ASTM C143. The inspectors observed cleanliness and preparation of the testing apparatus to verify it was done in accordance with ASTM C143. The inspectors observed the testing surface to verify it met the material, dimensional, and preparation requirements of ASTM C143. The inspectors observed the slump testing to verify it was conducted in accordance with ASTM C143.

The inspectors observed the testing apparatus, including the measuring bowl and cover assembly, tamping rod, and mallet used for air content testing to verify they met the material, dimensional, calibration, and preparation requirements of ASTM C231. The inspectors observed the strike-off plate and scoop used for air content testing to verify they met the material and dimensional requirements of ASTM C231. The inspectors observed the air content testing, including the use of an aggregate correction factor, to verify it was conducted in accordance with ASTM C231.

The inspectors observed the container, scale, and mallet used for unit weight testing to verify they met the material, dimensional, calibration, and preparation of ASTM C138. The inspectors observed the strike-off plate and scoop used for air content testing to verify they met the material and dimensional requirements of ASTM C138. The inspectors observed the unit weight testing to verify it was conducted in accordance with ASTM C138. The inspectors observed the field calculation for unit weight using the numbers obtained during testing to verify it was conducted in accordance with ASTM C138.

During in-process concrete testing, the inspectors observed the making of one set of concrete strength test sample cylinders to verify if:

- they were made within the time allowed by ASTM C172;
- they were made at the required frequency in accordance with ACI 349-01, Section 5.6, and SV3-CC01-Z0-027, Section 6.1.12.3, the size and quantity of cylinders made were in accordance with ASTM C31 and SV3-CC01-Z0-027, Section 6.1.12.2, the molds used met the dimensional and material requirements of ASTM C31;
- the tamping rod and mallet used met the material, dimensional, calibration, and preparation of ASTM C31; and
- casting, finishing, storage, and curing of the cylinders was conducted in accordance with ASTM C31.

The inspectors reviewed twenty-five concrete batch tickets and three test reports, including the concrete cylinder strength testing, to verify the records were complete, accurate, and contained the required information in accordance with ASTMs C31, C39, C138, C143, C172, C231, C1064; ACI 349-01, Section 5.6.2, and SV3-CC01-Z0-027, Section 6.1.12. 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 Section 4.2.10.

The inspectors reviewed a sample of three corrective action reports associated with the concrete placement to verify the evaluations and corrective actions were conducted in accordance with the licensee's 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 an associated nonconformance and disposition (N&D) report to verify the hardware nonconformance had an adequate technical evaluation and was dispositioned in accordance with APP-GW-GAP-428.The inspectors reviewed the resulting procedure clarification to verify it had been evaluated by engineering as required by APP-GW-GAP-420. The inspectors conducted a field walkdown of the concrete placement to verify the issue had been completely captured and the corrective actions had been implemented.

b. Findings

No findings were identified.

1A23 (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 the installation of reinforcing steel from elevation 135'-3" to 153'-3" for wall 7.3 between column line I and the shield building. The inspectors observed reinforcement installation activities, reviewed licensee records including design specifications, drawings, and E&DCRs.

The inspectors compared design drawings to installed reinforcement to verify if reinforcing steel was installed in accordance with the latest approved E&DCRs and per the requirements of ACI 349-01. The inspectors also performed in-field measurements of installed reinforcing steel to verify if it was the right 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 the design drawings and specification SV3-CC01-Z0-031.

The inspectors reviewed a sample of four E&DCRs to verify design changes were performed in accordance with APP-GW-GAP-420. Specifically, the inspectors reviewed the E&DCRs to verify if 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 also reviewed the E&DCRs to verify if an adequate technical justification was provided for the design changes, deviations from applicable quality standards such ACI 349-01 were controlled, and the revised design was correctly translated into the updated design documents.

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.02.03 - 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 135'-3" to 153'-3" for wall 1 between column lines I and N, and wall N between column line 1 and the shield building. The inspectors observed ongoing reinforcement installation activities, reviewed licensee records including inspection reports, design specifications, drawings, and E&DCRs.

The inspectors reviewed design drawings to verify the reinforcement's configuration met the requirements of ACI 349-01. The inspectors reviewed a nonconformance evaluation to verify approved repairs were reflected into the reinforcement field configuration in accordance with NQA-1-1994, Basic Requirement 3. The inspectors reviewed quality control reports to verify the licensee performed inspections of the installed reinforcement in accordance with specification SV3-CC01-Z0-031. The inspectors observed installed reinforcement to verify reinforcing steel was installed in accordance design drawings with the latest approved E&DCRs, and within the requirements of ACI 349-01. The inspectors sampled 12 embedment plates to evaluate the condition of their headed anchors and verify they were installed in accordance with design drawings and Section 7 of AWS D1.1:2000. The inspectors also performed in-field measurements of installed reinforcing steel to verify they were the right 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.

b. Findings

No findings were identified.

1A25 (Unit 3) ITAAC Number 3.3.00.02a.ii.c (766) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.c (766). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the walls of the non-radiologically controlled auxiliary building. The inspectors reviewed the associated records produced from the survey to verify if the completed work met the requirements of Table 3.3-1 of Appendix C of the COL. Specifically the inspectors reviewed the as-built survey records of the following walls to verify if they met the required as-built thickness:

- Wall Q from column line 11 to the shield building (SB) and elevation 100'-0" to 117'-6";
- Wall P from column line 11 to the SB and elevation 100'-0" to 117'-6";
- Wall K from column line 11 to the SB and elevation 100'-0" to 117'-6";
- Wall 7.3 from column line I to the SB and elevation 100'-0" to 117'-6";
- Wall 11 from column line I to Q and elevation 100'-0" to 117'-6"; and
- Floor from K to L and SB to CL 10 (12313) at 100'.

b. Findings

No findings were identified.

1A26 (Unit 3) ITAAC Number 3.3.00.02a.ii.d (767) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.d (767). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the walls of the radiologically controlled auxiliary building. The inspectors reviewed the associated records produced from the survey to verify if the completed work met the requirements of Table 3.3-1 of Appendix C of the COL. Specifically the inspectors reviewed the as-built survey records of the following walls to verify if they met the required as-built thickness:

- floor from I to J-2 and 4 to the SB and vertical wall 4 to 17 South of 5 (12351) at 1072;
- floor from I to the SB and 5 to intersecting wall before 5 (12352) at 105’;
- wall 1 from column line I to J-2 and elevation 100'-0" to 117'6"; and
- wall 5 from column line I to the SB elevation 100'-0" to 117'-6".

b. Findings

No findings were identified.

1A27 (Unit 3) ITAAC Number 3.3.00.03c (779) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03c (779). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the non-radiologically controlled auxiliary building. Specifically, the inspectors reviewed wall surveys and concrete density records to verify if the key site parameters of the walls met the shielding (thickness) requirements specified in Table 3.3-1 of Appendix C of the COL. The inspectors reviewed documents related to the following walls to determine whether the critical attributes of as-built SSC conformed to the final design:

- wall Q from column line 11 to the shield building (SB) and elevation 100'-0" to 117'-6";
- wall P from column line 11 to the SB and elevation 100'-0" to 117'-6";
- wall K from column line 11 to the SB and elevation 100'-0" to 117'-6";
- wall 11 from column line I to Q and elevation 100'-0" to 117'-6".

In addition, the inspectors reviewed concrete density records to verify if the walls met the shielding (density) requirements specified in the UFSAR Sections 3.8.4 and 12.3.2, respectively, for wall 11 from I to Q and elevation 100'-0" to 117'-6".

b. Findings

No findings were identified.

1A28 (Unit 3) ITAAC Number 3.3.00.03d (780) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03d (780). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the radiologically controlled auxiliary building. Specifically, the inspectors reviewed wall surveys and concrete density records to verify if the key site parameters of the walls met the shielding (thickness) requirements specified in table 3.3-1 of Appendix C of the COL. The inspectors reviewed documents related to the following walls to determine whether the critical attributes of as-built SSC conformed to the final design:

- floor from I to J-2 and 4 to the SB and vertical wall 4 to 17 South of 5 (12351) at 1072;
- floor from I to the SB and 5 to intersecting wall before 5 (12352) at 105’;
- wall 1 from column line I to J-2 and elevation 100'-0" to 117'-6"; and
- wall 5 from column line I to the SB elevation 100'-0" to 117'-6".

In addition, the inspectors reviewed concrete density records to verify if the walls met the shielding (density) requirements specified in the UFSAR Sections 3.8.4 and 12.3.2, respectively, for wall 5 from column line I to the SB and elevation 100'-0" to 117'-6".

b. Findings

No findings were identified.

1A29 (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:

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

The inspectors observed the rigging, lifting, and setting of the Unit 4 pressurizer 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 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. The inspectors observed the lifting of the pressurizer to ensure that the trunnions were used to accomplish the upending and vertical lift in accordance with the technical manual, Section 5.7.

The inspectors reviewed the licensee's rigging plan for the Unit 4 pressurizer to determine if it was developed in accordance with the technical manual. The inspectors selected a sample of parameters from the rigging plan and observed the lift of the pressurizer 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 trunnions were not exceeded in accordance with the rigging plan. 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.

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 conducted an inspection of the Vogtle Unit 4 steam generator-1 (SG-1) to determine if the component was fabricated in accordance with the ASME Boiler and Pressure Vessel Code (BPVC), Section III, 1998 Edition including 2000 Addenda, WEC steam generator design specification, and the UFSAR Chapter 5.

The inspectors reviewed fabrication records for the following six welds and the adjoining materials for the SG-1 (ASME Class 1):

- 109-51 channel head (primary inlet) nozzle to stainless steel safe-end,
- 117-51 channel head 690-buttering (chemical and volume control system (CVS) nozzle outside),
- 118-51 channel head cladding (CVS nozzle inside),
- 119-51 (CVS nozzle safe-end to channel head),
- 201-96 (channel head to RCP casing A), and
- 5101-71 (tubesheet to channel head).

The inspectors reviewed the Doosan ASME N-1, N-2, and N-5 Code data reports to determine if the materials specified and hydrostatic test performed on the SG-1 met

the requirements of the ASME BPVC and the WEC 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 design documents to determine if attributes of the parts and welds identified were captured in the final as-built condition of the components in accordance with the ASME Code, Section III, WEC design specification, design drawings, and the UFSAR requirements.

The inspectors reviewed CMTRs for the SG-1 to determine if the reports referenced applicable quality and technical requirements from 10 CFR 21, NQA-1, ASME Code Section III, and the WEC steam generator design specification.

The inspectors reviewed fabrication records to determine if the base and weld materials were fabricated in accordance with the requirements of ASME Code Sections II and III, and the WEC material specifications. For the weld filler metals, the inspectors reviewed CMTRs to determine if the weld filler metals met the following applicable requirements in the as-welded and heat treated conditions:

- chemical analysis;
- mechanical testing (tensile and yield strengths, and percent elongation);
- fracture toughness (impact and drop weight testing); and
- delta ferrite content, and resistance to pitting and crevice corrosion for stainless steel.

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

- chemical analysis;
- mechanical testing (tensile and yield strengths);
- fracture toughness (impact and drop weight testing);
- base material heat treatments; and
- delta ferrite content, and resistance to pitting and crevice corrosion for stainless steel.

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

- heat treatment records,
- NDE records, and
- post weld heat treatment (PWHT).

The inspectors reviewed a nonconformance report (NCR) and repair control plan for a weld repair on FW-No. 119-51 to determine if the repair activities were performed in accordance with the ASME Code, Section III, NB-4453. The inspectors reviewed the NCR with supporting documents for adequate disposition and technical justifications with consideration for reportability screening and evaluations under 10 CFR Part 21 and 10 CFR 50.55(e). The inspectors reviewed the weld repair traveler to verify use of the proper traceable weld filler metal, and the original ultrasonic examination method of identifying the defect was used for final acceptance.

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 and results conformed to the requirements of the ASME Code, Sections III and V. The inspectors reviewed a sample of radiograph films for the weld samples selected. The inspectors reviewed radiograph attributes, such as description of indications, film quality, film density, geometric unsharpness, and IQI selection and location to determine if the radiographs were conducted and evaluated in accordance with the ASME Code. In addition, the inspectors reviewed NDE ultrasonic test (UT) reports to determine whether inspection methods and techniques for straight and angle beam scanning, calibration, frequency, transducer size, wedge angle, and sensitivity for examinations of production welds and repairs were performed in accordance with the requirements of the ASME Code, Sections III and V.

The inspectors reviewed PWHT records for materials and welds sampled to determine if the conditions of PWHT and 80% aggregate times at temperatures were performed for the channel head and tubesheet in accordance with the ASME Code, Section III requirements.

The inspectors reviewed the primary tube U-bend stress relieving records for rows 1 through 17 to determine if these smaller radii bends were stress-relieved after bending in accordance with the requirements of the alloy 690 material specification. In addition, the inspectors reviewed the tube extrados wall thickness measurements at three bend portions (45, 90, and 135) for rows 1 through 17 to determine if the minimum reduction in wall thickness was in accordance with the requirements of the alloy 690 material specification.

b. Findings

No findings were identified.

1A31 (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:

- 65001.03-02.03 - Installation and Welding
- 65001.03-02.06 - Nondestructive Examination (NDE)
- 65001.B-02.03-Welder Qualification

The inspectors observed machine GTAW of an intermediate weld pass on an 18-diameter stainless steel pipe to nozzle for weld SV4-RCS-PLW-041-1 on pressurizer surge line RCS-PL-L003 to verify welding activities were performed in accordance with

the requirements of the ASME Code, Section III, Subsection NB, Class 1. The inspectors reviewed the PCI weld process traveler to verify if ANI hold points were sequentially signed-off and the welder and weld metal identifications were traceable in compliance with the ASME Code, Section III, Subsection NCA. The inspectors reviewed the weld traveler to verify if the weld filler material was in compliance with the welding material request and the ASME Code, Section II, Part C, SFA 5.9. The inspectors also reviewed welder qualification records for welder M-2180 to verify he was qualified and tested in compliance with the ASME Code, Section IX.
The inspectors reviewed a liquid dye penetrant examination report to verify the dwell times for penetrant, post-removal, and developer were performed and accepted in compliance with the ASME Code, Section V, Article 6. The inspectors reviewed a computed radiographic examination report to verify if the IQI, geometric unsharpness, and acceptance by a Level III examiner complied with the ASME Code, Section V, Article 2.

b. Findings

No findings were identified.

1A32 (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
- 65001.06-02.05 - Problem Identification and Resolution
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review
- 65001.F-02.04-General QA Review

The inspectors performed an ASME mechanical component design inspection to verify if the licensee met the ITAAC acceptance criteria of “the ASME Code Section III design reports exist for the as-built components identified in Table 2.1.2-1 [of the COL] as ASME Code Section III.” For the PZR, the inspectors reviewed design documents, including: procedures, WEC design specifications, ASME generic design report, design drawings, system transient analyses, and transient and component calculations. The team also interviewed personnel to verify if these documents defined the final design and arrangement of structures, SSCs in the RCS; and that SSC attributes were identified, documented, reviewed, and approved by responsible engineering personnel.

The inspectors selected specific inspection criteria and critical attributes for the SSC, along with inherent characteristics of engineering programs, to verify that the program controlling design activities had been established and were implemented in

accordance with program procedures. In addition, the inspectors reviewed critical attributes to determine if internal and external events or hazards could affect the components performance and if that could result in a more than minimal impact to the conclusions made in the WEC transient analysis and in Chapter 15 of the UFSAR.

The inspectors reviewed a sample of personnel qualification records and job task training matrix for the engineers who performed design activities, specifically for transient analyses. This review was to verify if the design documents were created and verified by qualified engineers, and whether personnel involved in the development of design documents met WEC procedure requirements for approvers, reviewers, and verifiers and met the independent verification requirements of the ASME Code, Section III. The inspectors reviewed RPEs records for the WEC design specifications for the PZR to verify if records met the WEC procedure, ASME Section III Code, and ASME NQA-1-1994 requirements.

For the PZR, the inspectors selected the following for review:

- a sample of design attributes associated with component classification and ASME service level in accordance with applicable requirements of ASME Section III, Division 1 Subsection NB, Class 1 Components, 1998 Edition including 2000 Addenda;
- component parameters for pressure and temperature during selected UFSAR Chapter 15 accident scenarios and the impacts to allowable stresses for each component to verify the component design maintained its ability to perform its function in accordance with the ASME Section III design requirements; and
- software and personnel qualifications for software used for ASME related design work, which included: WESTEMS 4.5.2 Release to perform stress and fatigue evaluation of pressure vessel components per ASME Section III, WES_FRAMES 4.1 used to perform nonductile failure evaluations of pressure vessel components per Nonmandatory Appendix G, “Protection Against Non-Ductile Failure,” of ASME Section III, and implementation of USFAR Section 3.9.1.2, “Computer Programs Used in Analyses;” and
- design specification being incorporated into the design report, including how selected deviations were addressed.

The inspectors selected a sample of stress and design analyses for subcomponents to verify that the design inputs were identified and documented, and that the subcomponents were designed in accordance with the ASME Section III requirements. Specifically, the inspectors evaluated the PZR design with respect to the following UFSAR Chapter 15 accident analyses: Section 15.3.3, “Reactor Coolant Pump Shaft Seizure (Locked Rotor),” Section 15.4.2, “Uncontrolled Rod Cluster Control Assembly Bank Withdrawal at Power,” and the PZR nozzle for the safety valve and the transient associated with PZR safety valve opening to evaluate the effects on the allowable stresses to the PZR.

The inspectors reviewed a sample of SNC’s CRs and Westinghouse’s CAPALs to verify if issues were evaluated by the responsible organizations; identified potential affected design; and if the corrective actions associated with ASME design were addressed. The inspectors reviewed the licensees and their contractors operating experience/lessons learned evaluations and CAP documentation with respect to historical design issues associated with the PZR and selected software programs. The

inspectors reviewed corrective action documents issued during the inspection to verify that issues were entered into the licensee or applicable contractor corrective action program in accordance with corrective action program requirements.

b. Findings

No findings were identified.

1A33 (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
- 65001.05-02.08 - Problem Identification and Resolution
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review
- 65001.F-02.04-General QA Review

The inspectors performed an ASME mechanical component design inspection to verify if the licensee met the ITAAC acceptance criteria of “the ASME Code Section III design reports exist for the as-built components identified in Table 2.1.3-1 [of the COL] as ASME Code Section III.” For the RPV, the inspectors reviewed design documents, including: procedures, WEC design specifications, ASME generic design report, design drawings, system transient analyses, and transient and component calculations. The team also interviewed personnel to verify if these documents defined the final design and arrangement of structures, SSCs in the RCS; and that SSC attributes were identified, documented, reviewed, and approved by responsible engineering personnel.

The inspectors selected specific inspection criteria and critical attributes for the SSC, along with inherent characteristics of engineering programs, to verify that the program controlling design activities had been established and were implemented in accordance with program procedures. In addition, the inspectors reviewed critical attributes to determine if internal and external events or hazards could affect the components performance and if that could result in a more than minimal impact to the conclusions made in the WEC transient analysis and in Chapter 15 of the UFSAR.

The inspectors reviewed personnel qualification records and job task training matrix for the engineers who performed design activities, specifically for transient analyses. This review was to verify that the design documents were created and verified by qualified engineers, and that personnel involved in the development of design documents met WEC procedure requirements for approvers, reviewers, and verifiers and met the

independent verification requirements of ASME Section III. The inspectors reviewed RPEs records for the WEC design specifications for the RPV to verify records met WEC procedure, ASME Section III Code, and ASME NQA-1-1994 requirements.

The inspectors reviewed a sample of as-built component design documents for the Unit 4 RPV and compared them to the ASME Code, Section III, Sub-sections NCA and NB requirements. The inspectors also reviewed a sampling of design requirements in the RPV design specifications to verify if they were translated into the generic and Unit 4 site specific design reports. The documents reviewed included design specifications, generic and site-specific design reports, as-built analysis reports, component sizing calculations, as-built design report and applicable reconciliation documents, design drawings, engineering calculations, and design change documents.

For the RPV, the inspectors selected the following for review:

- a sample of design attributes associated with component classification and ASME service level in accordance with applicable requirements of ASME Section III, Division 1 Subsection NB, Class 1 Components, 1998 Edition including 2000 Addenda;
- component parameters for pressure and temperature during selected UFSAR Chapter 15 accident scenarios and the impacts to allowable stresses for each component to verify the component design maintained its ability to perform its function in accordance with the ASME Section III design requirements;
- software and personnel qualifications for software used for ASME related design work, which included: WESTEMS 4.5.2 Release to perform stress and fatigue evaluation of pressure vessel components per ASME Section III, and implementation of USFAR Section 3.9.1.2, “Computer Programs Used in Analyses;” and
- design specification being incorporated into the design report, including how selected deviations were addressed.

The inspectors selected a sample of stress and design analyses for subcomponents to verify that the design inputs were identified and documented, and that the subcomponents were designed in accordance with the ASME Section III requirements. Specifically, the inspectors evaluated the RPV design with respect to the following UFSAR Chapter 15 accident analyses: Section 15.3.3, “Reactor Coolant Pump Shaft Seizure (Locked Rotor),” Section 15.4.2, “Uncontrolled Rod Cluster Control Assembly Bank Withdrawal at Power,” and a containment flood-up event following an associated DBA and the effects on the allowable stresses to the RPV.

The inspectors reviewed a sample of SNC’s CRs and Westinghouse’s CAPALs to verify if issues were evaluated by the responsible organizations; identified potential affected design; and if the corrective actions associated with ASME design were addressed. The inspectors reviewed the licensee’s contractor and licensee’s operating experience/lessons learned evaluations and CAP documentation with respect to historical design issues associated with the RPV and selected software programs. The inspectors reviewed corrective action documents issued during the inspection to verify that issues were entered into the licensee or applicable contractor corrective action program in accordance with corrective action program requirements.

b. Findings

No findings were identified.

1A34 (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.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed CB&I welding fabrication records for the containment vessel top head (CVTH) on the following three completed double-V groove butt joints to verify if fabrication and welding activities were performed in accordance with the requirements of the ASME Code, Section III, Subsection NE:

- weld seam C4-A-24 to A-25 (TH4 course);
- weld seam C4-B-18 to B-19 (TH5 course); and
- circumferential weld seam joining both TH4 to TH5 courses.

Specifically, the inspectors reviewed CB&I weld travelers and associated documents to verify that QC inspection hold points for the following activities on the internal and external portions of these weld seams were signed-off in accordance with the ASME Code, Section III, Article NCA-4000:

- weld seam fit-up alignment and tack welding;
- 200 degree F preheat prior to start of any welding; and
- plate thickness checks and NDE-MT at marked removal locations of temporary attachments (fit-up tools and electrical ground plates).

The inspectors reviewed the latest revisions of three CB&I welding procedures to verify manual and machine welding processes were qualified and tested (includes impact testing) in accordance with the requirements of the ASME Code, Section IX, Article II.

The inspectors reviewed 38 CB&I welder/operator performance qualification records for 17 individuals to verify they were tested and certified in accordance with the requirements of the ASME Code, Section IX, Article III.

The inspectors reviewed 11 CMTRs for CVTH plates and 12 weld filler metals used by CB&I to verify if the results of tests for chemical analysis and mechanical properties (includes impact testing) were in accordance with the requirements of the ASME Code, Section II, Parts A and C, respectively.

The inspectors reviewed two CB&I X-ray radiographic film packages and reports for weld seams TH4-A24/A25 and TH5-B18/B19 to verify location markers and film density tolerances in the area of interest with respect to the designated wire IQI locations were in accordance with the requirements of the ASME Code, Section V, Article 2. The inspectors reviewed the recertification record of qualifications for the CB&I NDE-RT Level II examiner with ID-No. 728683 along with the NDE training and experience record to verify if the individual was qualified and certified in accordance with ASNT SNT-TC-1A.

The inspectors reviewed a Nippon Steel CMTR for a weld filler metal used by the IHI Corporation for joining TH6 quarter sections, and both halves of the TH6 course and dollar plate to verify if that the chemical analysis and mechanical properties (includes impact testing) were in accordance with the ASME Code, Section II, Part C.
The inspectors reviewed IHI Corporation radiographic examination records for the following six welds to verify if the radiography was performed in accordance with the requirements of the ASME Code, Section V, Article 2:

- nuclear Part CA-A24 knuckle plate
- nuclear Part CA-A25 knuckle plate
- weld numbers WC4-C1-1 and WC4-C2-1 joining the first halves of the TH6 course and dollar plate; and
- weld numbers WC4-C1-2 and WC4-C2-2 joining the second halves of the TH6 course and dollar plate.

The inspectors reviewed three JFE Steel Corporation ultrasonic examination records to verify that the 100% straight beam scanning of the CVTH plates using a 5 MHz test frequency was performed with acceptable results based on the JIS 0801 (2008) standard in accordance with the requirements of the CB&I containment vessel (CV) material specification MS-SA-738B-2765.

Finally, the inspectors reviewed an IHI Corporation ASME N-2 data report for welding two sections of each TH4 course plates C4-A24 and C4-A25 to verify they were signed by an ANI in accordance with the requirements of the ASME Code, Section III, Subsection NCA.

b. Findings

No findings were identified.

1A35 (Unit 4) ITAAC Number 2.2.01.02a (91) / Family 06F

a. Inspection Scope

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

- 65001.11-02.03 - Installation and Welding

- 65001.11-02.05 - Nondestructive Examination
- 65001.B-02.05-Inspection

The inspectors reviewed CB&I welding and NDE records for the circumferential weld seam between the lower personnel airlock and Unit 4 containment vessel penetration sleeve to verify installation activities were performed in accordance with the requirements of the ASME Code, Section III, Subsection NE.

The inspectors reviewed CB&I weld traveler U4-S1-E14-PAL/E14 to verify traceability of weld filler metals and welders were controlled during preheat, weld seam fit-up, and tack welding activities for the weld seam were in accordance with the requirements of the ASME Code, Section III, Article NCA-4000. The inspectors also reviewed the weld traveler to verify the inspection hold points during preheat, fit-up, tack, and dimensional checks were signed-off as acceptable in accordance with the ASME Code, Section III, Article NCA-4000.

The inspectors reviewed NDE records for PT, magnetic particle, and RT examinations to verify surface and volumetric examinations were performed and recorded with acceptance in accordance with the requirements of the ASME Code, Section III-NE, and Section V. The inspectors reviewed a CB&I NDE-PT record for surface examination performed and evaluated by a Level II inspector to verify the repair of a welding arc strike area inside the airlock was examined in accordance with the ASME Code, Section V, Article 6. The inspectors reviewed a CB&I NDE-MT record for surface examinations performed and evaluated by a Level II inspector to verify two repair cavity locations in the weld seam were examined for defect removal prior to re-welding in accordance with the ASME Code, Section NE-4450. The inspectors reviewed a CB&I NDE-MT record for surface examination performed and evaluated by a Level II inspector to verify temporary attachment removal locations on the outside of the airlock were examined in accordance with the ASME Code, Section V, Article 7. The inspectors reviewed the CB&I radiographic film package and RT report for the weld seam to verify location markers and film density tolerances in the area of interest with respect to the designated wire Image Quality Indicator (IQI) locations were in accordance with the requirements of the ASME Code, Section III, NB-5300, and Section V, Article 2.

b. Findings

No findings were identified.

1A36 (Unit 4) ITAAC Number 2.2.01.04a.ii (96) / Family 06F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.04a.ii (96). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed fracture toughness properties of carbon steel plates and weld filler metals for the CVTH. Specifically, the inspectors reviewed CMTRs associated with the following three CVTH welds and course TH6 plates to determine whether Charpy V-notch impact testing was performed in accordance with the requirements of the ASME Code Section III, Subarticle NE-2300, and WEC CV design specification:

- course TH4 weld-no. C4-A-24 to -25;
- course TH5 weld-no. C4-B-18 to -19;
- girth weld-no. TH4 to TH5; and
- course TH6 plates C4-C1-1 and C4-C1-2.

The inspectors reviewed fracture toughness properties of carbon steel extension sleeves for EPAs of the containment vessel. Specifically, the inspectors reviewed four piping CMTRs associated with CV penetration extension sleeves for EPAs E11, E16, E27, and E31 to determine whether Charpy V-notch impact testing was performed in accordance with the requirements of the ASME Code, Section III, Subarticle NE-2300, and WEC CV design specification.
For the four EPAs, the inspectors toured the storage facility and reviewed the planned preventative maintenance to ensure that they are being stored and maintained in accordance with NQA-1-1994, the licensee's procedures, and the vendor manual.

b. Findings

No findings were identified.

1A37 (Unit 4) ITAAC Number 2.2.01.08 (109) / Family 08F

a. Inspection Scope

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

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

The inspectors performed a walkdown and conducted an interview with senior staff at the Waynesboro / SNC Construction Warehouse and temporary storage at the Machine Shop in building 184 to verify the storage conditions where the EPAs were stored was in compliance with the applicable vendor manual. Specifically, the inspectors reviewed SV0-EY01-VHP-001, “Vogtle Units 3&4 Electrical Penetration Assembly (EPA): Packaging, Shipping, and Storage Procedure,” Rev. 0, Appendix B, “Requirements for Storage of Mirion Technologies (Conax Nuclear) Electrical Penetration Assemblies,” to determine the vendor requirements. The intent of the inspection was to determine if the storage conditions were not deteriorating the EPAs and the licensee was implementing the vendor storage requirements specified in Mirion Technologies - IPS 2314, which included:

- the storage facility was a fire resistant, weather tight, and well ventilated, secured building;
- the EPA crates were placed not to exceed two stacked vertically to permit air circulation around the individual crates;
- temperatures in the portion of the storage facility in which the EPA crates were located, was maintained within the EPA manufacturers limits of 40 degrees F to 140 degrees F (primarily determined through the interview); and
- access to the EPA crate storage area was controlled and limited only to designated personnel. The EPA crate were also stored in such a manner as to provide access to periodically inspect the nitrogen pressure gauges in the individual EPA crates without excessive handling.
- The storage facility was clean with no accumulated trash or discarded packaging material.
- The storage space was protected by a fire sprinkler system and no hazardous chemicals, paints, solvents were store near the EPA crates.
- The storage area was being protected from rodents and other animals which could damage the equipment (primarily determined through the interview).

The inspectors reviewed the final fabrication and testing records of electrical penetrations created by Westinghouse Electric Company and Mirion Technologies (Conax Nuclear), Inc. to verify if penetrations followed design specifications as evidence by acceptance testing. Specifically, the inspectors reviewed the test records for pressure testing, voltage testing, resistance tests and general composition of the materials used in the fabrication to verify if any tests did not meet acceptance standards. The inspectors reviewed these tests to determine if the fabrication testing of the EPAs supported the ability to perform their safety function once installed. The following electrical penetrations were sampled:

- SV4-IDSD-EY-P16Y, low voltage power penetration
- SV4-IDSC-EY-P29Y, low voltage power penetration
- SV4-IDSC-EY-P27Z, instrumentation penetration
- SV4-IDSB-EY-P30Z, instrumentation penetration

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-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 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 conducted an inspection of the accumulator tank B (ACC B) and core makeup tank B (CMT B) to determine if the components were fabricated in accordance with the ASME Code, Section III, WEC design and fabrication specifications, and the UFSAR, Chapter 5.

The inspectors reviewed fabrication and procurement records for the following welds and the adjoining materials for the ACC B (ASME Class 3):

- CW-15/1 (top head),
- LW-013/1 (shell weld),
- LW-013/5 (shell weld),
- NZ-025 (manway to shell),
- NZ-036 (outlet nozzle),
- NZ-012 (outlet nozzle safe end), and
- BT-011 (outlet nozzle safe end buttering).

The inspectors reviewed fabrication and procurement records for the following welds and the adjoining materials for the CMT B (ASME Class 1):

- CW-001/2 (lower head to shell),
- CW-002/1 (upper head crown to petals),
- CW-035 (manway to shell),
- LW-013/1-2 (upper head petals 1 and 2),
- LW-014/1-3 (lower head petals 2 and 3),
- CW-040 (outlet nozzle), and
- BT-031 (outlet nozzle buttering).

The inspectors reviewed ASME N-1 and N-2 Code data reports and certificates of conformance (CoC) 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 design documents to determine if fabrication attributes of the parts and welds, such as material type and required tests, were captured in the final as-built condition of the components in accordance with the ASME Code, WEC design specification, design drawings, and the UFSAR requirements.

The inspectors reviewed purchase orders (PO) for the accumulator and CMT to determine if the POs specified the quality and technical requirements; specifically 10 CFR 21, NQA-1, ASME Section III, and the WEC design specification.

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 the fabrication plans to determine if the plans outlined the requirements of the ASME Code, 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 the ASME Code, Section III and the WEC design and material specifications:

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

The inspectors reviewed fabrication control 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 control plans to determine if fabrication activities, such as weld preparation, welding, weld buttering, weld cladding, PWHT, NDE, and additional tests were performed, and if the sequence of these activities was conducted in accordance with the ASME Code and the WEC fabrication specification. Additionally, the inspectors reviewed the fabrication control plans to determine if the records provided adequate 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 and if fabrication control plans contained appropriate inspection hold points. 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 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

with the 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 the ASME Code requirements.

The inspectors reviewed quality control welding monitoring records for the welds sampled to determine if the weld process was applicable for the situation, and in accordance with the 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 WPSs to determine if they were in conformance with ASME Code requirements. The inspectors reviewed the supporting procedure qualification records (PQRs) to determine if the specific ranges of welding variables listed in the WPSs were appropriately qualified and the type and number of qualification tests required received acceptable results in accordance with ASME Code requirements.

The inspectors reviewed a sample of nonconformance reports, E&DCRs, and corrective action documents related to the fabrication of the accumulator and CMT. The inspectors reviewed these documents to determine if the conditions were properly evaluated; received the appropriate amount of review; and that weld repairs, when performed, were conducted in accordance with the ASME Code requirements.

b. Findings

Introduction

The NRC identified an ITAAC finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, for SNC's failure to identify nonconforming radiograph films for the Unit 4 CMT B. Specifically, the licensee failed to identify that density variations for radiograph film sections 8-9 and 14-15 for the CMT B manway to shell weld (CW-035) were nonconforming to ASME Code Section III, 1998 Edition including with 2000 Addenda, Subarticle NB-5100, General Requirements for Examination.

Description

During the ASME mechanical component fabrication inspection conducted from December 10, 2018 to February 14, 2019, the inspectors identified that the licensee failed to identify that radiographic films met density variation requirements for the CMT B full penetration weld joint CW-035, which connects the manway to the shell. The inspectors determine this weld to be a Category A full penetration weld per ASME Code paragraph NB-3351, Welded Joint Category, and subparagraph NB-3351.1, Category A, Section 7.2 of the WEC fabrication specification SV4-MT01-Z0-200, "AP1000 Core Makeup Tank Fabrication Specification," Rev. 0, and ASME Code

Subarticle NB-5200, “Required Examination of Welds for Fabrication and Preservice Baseline.” The weld joint therefore required a radiographic examination. Additionally, ASME Code Subarticle NB-5100, “General Requirements for Examination,” requires RT be in accordance with ASME Code Section V, Article 2, “Radiographic Examination.“

The inspectors reviewed the radiographic examination report for weld CW-035 and noted the report documented that the radiograph of the weld conformed to applicable Code requirements. However, the inspectors identified during their review of the radiographs, two film sections that appeared not to meet ASME Code Section V, Article 2 requirements. Specifically, sections 8-9 and 14-15 exceeded the density variation requirements of ASME Code Section V, Article 2, subparagraph T-282.2, Density Variation. The inspectors determined that the density of the radiographs in areas within the area of interest varied by more than minus 15% from the density adjacent to the wire IQI. ASME Code Section V, Article 2, subparagraph T-282.2 requires, in part, that the density of the radiograph anywhere through the area of interest vary by no more than minus 15% or plus 30% from the density adjacent to the wire IQI.

The inspectors reviewed corrective action documents related to film quality issues from the CMT B vendor. Condition report (CR) 10392176 was developed to document an NRC identified violation at V.C. Summer where radiograph film did not meet the density requirements of ASME Section V, Article 2. The nonconforming components identified in the CR included the CMT, accumulator, and pressurizer, all from the same vendor who supplied the Unit 4 Vogtle CMT B. Additionally, one of the welds with nonconforming film identified at V.C. Summer was CMT weld CW-035. The inspectors noted that CR 10392176 was closed through corrective action report (CAR) 270667, which the licensee determined the issue to be isolated to V.C. Summer. The inspectors reviewed CR 10491047 that was developed during a previous NRC inspection which identified radiograph film associated with the Vogtle Unit 3 PRHRHX that did not meet the density requirements of ASME Section V, Article 2. This component was supplied by the same vendor that supplied the Unit 4 CMT B. As part of the closure of CR 10491047, the licensee performed an extent of condition which reviewed a sample of film from a sample of welds of all components supplied by the vendor. During the extent of condition, the licensee sample included film from Unit 3 CMT B, weld CW-035 and Unit 4 CMT A, weld CW-035.

The licensee entered this issue into their corrective action program as CRs 50010045 and 50010650, and generated nonconformance and disposition (N&D) report SV4-MT01-GNR-000006, Core Make-Up Tank 4A & 4B film quality on weld CW-035, Rev. 0. The licensee performed additional radiographs on the two sections listed above in order to provide reasonable assurance that ASME Code Section III requirements were met for non-destructive examination of Unit 4 CMT B pressure boundary weld CW-035. Additionally, the inspectors reviewed the associated RT report for the two new sections to verify ASME Code Section V, Article 2 requirements were met.
As part of the corrective actions taken for CRs 50010045 and 50010650, the licensee performed a 100% review of radiograph film for all components supplied by this vendor. Additional nonconforming film was identified by the licensee, and the licensee planned to retake additional radiographs as required to provide reasonable assurance that ASME Code Section III requirements were met.

Analysis

The licensee's failure to identify nonconforming radiograph films for the Unit 4 CMT B full penetration weld joint CW-035 was a performance deficiency. The inspectors determined that for two film sections, the density of the radiographs in areas within the area of interest varied by more than minus 15% from the density adjacent to the wire IQI. ASME Code Section V, Article 2, subparagraph T-282.2, Density Variation, requires that the density of the radiograph anywhere through the area of interest not vary by more than minus 15% or plus 30% from the density adjacent to the wire IQI. The finding was determined to be more than minor because the performance deficiency represented an adverse condition that rendered the quality of a component indeterminate, and required substantive corrective action. The licensee subsequently performed additional radiographs in order to provide reasonable assurance of ASME Code compliance. The design commitment for ITAAC 2.2.03.02a (159) states: Pressure boundary welds in components identified in Table 2.2.3-1 as ASME Code Section III meet ASME Code Section III requirements. The acceptance criteria states that a report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. This is an ITAAC finding because the finding is material to the ITAAC acceptance criteria because radiographic films 8-9 and 14-15 failed to meet ASME Code Section III requirements for non-destructive examination for pressure boundary welds. The acceptance of the RT report for weld CW-035 is based on all radiographic films meeting ASME Code Section III requirements. Through the subsequent radiographs performed and an RT report, the licensee was able to demonstrate that the ASME Code Section III requirements were met.

The inspectors determined this finding was associated with the Procurement/Fabrication Cornerstone. The finding was not associated with a security program; it was not associated with an IMC 2504 operational or construction program; and it was not associated with a repetitive, NRC-identified omission of a program critical attribute. Using IMC 2519, Appendix A, AP1000 Construction Significance Determination Process, dated 12/06/2017, the inspectors determined that the finding was associated with a system; i.e. the passive core cooling system (PXS) (CMT), which is assigned to the intermediate risk importance column of the AP1000 Construction Significance Determination Matrix. The licensee was able to provide reasonable assurance that the design function of the applicable system was not adversely affected. Therefore, this finding was of very low safety significance (Green). The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Conservative Bias, H.14, in the area of Human Performance, in accordance with IMC 0613, Appendix F, Construction Cross-Cutting Areas and Aspects, dated 10/01/2018. Specifically, the licensee failed to use decision making practices that emphasized prudent choices over those that are simply allowable when condition reports were dispositioned without expanding the scope of review based on known nonconformances and potential issues identified in previous NRC violations, construction experience, and licensee extent of condition reviews [DM.2].

Enforcement

10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, requires, in part, that conditions adverse to quality, such as nonconformances, are promptly identified and corrected.

ND-PI-100, New Nuclear Plant Development Corrective Action Program, Version 2.0, Section 4.9, defines conditions adverse to quality as, in part, an all-inclusive term used in reference to nonconformances potentially impacting Nuclear Safety. Non-conformances are deficiencies in characteristic, documentation, or procedure that renders the quality of an item or activity unacceptable or indeterminate.

10 CFR Part 50.55a(b), Use and conditions on the use of standards, requires, in part, Systems and components of boiling and pressurized water-cooled nuclear power reactors must meet the requirements of the ASME BPVC and the ASME OM Code. ASME Code Section III, 1998 Edition including 2000 Addenda, paragraph NB-5111, Methods, of Subarticle NB-5100, General Requirements for Examination, requires, in part, that Radiographic examination shall be by film radiography or real time radioscopy in accordance with Section V, Article 2. ASME Code Section V, Article 2, subparagraph T-282.2, Density Variation, requires, in part, that If the density of the radiograph anywhere through the area of interest varies by more than minus 15% or plus 30% from the density through the body of the hole IQI or adjacent to the designated wire of a wire IQI, within the minimum/maximum allowable density ranges specified in T-282.1, then an additional IQI shall be used for each exceptional area or areas and the radiograph retaken.

Contrary to the above, since November 15, 2018, the licensee failed to identify that density variations for radiograph film sections 8-9 and 14-15 for the CMT B manway to shell weld (CW-035) exceeded the minus 15% requirement. Areas throughout the area of interest for sections 8-9 and 14-15 had density readings greater than minus 15% from the density adjacent to the wire IQI. The failure to comply with ASME Code examination requirements has the potential to result in not identifying and correcting unacceptable indications in pressure boundary welds. The licensee performed immediate corrective actions to demonstrate with reasonable assurance that the component would have been able to meet its design function. The licensee performed additional radiographs and provided reasonable assurance that ASME Code Section III requirements were met for non-destructive examination of CMT B pressure boundary weld CW-035. The licensee entered this finding into their corrective action program as CRs 50010045 and 50010650. This violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the Enforcement Policy. This issue is identified as NCV 05200026/2019001-01, Failure to Identify Nonconforming Radiographic Film on CMT B.

1A39 (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:

- 65001.07-02.01 - General Installation

The inspectors reviewed quality records and conducted a walkdown in the field to determine if the installed accumulator discharge check valves were a different check valve type than the installed CMT discharge check valves in accordance with the VEGP 4 UFSAR, Section 6.3.2.2.8.7, "Accumulator Check Valves". The inspectors reviewed the Valve List (Appendix B-4.1) from the PXS System Specification Document and the Valve Datasheets for the CMT and accumulator discharge check valves to verify the CMT discharge check valves (PXS-PL-V016A, PXS-PL-V016B, PXS-PL-V017A, and PXS-PL-V017B) are in-line type check valves and the accumulator discharge check valves (PXS-PL-V028A, PXS-PL-V028B, PXS-PL-V029A, and PXS-PL-V029B) are swing type check valves. The inspectors visually examined the accumulator and CMT check valves located in PXS compartment A (Room 11206) and compared the serial numbers of the valves to those listed in the referenced documents to verify the correct valves were installed in the correct locations in the piping system.

b. Findings

No findings were identified.

1A40 (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
- 65001.06-02.02 - Component Welding
- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.06-Records
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.03-Observation of Fabrication Activities

The inspectors observed welding of pipe spools and valves in the PRHR HX outlet line to steam generator channel head line to determine if welding and valve installation was being done per the ASME Code, Section III, Subsection NB and the applicable site procedures and quality program. Specifically, the inspectors observed the following welds:

- FW-10 which joins lines PXS-L104A to PXS-L104B;
- FW-14 which joins air operated valve (AOV) PXS-PL-V108A into line PXS-L104A; and
- FW-3 which joins AOV PXS-PL-V108B into line PXS-L104B.

The inspectors observed welding to determine if welding variables such as amperage, polarity, preheat, and shielding gas were in accordance with the welding procedure. The inspectors checked to determine if the welds were protected from wind and moisture and if the weld area was clean and free of harmful contaminants in accordance with the welding procedure and ASME Code. The inspectors reviewed the welders' qualification records to determine if they had been qualified per the ASME Code, Section IX. The inspectors reviewed the in-process weld data sheets to determine if work processes and hold points were being followed; completed steps were signed; and material and personnel traceability were being maintained. The inspectors reviewed the CMTRs for the weld filler metal that was being used to determine if the material was traceable to a CMTR and that the materials being used had been chemically tested and qualified per the ASME Code, Sections II and III, Subsection NB.

The inspectors observed the welding of the AOV to pipe welds to determine if the valves were being installed with the flow direction that was as shown on the drawing and with an alignment and position as required in the valve manufacturer's instructions and installation procedure. Additionally, the inspectors observed the locations where welding leads were placed and traced the welding current path to verify if the current path could be passing through and, thus possibly damaging, sensitive or moving parts of the valve.

The inspectors also reviewed the QADPs for the two valves, PXS-PL-V108A and PXS-PL-V108B, to determine if the pressure boundary parts (valve bodies) had been manufactured in accordance with ASME Code Section III Subsection NB. For each valve the inspectors reviewed records pertaining to the valve body to determine if the valve body had been made, heat treated, inspected, and repaired per the ASME Code. The inspectors reviewed the CMTRs to determine if the materials had been heat treated and chemically tested per ASME Code Section II and III Subsection NB. The inspectors reviewed NDE records of liquid penetrant and radiography to determine if the valve bodies had been examined per the ASME Code. The inspectors reviewed weld repair records to determine if surface defects identified by NDE had been repaired and documented per the ASME Code.

b. Findings

No findings were identified.

1A41 (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.02.04 - Review As-built Deviations/Nonconformance

The inspectors observed construction activities associated with wall 7.3 located in the auxiliary building and between elevations 100’-0” and 117’-6”. The inspectors observed ongoing reinforcement installation activities and quality control inspections and reviewed design drawings and design deviations.

The inspectors observed reinforcement installation activities to verify they were performed using the latest-approved design changes, design drawings, and design specifications in accordance with NQA-1 1994. Specifically, the inspectors performed independent measurements of installed reinforcement and embedment plates. The inspectors measured installed reinforcing steel to verify the bar size, spacing requirements, minimum concrete clear cover, and lap splices were in accordance with drawing SV4-0000-C9-001. The inspectors also evaluated the condition of reinforcement bars, embedment plates, and mechanical penetrations 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 reviewed four E&DCRs to verify the design control process was implemented in accordance with APP-GW-GAP-420 and the reinforcement configuration of the wall reflected the approved changes described on the E&DCRs. Also, the inspectors screened the E&DCRs to determine if their disposition was within the requirements of ACI 349-01.

The inspectors independently measured spacing in reinforcement congested areas to verify it met the requirements of Section 7.6 of ACI 349-01. The inspectors also measured the spacing between embedded items that were installed parallel to reinforcing steel to verify minimum clear spacing was maintained as required by Section 4.2.3.6 of specification SV4-CC01-Z0-031.

b. Findings

No findings were identified.

1A42 (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:

- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.02 - Laboratory Testing
- 65001.02-02.06 - Record Review
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F-02.01-Design Document Review

The inspectors reviewed design drawings, took independent measurements, and reviewed records associated with construction of the reinforced concrete floor at elevation 92'-8 1/2" from column lines 2 to 4 and K-2 to l-2 in the Unit 4 auxiliary building.

The inspectors reviewed a sample of design drawings to determine whether the design documents defined the final design and arrangement of these floor sections, including thickness, and the design implemented was consistent with the descriptions in UFSAR Section 3.8.4.1.2, UFSAR Figure 3.7.2-12, and the Vogtle Unit 3 COL, Appendix C, Table 3.3-1. The inspectors reviewed a sample of three E&DCRs associated with the rebar and concrete to verify if design changes were conducted in accordance with the requirements of APP-GW-GAP-420. Additionally, the inspectors reviewed the E&DCRs for dispositions of design changes to verify the changes from the original design did not make substantial changes that would require reevaluation of the design calculations.

Prior to the concrete placement, the inspectors independently measured the rebar size, spacing, and locations of the North/South and East/West horizontal rebar to verify it was installed in accordance with the design drawings, Chapter 21 of ACI 349-01, Chapter 21, Section 4.3.3 of SV4-CC01-Z0-031, and Section 4.6.1 of SV4-CC01-Z0-031. The inspectors measured the rebar dowels and lap splices to verify they met the requirements specified on the design drawings, Chapter 12 and 21 of ACI 349-01, and Section 4.6.2. of SV4-CC01-Z0-031. The inspectors observed the installed rebar couplers to verify if they were the type, size, and in the location specified in the design drawings and SV4-CR01-Z0-010. The inspectors independently measured the rebar clearances to verify it was installed in accordance with ACI 349-01, Paragraph 3.3.2. The inspectors observed the markings on the rebar to verify it was the size specified on the design drawings and were the material required by Section 2.1.2.5 of ACI 349-01 and SV4-CR01-Z0-011.

The inspectors reviewed the pour card and the mix specified to verify:

- the mix selected met the design strength requirements in UFSAR, Section 3.8.4.6.1.1;
- the workability and consistency of the mix selected was suitable for the placement configuration without segregation or excessive bleeding in accordance with by ACI 349-01, Section 5.2;
- the mix had been pre-qualified in accordance with ACI 349-01, Section 5.2 and SV4-CC01-Z0-026, Section 4.2.2;
- the mix proportions specified were consistent with the selected pre-qualified mix from SV4-CC01-Z0-026, Section 4.2.10; and
- the batching instructions were in accordance with ASTM C94 and SV4-CC01-Z0-026, Section 4.2.3.

The inspectors reviewed nine concrete batch tickets and one test report, including the concrete cylinder strength testing, to verify the records were complete and contained the required information in accordance with ASTMs C31, C39, C138, C143, C172, C231, C1064; ACI 349-01, Section 5.6.2, and SV4-CC01-Z0-027, Section 6.1.12. 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 SV4-CC01-Z0-026, Section 4.2.10. The inspectors reviewed the concrete curing record to verify curing had been completed and monitored in accordance with ACI 349-01, Section 5.11 and Section 4.2.15, and SV4-CC01-Z0-031, Section 4.2.16. The inspectors reviewed the QC inspection report for the pre-placement and concrete placement activities to verify the inspection was documented and the activities were accepted in accordance with Section 4.5 of SV4-CC01-Z0-031.

The inspectors reviewed a sample of two corrective action reports associated with the concrete placement to verify the evaluations and corrective actions were conducted in accordance with the licensee's CAP; the issues were identified and documented in a timely manner; and the issues were classified and resolved commensurate with their safety significance. The inspectors reviewed a sample of two N&Ds to verify the nonconformances had adequate technical evaluations and were dispositioned in accordance with procedure APP-GW-GAP-428.

b. Findings

No findings were identified.

1A43 (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.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 117'-6" to 127'-0" for wall 1 between column lines I and N. The inspectors observed reinforcement installation activities and reviewed licensee records, including design drawings, design specifications, and an E&DCR.

The inspectors reviewed design changes and installation of reinforcement. The inspectors reviewed an E&DCR to verify design changes were performed in accordance with APP-GW-GAP-420. Specifically, the inspectors verified the approved design changes were incorporated into the as-built condition of the wall. In addition, the inspectors screened the E&DCRs to determine if the disposition was within the requirements of ACI 349-01, Section 7.6 for rebar spacing.

The inspectors performed in-field measurements of installed reinforcing steel to verify it was the right 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.

b. Findings

No findings were identified.

1A44 (Unit 4) ITAAC Number 3.3.00.02a.ii.a (764) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.a (764). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the walls that are part of the in-containment structures. The inspectors reviewed the associated records produced from the survey to verify if the completed work met the requirements of table 3.3-1 of Appendix C of the COL. Specifically the inspectors reviewed the as-built survey records of the following walls to verify if they met the required as-built thickness:

- west steam generator compartment, north wall from elevation 103' to 153';
- west steam generator compartment, west wall from elevation 103' to 153';
- west steam generator compartment, south wall from elevation 103' to 153';
- pressurizer compartment, west wall from elevation 107'-2" to 160';
- pressurizer compartment, north wall from elevation 107'-2" to 160'; and

- pressurizer compartment, east wall from elevation 107'-2" to 160'.

b. Findings

No findings were identified.

1A45 (Unit 4) ITAAC Number 3.3.00.02a.ii.c (766) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.c (766). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the walls of the non-radiologically controlled auxiliary building. The inspectors reviewed the associated records produced from the survey to verify if the completed work met the requirements of table 3.3-1 of Appendix C of the COL. Specifically the inspectors reviewed the as-built survey records of the following walls to verify if they met the required as-built thickness:

- wall Q from column line 11 to the SB and elevation 100'-0" to 117'-6";
- wall M from column line 11 to the SB and elevation 82'-6" to 100'-0";
- wall L from column line 11 to the SB and elevation 82'-6" to 100'-0"; and
- wall 7.3 from column line I to J-2 and elevation 82'-6" to 100'-0".

b. Findings

No findings were identified.

1A46 (Unit 4) ITAAC Number 3.3.00.02a.ii.d (767) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.d (767). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the walls of the radiologically controlled auxiliary building. The inspectors reviewed the associated records produced from the survey to verify if the completed work met the requirements of table 3.3-1 of Appendix C of the COL. Specifically the inspectors reviewed the as-built survey records of the following walls to verify if they met the required as-built thickness:

- wall I from column line 1 to 4 and elevation 100'-0" to 117'-6";

- wall I from column line 4 to 5 and elevation 107'-2" to 117'-6";
- wall N from column line 1 to 129 north of 1 and elevation 100'-0" to 125'; and
- wall N from column line 129 north of 1 to 2 and elevation 100'-0" to 118'-2.5".

b. Findings

No findings were identified.

1A47 (Unit 4) ITAAC Number 3.3.00.02f (774) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02f (774). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors performed an independent measurement of the distance between the outside surfaces of the walls at column lines I and N along the wall at column line 1 at elevation 100'-0" of the Unit 4 Auxiliary Building using a tape measure. This wall dimension is referenced as X1 in Table 3.3-5, "Key Dimensions of Nuclear Island Building Features," of the Appendix C of the Vogtle Electric Generating Plant COL. The inspectors verified the wall dimension met the nominal dimension and tolerance requirements specified in Table 3.3-5.

b. Findings

No findings were identified.

1A48 (Unit 4) ITAAC Number 3.3.00.03a (777) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03a (777). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the walls that are part of the in-containment structures. Specifically, the inspectors reviewed wall surveys and concrete density records to verify if the key site parameters of the walls met the shielding (thickness and density) requirements specified in table 3.3-1 of Appendix C of the COL and the UFSAR section 3.8.4 and 12.3.2 respectively. The inspectors reviewed documents

related to the following walls to determine whether the critical attributes of as-built SSC conformed to the final design:

- west steam generator compartment, north wall from elevation 103’ to 153’;
- west steam generator compartment, west wall from elevation 103’ to 153’;
- west steam generator compartment, south wall from elevation 103’ to 153’;
- pressurizer compartment, west wall from elevation 107’-2” to 160’;
- pressurizer compartment, north wall from elevation 107’-2” to 160’; and
- pressurizer compartment, east wall from elevation 107’-2” to 160’.

b. Findings

No findings were identified.

1A49 (Unit 4) ITAAC Number 3.3.00.03c (779) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03c (779). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the non-radiologically controlled auxiliary building. Specifically, the inspectors reviewed wall surveys and concrete density records to verify if the key site parameters of the walls met the shielding (thickness) requirements specified in table 3.3-1 of Appendix C of the COL. The inspectors reviewed documents related to the following walls to determine whether the critical attributes of as-built SSC conformed to the final design:

- wall Q from column line 11 to the SB and elevation 100'-0" to 117'-6";
- wall M from column line 11 to the SB and elevation 82'-6" to 100’-0";
- wall L from column line 11 to the SB and elevation 82'-6" to 100’-0"; and
- wall 7.3 from column line I to J-2 and elevation 82'-6" to 100’-0".

b. Findings

No findings were identified.

1A50 (Unit 4) ITAAC Number 3.3.00.03d (780) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03d (780). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the radiologically controlled auxiliary building. Specifically, the inspectors reviewed wall surveys and concrete density records to verify if the key site parameters of the walls met the shielding (thickness) requirements specified in table 3.3-1 of Appendix C of the COL. The inspectors reviewed documents related to the following walls to determine whether the critical attributes of as-built SSC conformed to the final design:

- wall I from column line 1 to 4 and elevation 100'-0" to 117'-6";
- wall N from column line 1 to 129 north of 1 and elevation 100'-0" to 125'; and
- wall N from column line 129 north of 1 to 2 and elevation 100'-0" to 118'-2.5".

b. Findings

No findings were identified.

1A51 (Unit 4) 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

The inspectors performed an inspection of the survey between the Unit 4 nuclear island and the turbine building to verify if the minimum horizontal separation was maintained for safe shutdown earthquake criteria in accordance with the acceptance criteria of the ITAAC. The inspectors reviewed the construction drawings to verify if the separation was designed and constructed to be at least 3 inches in accordance with the ITAAC acceptance criteria. The inspectors observed the licensee perform a field survey of the distance between the buildings from elevation 100'-0" to 117'-6" to determine if the method used matched the technique prescribed in the work instruction. The inspectors observed the survey activities to verify line of sight to the survey device existed throughout the activity and the survey points were performed at the intervals in accordance with the work instruction. The inspectors also reviewed the calibration sticker on the survey equipment to verify if the equipment was within the calibration frequency in accordance with the measuring and test equipment program. The inspectors also reviewed personnel training records for the individuals that conducted the survey to verify they were qualified in accordance with 226319-000-4MP-T81C-N3201, "Construction Survey," Rev. 4. The inspectors reviewed the licensee's survey report to verify if a minimum separation of 3 inches existed between the structural elements of the nuclear island and the turbine building at elevations 100'-0" and above in accordance with the acceptance criteria of this ITAAC, as specified in Table 3.3-6 of Appendix C of the COL.

b. Findings

No findings were identified.

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

1P01 Construction QA Criterion 16

- 35007-A16.04.01 - Inspection of QA Implementing Documents
- 35007-A16.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

Quarterly Resident Inspector Corrective Action Program (CAP) Routine Review
The inspectors reviewed issues entered into the licensee's CAP on a daily basis to assess issues that might warrant additional follow-up inspection, to assess repetitive or long term issues, to assess adverse performance trends, and to ensure the CAP appropriately included regulatory required non-safety related SSCs. The inspectors periodically attended the licensee's CAP review meetings, held discussions with licensee and contractor personnel, and performed reviews of CAP activities during the conduct of other baseline inspection procedures. The inspectors reviewed conditions entered into the licensee's CAP to determine whether the issues were appropriately classified in accordance with the licensee's quality assurance program and CAP implementing procedures. The inspectors reviewed corrective actions associated with conditions entered into the CAP to determine whether appropriate actions to correct the issues were identified and implemented effectively, including immediate or short-term corrective actions, in accordance with the applicable quality assurance program requirements and 10 CFR 50, Appendix B, Criterion XVI. Additionally, the inspectors reviewed the corrective actions taken to determine whether they were commensurate with the significance of the associated conditions in accordance with the licensee's CAP implementing procedures. The inspectors completed reviews of CAP entry logs to verify if issues from all aspects of the project, including equipment, human performance, and program issues, were being identified by the licensee and its contractors at an appropriate threshold and entered into the CAP as required by licensee's CAP implementing procedures.

b. Findings

No findings were identified.

1P02 Construction QA Criterion 16

- 35007-A16.04.01 - Inspection of QA Implementing Documents
- 35007-A16.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

Resident Inspector Follow-Up of Selected Issues
The inspectors selected two issues that were entered into the licensee's CAP for additional follow-up inspection. For both of these issues, the inspectors reviewed the licensee's evaluation and corrective actions to verify if the following attributes were performed in accordance with the licensee's corrective action program implementing procedures:

- complete and accurate identification of the cause of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- consideration of the extent of condition, generic implications, common cause, and previous occurrences; and
- classification and prioritization of the resolution of the problem commensurate with its safety significance.

The inspectors reviewed CR 70000175 regarding concrete placement for Unit 3 shield building courses 11 and 12. The inspectors reviewed the associated N&D report to verify if the hardware nonconformance had an adequate technical evaluation and was dispositioned in accordance with APP-GW-GAP-428, "Nonconformance and Disposition Report." The inspectors reviewed the resulting procedure clarification to determine if it had been evaluated by engineering as required by APP-GW-GAP-420, "Engineering and Design Coordination Reports." The inspectors conducted a field walk down of the concrete placement to determine if the issue had been completely captured and the corrective actions had been implemented.

The inspectors reviewed CR 50004029, CR 70000073, and CR 70000183 regarding out-of-tolerance rebar cast in concrete. The inspectors reviewed the trending codes applied to each item to verify if they were correctly identified, tracked, and trended in accordance with ND-AD-002-025, "Issue Identification, Screening, and Dispatching." The inspectors reviewed the associated N&D reports to verify if the hardware nonconformances had adequate technical evaluations and were dispositioned in accordance with APP-GW-GAP-428.

b. Findings

No findings were identified.

1P03 Construction QA Criterion 4

- 35007-A4 - Appendix 4. Inspection of Criterion IV – Procurement Document Control

a. Inspection Scope

During the week of January 14, 2018, the NRC conducted an inspection of the implementation of the licensee's programs for Procurement Document Control and Control of Purchased Material, Equipment and Services. Currently the program is

divided into two parts: WEC prepared purchase orders that were in effect prior to July 2018 and SNC prepared purchase orders that went into effect beginning in July 2018.

As part of the inspection activities, inspectors reviewed the licensee's procurement procedures and processes to determine if the licensee effectively implemented their approved quality assurance program as required by Appendix B to 10 CFR Part 50. The review was to verify that the licensee clearly defined the procurement organization, functions, responsibilities and administration as required by the Vogtle 3 & 4 Quality Assurance Program Document (QAPD) Section 4 and as outlined in the services agreement with their contractors.

The inspectors reviewed a sample of safety related purchase orders (POs) that pertained to items such as structural steel, embed plates, ASME Code Section III components, and ASME Code Section III piping subassemblies. The POs were selected from four vendors to verify that the design, quality assurance, technical documentation, and certificate requirements were properly transcribed from the design authority to the vendor. The inspectors also reviewed the POs and receipt inspections to verify if they were prepared and inspected by qualified licensee personnel. The current list of qualified procurement engineers and receipt inspection personnel was reviewed to verify if these individuals were qualified per the sites quality control procedures.

The inspectors reviewed the administrative controls for updating technical documents associated with these POs to verify if the revision history was monitored and updated on a continuous basis in accordance with the licensee's procedures and processes. A review of the process controls that were used to provide updates to technical documents included the following:

- development and maintenance of the applicable technical requirements;
- required vendor documents/records; and
- receipt of technical documents from the supplier.

The inspectors reviewed a sample of inspection attribute lists, inspection plans, and inspection reports associated with the POs, to verify if items received on site were examined for conformance with the requirements specified in the procurement documents (including approved changes). The inspectors also reviewed the source inspection records and applicable on-site receipt inspection reports to verify if the appropriate acceptance criteria had been met.

The inspectors reviewed SNC's processes for approving vendors to verify if purchased safety related items were from qualified contractors (i.e. vendors and/or suppliers on the nuclear quality approved suppliers list (ASL/QSL)). Inspectors also reviewed a sample of audit reports for the vendors associated with four POs to verify the following:

- audits, surveillances, and evaluations documented the placement or retention of the contractor on the ASL;
- audits, surveillances, and evaluations were conducted on schedule, and by qualified auditors;
- audit findings were properly identified and dispositioned; and
- restrictions on vendors were identified through the audit process and listed on both the WEC and SNC ASL.

The inspectors reviewed CRs associated with the implementation of SNCs procurement program to determine if the licensee had evaluated the CRs in accordance with their QAPD. The CRs were reviewed to determine whether actions taken were commensurate with the significance of the associated condition; issues were being identified by the licensee and its contractors at an appropriate threshold and entered into the CAPs; and issues were appropriately classified in accordance with the QAPD and CAP implementing procedures.

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 Fitness for Duty - Construction

b. Findings

Introduction

On May 31, 2018, the NRCs Office of Investigations (OI) completed an investigation (OI Report 2-2017-026) to review an issue occurring on May 8, 2017, at Southern Nuclear Company (SNC) Vogtle Electric Generating Plant (Vogtle), Units 3 and 4, involving the Fitness for Duty (FFD) program implementation. Based on the investigation, the NRC identified a Severity Level IV violation. Additionally, based on review of the criteria of Section 2.3.2 of the NRC Enforcement Policy, this violation will be dispositioned as a NCV.

Description

On May 9, 2017, SNC, Vogtle, Units 3 & 4, received information related to an alleged pre-access FFD testing subversion. Upon notification of a potential violation of the FFD testing program, the licensee security management team initiated an investigation. Results of the investigation identified that an FFD Collector did not always have personnel remove all the items from their pockets prior to providing a urine sample. As a result of the FFD collector's failure to meet regulatory requirements, an individual was able to subvert an FFD test.

Analysis

The NRC determined that the failure to require all individuals to empty their pockets prior to FFD testing was a violation of regulatory requirements 10 CFR 26.105(b), 10

CFR 26.85(a), and inconsistent with site procedure SVO-G1-GSP-001, “Drug and Alcohol Testing,” Rev. 15. The finding was determined to be more than minor because the issue represented a failure to appropriately implement the requirements of 10 CFR 26.105(b) and 10 CFR 26.85(a). Violations that involve willfulness or that affect the regulatory process are dispositioned using traditional enforcement and are not subject to IMC 2519, “Construction Significance Determination Process.” In addition, traditional enforcement violations are not assessed for cross-cutting aspects.

Enforcement

10 CFR 26.85(a) Urine collector qualifications, states in part, that urine collectors shall be knowledgeable of the requirements of this part and the FFD policy and procedures of the licensee or other entity for whom collections are performed, and shall keep current on any changes to urine collection procedures. Collectors shall receive qualification training that meets the requirements of this paragraph and demonstrate proficiency in applying the requirements of this paragraph before serving as a collector.

10 CFR 26.105(b), states in part, that the collector shall also ask the donor to empty his or her pockets and display the items in them to enable the collector to identify items that the donor could use to adulterate or substitute his or her urine specimen. The donor shall permit the collector to make this observation. If the donor refuses to show the collector the items in his or her pockets, this is considered a refusal to test. If an item is found that appears to have been brought to the collection site with the intent to adulterate or substitute the specimen, the collector shall contact the Medical Review Officer or FFD program manager to determine whether a directly observed collection is required. If the item appears to have been inadvertently brought to the collection site, the collector shall secure the item and continue with the normal collection procedure. If the collector identifies nothing that the donor could use to adulterate or substitute the specimen, the donor may place the items back into his or her pockets.

WECTEC Procedure SVO-G1-GSP-001, Rev. 15, Section 6.5(5)(6); states in part, to maintain the integrity of the specimen, the following precautions shall be taken: (5) Donor shall remove any unnecessary outer garments such as a coat or jacket and leave personal effects (i.e. purse, brief case, etc.) outside the collection area. (6) Empty all pockets prior to collections. After checking the contents for material or items that may be used to adulterate the sample, the collector may allow the donor to return contents to pockets.

Contrary to the above, on May 8, 2017, an FFD collector working at Vogtle Units 3 and 4 failed to ensure a donor emptied their pockets of all contents before collection of the sample. Specifically, an FFD collector working at the Vogtle Units 3 and 4 Tobacco Road Training Facility failed to have a donor empty their pockets before collecting a sample from the donor. This failure allowed the donor to subvert a FFD test. Specific actions taken by the licensee included re-testing all the individuals which were tested on May 8, 2017, by the FFD collector in question. All re-tested individuals passed. The FFD collector and the individual that subverted the FFD test were both removed from the site. As a result, there was no degradation in the level of safety or security as described in Section 6.14 of the NRC Enforcement Policy. The security significance of this violation was determined to be a Severity Level IV (NCV), in part,

because there were no adverse security impacts to the construction facility, and the individual was precluded from entering the Construction Controlled Area. Although this violation is willful, it was brought to the NRC's attention by the licensee, it involved isolated acts of low-level individuals, and it was addressed by appropriate remedial actions. Therefore, this violation is being treated as a NCV, consistent with Section 2.3.2.a of the Enforcement Policy. The NCV was opened and closed during this reporting period as NCV 5200025/2019001-02 and 05200026/2019001-02 and entered into the licensee's corrective action program as Condition Report Number 10366889.

3. OPERATIONAL READINESS

Cornerstones: Operational Programs

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

3P01 Preservice Inspection

- 73754-02.02 - Personnel Qualification & Certification
- 73754-02.03 - Non-destructive Examination (NDE) Review

a. Inspection Scope

The inspectors directly observed the following nondestructive examination (NDE) activities associated with the direct vessel injection (DVI) B line for Unit 3. These activities were mandated by the ASME Code. The inspectors evaluated the NDE activities and reviewed the associated ultrasonic examination (UT) reports for compliance with the requirements in Section XI of the ASME Code. Additionally, the inspectors reviewed the applicable NDE procedures and the qualifications of the NDE technicians performing the examinations to determine if the UT examinations were performed in accordance with the ASME Code, Section XI. The following NDE evaluations were reviewed:

- manual UT of SV3-PXS-PLW-025-FW1, DVI B Line, ASME Class 1, Cat. B-J elbow-to-pipe, Item B9.11
- manual UT of SV3-PXS-PLW-022-FW4, DVI B Line, ASME Class 1, Cat. B-J elbow-to-pipe, Item B9.11
- manual UT of SV3-PXS-PLW-022-SW3, DVI B Line, ASME Class 1, Cat. B-J pipe-to-elbow, Item B9.11

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4OA5 Other Activities

.01 VOG3-3.3.00.02a.i.d-AP1000

a. Inspection Scope

The inspectors performed a review of the licensee's corrective actions associated with NCV 5200025/2016001-01, Failure to perform AISC N690-94 required weld NDE, documented in Inspection Report 05200025/2016001 (ML16132A557). The review was to determine whether the corrective actions taken by the licensee were complete and sufficient to address the issue and ensure the acceptance criteria for the related ITAAC could be met. Specifically, this violation was associated with the licensee's failure, through their contractor, WEC, to adequately review and accept nonconforming items in accordance with documented procedures. The violation represented an ITAAC finding because it was material to the acceptance criteria of ITAAC 3.3.00.02a.i.d (763), in that, if left uncorrected, the licensee may not have been able to demonstrate that the acceptance criteria of the ITAAC was met. The acceptance criteria of this ITAAC requires that all deviations between the as-built structures and the approved designs be reconciled to verify that the as-built structures will withstand the design basis loads without a loss of structural integrity or other safety-related functions.

The inspectors reviewed SNC CRs 10180672 and 10181738, CARs 263177 and 263554, technical evaluations (TEs) 954623 and 965635, and associated corrective actions taken to address this issue. Additionally, the inspectors reviewed N&D SV0-CE01-GNR-000031, N&D SV3-1000-GNR-000007, and License Amendment 86 (ML17178A197) to verify that the non-conforming conditions were appropriately evaluated, approved, and dispositioned in accordance with applicable technical and QA requirements.

Based on the review described above, the inspectors determined that the licensee took adequate corrective actions to address the violation and the nonconforming conditions had been appropriately addressed such that the acceptance criteria of ITAAC 3.3.00.02a.i.d (763) was no longer impacted. No additional findings were identified. NCV 05200025/2016001-01 is closed.

b. Findings

No findings were identified.

.02 VOG4-3.3.00.02a.i.d-AP1000

a. Inspection Scope

The inspectors performed a review of the licensee's corrective actions associated with NCV 5200026/2016001-01, Failure to perform AISC N690-94 required weld NDE,

documented in Inspection Report 05200026/2016001 (ML16132A557). The review was to determine whether the corrective actions taken by the licensee were complete and sufficient to address the issue and ensure the acceptance criteria for the related ITAAC could be met. Specifically, this violation was associated with the licensee's failure, through their contractor, WEC, to adequately review and accept nonconforming items in accordance with documented procedures. The violation represented an ITAAC finding because it was material to the acceptance criteria of ITAAC 3.3.00.02a.i.d (763), in that, if left uncorrected, the licensee may not have been able to demonstrate that the acceptance criteria of the ITAAC was met. The acceptance criteria of this ITAAC requires that all deviations between the as-built structures and the approved designs be reconciled to verify that the as-built structures will withstand the design basis loads without a loss of structural integrity or other safety-related functions.

The inspectors reviewed SNC CRs 10180672 and 10181738, CARs 263177 and 263554, TEs 954623 and 965635, and associated corrective actions taken to address this issue. Additionally, the inspectors reviewed N&Ds SV0-CE01-GNR-000031 and License Amendment 85 (ML17178A197) to verify that the non-conforming conditions were appropriately evaluated, approved, and dispositioned in accordance with applicable technical and QA requirements.

Based on the review described above, the inspectors determined that the licensee took adequate corrective actions to address the violation and the nonconforming conditions had been appropriately addressed such that the acceptance criteria of ITAAC 3.3.00.02a.i.d (763) was no longer impacted. No additional findings were identified. NCV 05200026/2016001-01 is closed.

b. Findings

No findings were identified.

.03 VOG3-2.2.03.02a-AP1000

a. Inspection Scope

During the ASME mechanical component design inspection conducted from August 14 - 25, 2017, the inspectors identified two examples where the licensee failed to verify if the maximum range of stress intensities for the PRHR HX tube sheet and the CMT inlet nozzle were within the ASME Code allowable limits. These issues were dispositioned as NCV 05200025/2017004-01, PRHR HX Tube Sheet and CMT Inlet Nozzle Stress Intensity Not Within ASME Code Allowable Limits. Because the violation was material to the acceptance criteria of ITAAC 2.2.03.02a, the inspectors reviewed the licensee's corrective actions to verify if the PRHR HX and CMT design met the ASME Code requirements.

The inspectors reviewed the SNC CRs and Westinghouse CAPALs related to these issues to determine if corrective actions were complete and that the corrective actions addressed the deficiencies to determine that the nonconforming conditions no longer existed. The inspectors reviewed analyses, and E&DCRs to verify that the changes

would support ASME Code Section III requirements. The inspectors reviewed the licensees E&DCR process to determine that the applicable analyses and design reports would be effectively updated through this process. Additionally, the inspectors reviewed the E&DCR and analyses to determine if a professional engineer had verified the changes. No additional findings were identified. NCV 05200025/2017004-01 is closed.

b. Findings

No findings were identified.

.04 VOG4-2.2.03.02a-AP1000

a. Inspection Scope

During the ASME mechanical component design inspection conducted from August 14 - 25, 2017, the inspectors identified two examples where the licensee failed to verify if the maximum range of stress intensities for the PRHR HX tube sheet and the CMT inlet nozzle were within ASME Code allowable limits. These issues were dispositioned as NCV05200026/2017004-01, PRHR HX Tube Sheet and CMT Inlet Nozzle Stress Intensity Not Within ASME Code Allowable Limits. Because this violation was material to the acceptance criteria of ITAAC 2.2.03.02a, the inspectors reviewed the licensee's corrective actions to verify if the PRHR HX and CMT design met the ASME Code requirements.

The inspectors reviewed the SNC CRs and Westinghouse CAPALs related to these issues to determine if corrective actions were complete and that the corrective actions addressed the deficiencies to determine that the nonconforming conditions no longer existed. The inspectors reviewed analyses, and E&DCRs to verify that the changes would support ASME Code Section III requirements. The inspectors reviewed the licensees E&DCR process to determine that the applicable analyses and design reports would be effectively updated through this process. Additionally, the inspectors reviewed the E&DCR and analyses to determine if a professional engineer had verified the changes. No additional findings were identified. NCV 05200026/2017004-01 is closed.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

.1 Exit Meeting.

On April 15, 2019, the inspectors presented the inspection results to Mr. Joseph Klecha, Vice President of Site Operations – Vogtle 3 and 4, 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

C. Castell, SNC Licensing Engineer
D. Craigo, SNC Engineering
L. Grissom, SNC Licensing Engineer
J. Hurst, WEC ASME
K. Stacy, SNC Licensing Supervisor
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

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
05200026/2019001-01	Noncited Violation	Open/Closed	Failure to Identify Nonconforming Radiographic Film
05200025/2019001-02	Noncited Violation	Open/Closed	Failure to Implement FFD Requirements
05200026/2019001-02	Noncited Violation	Open/Closed	Failure to Implement FFD Requirements
05200025/2017004-01	Noncited Violation	Closed	PRHR HX Tube Sheet and CMT Inlet Nozzle Stress Intensity Not Within ASME Code Allowable Limits
05200026/2017004-01	Noncited Violation	Closed	PRHR HX Tube Sheet and CMT Inlet Nozzle Stress Intensity Not Within ASME Code Allowable Limits
05200025/2016001-01	Noncited Violation	Closed	Failure to perform AISC N690-94 required weld NDE

05200026/2016001-01	Noncited Violation	Closed	Failure to perform AISC N690-94 required weld NDE

LIST OF DOCUMENTS REVIEWED

Section 1A01

SV3-PXS-PLW-070, "Passive Core Cooling System Containment Bldg Room 11305 ADS Piping to Sparger A," Revision (Rev.) 2
Stone and Webster, Inc Weld Data Sheet (WDS), Weld-No. SV3-PXS-PLW-070-3, 11/20/17
Stone and Webster, Welding Material Requisition (WMR), 423419, 2/14/19
Work Package SV3-PXS-P0W-800032, Work Scope Instructions NCSP0219-7.05R010.00
WPS1-8.8T01, "Stone and Webster, Inc. (S&W) Welding Procedure Specification (WPS) ASME Section IX," Rev. 10
ASME Code, Section III, Subsection NCA-4134.8 through 4134.10
SV3-PXS-GNR-000101, SV3-PXS-PLW-070 Insufficient Length (ESR 50011226), Rev. 0

Section 1A02

SV3-SS30-Z0-001, "AP1000 RCS Primary Equipment Supports Design Specification", Rev. 3
SV3-Q601-MHH-001, "Installing Q601 Module", Rev. 0
SV3-PH01-V2-005, AP1000 Pressurizer Upper Support, Ring Girder, Final Machining and Welding, Rev. 2

Section 1A03

Procedures:
Westinghouse Electric Company (WEC) Quality Management System (QMS)-A, Rev. 7
WEC 2-2.5-100, Competence, Awareness, and Training, Rev. 0.0
WEC 2.5-1-100, Westinghouse Corrective Action Program Procedure, Rev. 6.0
WEC W2-8.4-105 (WEC 2.15), Signing and Sealing by Professional Engineers, Rev. 0.0
WEC QA-2.11, Registered Professional Engineering Qualification, Rev. 0.0
WEC 2-8.4-102, Design Document Verification, Rev. 1.0
WEC 2.6. Training, Rev. 0
WEC 2-6.1-100, Document Control, Rev. 0.0
WEC2.8.4-104, Design Qualification, Rev. 0.0
WEC 3.2.6, Design Analysis, Rev. 0.0
WEC 3.2.6, Design Analysis, Rev. 2.0
WEC 3.3.1, Design Reviews, Rev. 4.1
WEC NSNP 3.6.1, Computer Software Development Process, Rev. 3
WEC W2-8.6-101(WEC 3.6.1), Computer Software Development Process, Rev. 0.2,
WEC NSNP 3.6.2, Validation of Computer Software, Rev. 2
WEC NSNP 3.6.3, Configuration Control of Computer Programs and Systems, Rev. 2
WEC NSNP 3.6.4, Software Problem Reporting and Resolution, Rev. 2
WEC 6.1, Document Control, Rev. 4.1
WEC 6.1, Document Control, Rev. 6.0
WEC 3.5.13, Qualification Reports, Rev. 0.0
WEC NSNP 3.6.2, Validation of Computer Software, Rev. 2
WEC2-8.6-104, Software Problem Reporting, Rev. 1.0
WEC2-8.6-106, Single Application Computer Programs, Rev. 0.2
WEC 16.2, Westinghouse Corrective Action Program, Rev. 8.0

WEC 17.1, Records, Rev. 3
WEC 17.1, Records, Rev. 4.0
WEC APP-GW-GAP-341, AP1000 Plant Program Design Change Control, Rev. 6
WEC APP-GW-GAP-420, Engineering and Design Coordination Reports, Rev. 16
WEC APPP-GW-GAP-440, Work Instructions for Revising AP1000 Design Change Impacted and Affected Documents, Rev. 9

Design Specifications, Design Reports, Design Analysis and Drawings:
APP-MV20-Z0-100, AP1000 Pressurizer Design Specification for RCS System, Rev. 11
APP-MV20-Z0-100, AP1000 Pressurizer Design Specification for RCS System, Rev. 6
APP-MV20-Z0R-101, AP1000 Pressurizer ASME Generic Design Report, Rev. 5
APP-MV20-Z0R-101, AP1000 Pressurizer ASME Generic Design Report, Rev. 3
APP-EH20-Z0-001, AP1000 Pressurizer Immersion Heater Design Specification, Rev. 5
APP-EH20-Z0-001, AP1000 Pressurizer Immersion Heaters Design Specification, Rev. 3
APP-MV20-Z0R-001, AP1000 Pressurizer Upper Support Bracket Analysis, Rev. 2
APP-MV20-Z0R-004, AP1000 Pressurizer Surge Nozzle Retaining Screen Analysis, Rev. 0
APP-MV20-Z0R-007, AP1000 Pressurizer Lower Head, Support Pad, and Shell Analysis, Rev. 3
APP-MV20-Z0R-008, APP1000 Pressurizer Safety Relief Nozzle Analysis, Rev. 1
APP-MV20-Z0R-009, APP1000 Pressurizer Surge Nozzle Analysis, Rev. 2
APP-EH20-Z0C-001 AP1000 Pressurizer Heater Thermal Analysis, Rev. 2
APP-MV20-Z0C-107, AP1000 Pressurizer Sizing Calculation, Rev. 1
APP-MV20-Z0C-126, AP1000 Pressurizer Calculation for Asymmetric Sub-compartment Pressurization Loads, Rev. 0
APP-GW-M3C-008, Containment and MSIV Compartments Piping Temperature Analysis for Design Basis Accidents, Rev. 2
SV3-MV20-Z0R-101 AP1000 Pressurizer Vogtle Units 3 (SV3) ASME Code Design Report, Rev. 0
SV3-MV20-Z0R-102, Rev. 0, AP1000 Pressurizer Vogtle Units 3 (SV3) ASME Code Design Report, 6/25/2015
SV3-MV20-Z0R-201, AP1000 Pressurizer Vogtle Unit 3 (SV3) As-Built Analysis, Rev. 0

Design Change Process (DCP) and Engineering and Design Change Coordination (E&DCR)
DCP APP-GW-GEE-4479, Modification to Pressure and Temperature Curves used for Equipment Qualification, Class 1, Rev. 0
DCP APP-GW-GEE-4487, Modifications to Pressure and Temperature Curves used for Equipment Qualification (PXS Compartments only), Rev. 0
DCP APP-GW-GEE-4572, PRHA Load Inputs to Major Equipment (Reactor Vessel, Reactor Vessel internals, Pressurizer, Steam Generators, Reactor Coolant Pumps), Rev. 0,
E&DCR APP-EH20-GEF-002, AP1000 Pressurizer Heater Min Wall, Rev.0
E&DCR APP-EH20-GEF-004, AP1000 Pressurizer Heater Surface Conditioning Update, Rev. 0
E&DCR APP-SS30-GEF-034, AP1000 Pressurizer Supports Level D Load Update, Rev. 0,
E&DCR APP-MV20-GEF-062 Pressurizer Safety Nozzle Thermal Range Allowable Load Update, Rev. 0,
E&DCR No. APP-MV20-GEF-066, AP1000 Pressurizer NQA-1 Requirements, Rev. 0,
E&DCR APP-MV20-GEF-067 AP1000 Pressurizer ICD and Design Specification Update, Rev. 1
E&DCR APP-MV20-GEF-068 AP1000 Pressurizer Design Specification Update, Rev. 0,
E&DCR APP-MV20-GEF-072, Pressurizer Incorporation of Asymmetric Pressure Loads, Rev. 0
E&DCR APP-MV20-GEF-153, Pressurizer Functional Specification Revisions, Rev. 0
E&DCR APP-MV20-GEF-154 AP1000 Pressurizer Safety Relief Nozzle ADS Blowdown Test, Rev. 0

E&DCR APP-MV20-GEF-155, AP1000 Pressurizer Support Load Evaluation, Rev. 0

Corrective Action Reports:
SNC Condition Report (CR)
10006356, WEC Calculation Assumption Discrepancy
10105934, Consortium Response found to be inadequate was initiated documenting the conditions SNC reviewed WEC CAPAL 100072674,
10105934, Consortium Response found to be inadequate was initiated documenting the conditions SNC reviewed WEC CAPAL 100072674,
10030905, Pressurizer Storage Requirement Not Being Met,

SNC Condition Action Report (CAR)
260141, Track and Evaluate WEC CAPAL 100321881,
269682 SNC CR 10354035

WEC Corrective Action, Prevention Action List (CAPAL)
100072674, SNC ICAP CR 10006356 WEC Calculation (APP-RCS-M3C-003) Assumption,
100321881 SNC ICAP CR 10105934 Consortium Response to CAPAL 10072674 found to be inadequate
100000382 (CAP Issue: 13-087-M041) Errors in Development of EQ Pressure and Temperature Profiles from AP1000 DBA Results,
100107634, (13-148-M050), Incorrect Inputs used in AP1000 Calculations,
100296118, WESTEMS 4.5.2 Identified Software Error - NB3600 Equation 13 Temperature for Allowables
100100267, ES work Violates of ASME Certificate Scope and ASME B&PVC
100297375, WESTEMS 4.5.2 Identified Software Error - Thermal Stress Ratchet Yield Strength Calculation
100377138, Potential ASME Code Calculation Errors (RPV and PZR)
100382797 Deficiency in ASME Calculations for AP1000,
100382797, Apparent Cause Analysis Report
2018-8825, SV3 Pressurizer Lower Shell weld edge preparation PT/MT
Computer Software Verification and Validation:
Calculation Note Number CN-PAFM-08-119, Rev. 0, Project WESTEMS 4.5.2, WESTEMS 4.5.2 Verification and Validation,
Calculation Note Number CN-PAFM-08-119, Rev. 1, Project WESTEMS 4.5.2, WESTEMS 4.5.2 Verification and Validation,
Calculation Note Number CN-PAFM-08-24, Rev. 0, WES_FRAMES Version 4.1 Change Specification and Validation,

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DCP_DCP_0094946 System Responsibility Assignments List, May 2010-AP1000 Nuclear Systems Engineering Group issued 2/19/2019
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LTR_SRA-16-005(APP-PXS-M3C-205, Rev. 6) Annual Qualification Matrix and Training Needs Assessment for Systems and Risk Application (SRA), issued on 6/6/2016
LTR_MRCDA_16-66 (APP-MV01-Z0C-021, Rev. 7), Documentation of Major Reactor Component Design and Analysis-II (MRCDA-II) Personnel Qualification Matrix, issued on 5/27/2016
LTR-PAFM-09-28, Qualification Matrix and Training Needs Assessment, issued on 4/14/2009
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APP-MV01-Z0C-021, Rev. 5 signature log indicate final approval date 2/4/2014
APP-MV01-Z0C-021, Rev. 7 signature log indicate final approval date 7/29/2016
APP-MV20-Z0-100, Rev. 11 signature log indicate final approval date 9/26/2017
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MISCELLANEOUS:
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LTR-MRCDA-16-59, Safety Assessment of the AP1000 Reactor Vessel and Pressurizer in Response to United Kingdom (UK) Generic Design Assessment (GDA) Structural Integrity (SI05) Comments from the UK Office for Nuclear Regulation (ONR),
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LTR-NCE-16-217, Impact Assessment of UK GDA ONR Comments on Westinghouse Operating Plants (Extent of Condition Assessment)
LTR-NCE-17-46, Use of ASME Code Section III Checklist, issued on 3/15/2017
WEC Internal Audit Report No. WEC-16-131, Rev. 0, issued on April 26, 2016
Mangiaroti Nonconformity Report No. NCR-4258, PZR Southern Vogtle Unit 3 Missing Evidence of PT Examination for Weld Edge Preparation, issued on 4/26/2018

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APP-RCS-M1-001, Reactor Coolant System Design Transients, Rev. 4
APP-RCS-M1-001, Reactor Coolant System Design Transients, Rev. 5
APP-MV20-Z0-100, AP1000 Pressurizer Design Specification for RCS System, Rev. 6
APP-MV20-Z0-100, AP1000 Pressurizer Design Specification for RCS System, Rev. 11
APP-MV20-Z0C-107, AP1000 Pressurizer Sizing Calculation, Rev. 1
APP-MV20-Z0C-124, AP1000 Pressurizer Weight and Center of Gravity Calculation, Rev. 1
APP-MV20-Z0R-007, AP1000 Pressurizer Lower Head, Support Pad, and Shell Analysis, Rev. 3
APP-MV20-Z0R-008, AP1000 Pressurizer Safety Relief Nozzle Analysis, Rev. 1
APP-MV20-Z0R-016, AP1000 Pressurizer Upper Shell and Head Analysis, Rev. 1
APP-MV20-Z0R-016, AP1000 Pressurizer Upper Shell and Head Analysis, Rev. 2
APP-MV20-Z0R-101, AP1000 Pressurizer ASME Generic Design Report, Rev. 3
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APP-SSAR-GSC-137, AP1000 Advanced First Core Rod Cluster Control Assembly (RCCA) Bank Withdrawal at Power, Rev. 0
APP-SSAR-GSC-140, AP1000 - Advanced First Core Loss of Load / Turbine Trip Analysis, Rev. 0
APP-SSAR-GSC-148, AP1000 Locked Rotor / Shaft Break Analysis to Support the Advanced First Core Analysis Project (AFCAP), Rev. 0
SV3-MV20-Z0R-101, AP1000 Pressurizer Vogtle Unit 3 (SV3) ASME Code Design Report, Rev. 0
SV3-MV20-Z0R-102, AP1000 Pressurizer Vogtle Unit 3 (SV3) ASME Code Design Report, Rev. 0
SV3-MV20-Z0R-201, AP1000 Pressurizer Vogtle Unit 3 (SV3) As-Built Analysis, Rev. 0

Drawings:
APP-MV20-V2-001, AP1000 PRESSURIZER BILL OF MATERIALS AND NOTES, REV. 3
APP-MV20-V2-002, AP1000 PRESSURIZER COMPLETE ASSEMBLY, REV. 3
APP-MV20-V2-003, AP1000 PRESSURIZER LOWER HEAD AND LOWER SHELL ASSEMBLY, REV. 4
APP-MV20-V2-004, AP1000 PRESSURIZER UPPER HEAD AND UPPER SHELL ASSEMBLY, REV. 3
APP-MV20-V2-005, AP1000 PRESSURIZER SURGE NOZZLE RETAINING SCREEN MACHINING AND ATTACHMENT, REV. 0
APP-MV20-V6-001, AP1000 PRESSURIZER SURGE NOZZLE MACHINING, REV. 2
APP-MV20-V6-002, AP1000 PRESSURIZER LOWER HEAD MACHINING. REV. 3
APP-MV20-V6-003, AP1000 PRESSURIZER LOWER SHELL AND SMALL NOZZLE MACHINING, REV. 4
APP-MV20-V6-004, AP1000 PRESSURIZER MIDDLE SHELL MACHINING, REV. 1
APP-MV20-V6-005, AP1000 PRESSURIZER UPPER HEAD SPRAY AND SAFETY RELIEF NOZZLE MACHINING, REV. 2
APP-MV20-V6-006, AP1000 PRESSURIZER UPPER HEAD AND SMALL NOZZLE MACHINING, REV. 2

APP-MV20-V6-007, AP1000 PRESSURIZER UPPER SHELL MANWAY MACHINING, REV. 1
APP-MV20-V6-008, AP1000 PRESSURIZER ASME B&PV CODE RATING NAMEPLATE AND MOUNTING BRACKET, REV. 1
APP-MV20-V6-021, AP1000 PRESSURIZER MANWAY STUD, NUT & WASHER ASSEMBLIES, REV. 0
APP-MV20-V6-022, AP1000 PRESSURIZER MANWAY STUD DETAILS, REV. 0
APP-MV20-V6-023, AP1000 PRESSURIZER MANWAY NUT, WASHER & INSERT PLATE SCREW DETAILS, REV. 0
APP-MV20-V6-024, AP1000 PRESSURIZER MANWAY COVER DETAILS, REV. 0
APP-MV20-V6-025, AP1000 PRESSURIZER MANWAY INSERT PLATE, REV. 1
APP-MV20-V6-026, AP1000 PRESSURIZER MANWAY GASKET, REV. 2
APP-MV20-V6-027, AP1000 PRESSURIZER MANWAY DIAPHRAGM, REV. 2

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APP-RCS-GEF-002, E&DCR for Removal of Heat Generation Specific Transients from APP-RCS-M1-001, Rev. 0
APP-MI01-GEF-379, RVI Reconciliation of Locked Rotor Event, Rev. 0

Section 1A04

Procedures:
Westinghouse Electric Company (WEC) Quality Management System (QMS)-A, Rev. 7, issued on October 1, 2013
WEC 2-2.5-100, Competence, Awareness, and Training, Rev. 0.0
WEC 2.5-1-100, Westinghouse Corrective Action Program Procedure, Rev. 6.0
WEC W2-8.4-105 (WEC 2.15), Signing and Sealing by Professional Engineers, Rev. 0.0
WEC QA-2.11, Registered Professional Engineering Qualification, Rev. 0.0
WEC 2-8.4-102, Design Document Verification, Rev. 1.0
WEC 2.6. Training, Rev. 0
WEC 2-6.1-100, Document Control, Rev. 0.0
WEC2.8.4-104, Design Qualification, Rev. 0.0
WEC 3.2.6, Design Analysis, Rev. 0.0
WEC 3.2.6, Design Analysis, Rev. 2.0
WEC 3.3.1, Design Reviews, Rev. 4.1
WEC NSNP 3.6.1, Computer Software Development Process, Rev. 3
WEC W2-8.6-101(WEC 3.6.1), Computer Software Development Process, Rev. 0.2,
WEC NSNP 3.6.2, Validation of Computer Software, Rev. 2
WEC NSNP 3.6.3, Configuration Control of Computer Programs and Systems, Rev. 2
WEC NSNP 3.6.4, Software Problem Reporting and Resolution, Rev. 2
WEC 6.1, Document Control, Rev. 4.1
WEC 6.1, Document Control, Rev. 6.0
WEC 3.5.13, Qualification Reports, Rev. 0.0
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WEC2-8.6-104, Software Problem Reporting, Rev. 1.0
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WEC APP-GW-GAP-341, AP1000 Plant Program Design Change Control, Rev. 6
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APP-GW-M3C-008, Containment and MSIV Compartments Piping Temperature Analysis for Design Basis Accidents, Rev. 2, approved on 12/17/2016

Design Change Process (DCP) and Engineering and Design Change Coordination (E&DCR)
DCP APP-GW-GEE-4479, Modification to Pressure and Temperature Curves used for Equipment Qualification, Class 1, Rev. 0
DCP APP-GW-GEE-4487, Modifications to Pressure and Temperature Curves used for Equipment Qualification (PXS Compartments only), Rev. 0
DCP APP-GW-GEE-4572, PRHA Load Inputs to Major Equipment (Reactor Vessel, Reactor Vessel internals, Pressurizer, Steam Generators, Reactor Coolant Pumps), Rev. 0

Corrective Action Reports:
SNC Condition Report (CR)
10006356, WEC Calculation Assumption Discrepancy,
10105934, Consortium Response found to be inadequate was initiated documenting the conditions SNC reviewed WEC CAPAL 100072674,
10105934, Consortium Response found to be inadequate was initiated documenting the conditions SNC reviewed WEC CAPAL 100072674,
10354036, UFSAR Discrepancy for Number of Specimen in RVMS Capsules

SNC Condition Action Report (CAR)
260141, Track and Evaluate WEC CAPAL 100321881
269682, SNC CR 10354035

WEC Corrective Action, Prevention Action List (CAPAL)
100072674, SNC ICAP CR 10006356 WEC Calculation (APP-RCS-M3C-003) Assumption,
100321881 SNC ICAP CR 10105934 Consortium Response to CAPAL 10072674 found to be inadequate
100000382 (CAP Issue: 13-087-M041) Errors in Development of EQ Pressure and Temperature Profiles from AP1000 DBA Results,
100107634, (13-148-M050), Incorrect Inputs used in AP1000 Calculations,
100296118, WESTEMS 4.5.2 Identified Software Error - NB3600 Equation 13 Temperature for Allowables,
100100267, ES work Violates of ASME Certificate Scope and ASME B&PVC,
100297375, WESTEMS 4.5.2 Identified Software Error - Thermal Stress Ratchet Yield Strength Calculation,
100377138, Potential ASME Code Calculation Errors (RPV and PZR),
100382797 Deficiency in ASME Calculations for AP1000,
2018-13086, RCS Cold Leg Thermal Stratification Conditions,
100382797, Apparent Cause Analysis Report

Computer Software Verification and Validation:
Calculation Note Number CN-PAFM-08-119, Rev. 0, Project WESTEMS 4.5.2, WESTEMS 4.5.2 Verification and Validation,
Calculation Note Number CN-PAFM-08-119, Rev. 1, Project WESTEMS 4.5.2, WESTEMS 4.5.2 Verification and Validation,

Indoctrination, Training and Qualification Records:
Form F-2.11-1, Rev. 2 for RPE-13225-10-2012, PE041768E exp. 09/30/2015
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Form F-2.11-1, Rev. 5, for RPE-25500-01-2014, PE041224E exp. 09/30/2015
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Form F-2.11-1, Rev. 5, for RPE-34347-01-2014, PE075818 exp. 09/30/2015
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DCP_DCP_009493 Personnel Training Records for 2011-AP1000 Nuclear Systems Engineering Group, issued on 2/14/2019
DCP_DCP_0094946 System Responsibility Assignments List, May 2010-AP1000 Nuclear Systems Engineering Group issued 2/19/2019
LTR_NCE-13-149 (APP-PXS-M3C-205, Rev. 5), Nuclear Component Engineering Qualification Matrix, Training Needs Assessment and Training Plan, issued on 7/18/2013
LTR_PCSA-11-20(APP-RCS-M1-001, Rev. 4), Qualification Matrix and Training Needs Assessment for Procedures and Control Systems Analysis (PCSA), issued on 3/3/2011
LTR_SCS-16-21(APP-RCS-M1-001, Rev. 5), Setpoints and Control System Qualification Matrix, issued on 5/25/2016,
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LTR_MRCDA_16-66 (APP-MV01-Z0C-021, Rev. 7), Documentation of Major Reactor Component Design and Analysis-II (MRCDA-II) Personnel Qualification Matrix, issued on 5/27/2016
LTR-PAFM-09-28, Qualification Matrix and Training Needs Assessment, issued on 4/14/2009
LTR-PAFM-07-132 Qualification Matrix & Training Needs Assessment, issued on 10/12/2007.

Training Signature Logs:
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APP-MV01-Z0C-021, Rev. 7 signature log indicate final approval date 7/29/2016
APP-MV20-Z0-100, Rev. 11 signature log indicate final approval date 9/26/2017
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APP-PXS-M3C-205, Rev. 6 signature log indicate final approval date 10/20/2016
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Calculations:
APP-MV01-Z0-101, Design Specification for AP1000 Reactor Vessel for System: Reactor Coolant System (RCS), Rev. 11
APP-MV01-Z0-101, Design Specification for AP1000 Reactor Vessel for System: Reactor Coolant System (RCS), Rev. 15
APP-MV01-Z0C-004, AP1000 Reactor Pressure Vessel Sizing Calculation, Rev. 7
APP-MV01-Z0C-004, AP1000 Reactor Pressure Vessel Sizing Calculation, Rev. 9
APP-MV01-Z0C-010, AP1000 Reactor Vessel Fracture, Rev. 5
APP-MV01-Z0C-015, Detailed Analysis of Closure Head Region for AP1000 Reactor Vessel (RPV), Rev. 5

APP-MV01-Z0C-015, Detailed Analysis of Closure Head Region for AP1000 Reactor Vessel (RPV), Rev. 7
APP-MV01-Z0C-016, Detailed Analysis of the Lower Shell and Lower Head Regions for the AP1000 Reactor Pressure Vessel (RPV), Rev. 5
APP-MV01-Z0C-016, Detailed Analysis of the Lower Shell and Lower Head Regions for the AP1000 Reactor Pressure Vessel (RPV), Rev. 7
APP-MV01-Z0C-021, AP1000 Reactor Pressure Vessel (RPV) Transient Groupings and Heat Transfer Coefficients, Rev. 5
APP-MV01-Z0C-021, AP1000 Reactor Pressure Vessel (RPV) Transient Groupings and Heat Transfer Coefficients, Rev. 7
APP-MV01-Z0R-101, AP1000 Reactor Vessel Design Report, Rev. 5
APP-MV01-Z0R-101, AP1000 Reactor Vessel Design Report, Rev. 8
APP-RCS-M1-001, Reactor Coolant System Design Transients, Rev. 4
APP-RCS-M1-001, Reactor Coolant System Design Transients, Rev. 5
APP-SSAR-GSC-137, AP1000 Advanced First Core Rod Cluster Control Assembly (RCCA) Bank Withdrawal at Power, Rev. 0
APP-SSAR-GSC-140, AP1000 - Advanced First Core Loss of Load / Turbine Trip Analysis, Rev. 0
APP-SSAR-GSC-148, AP1000 Locked Rotor / Shaft Break Analysis to Support the Advanced First Core Analysis Project (AFCAP), Rev. 0

Drawings:
APP-MI01-V6-141, AP1000 REACTOR INTERNALS DVI FLOW DEFLECTOR, REV. 5
APP-MI01-V6-171, AP1000 REACTOR INTERNALS UPPER NEUTRON SHIELD PANEL, REV. 2
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APP-MV01-V2-001, AP1000 REACTOR VESSEL AND CLOSURE HEAD GENERAL ASSEMBLY, REV. 5
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APP-MV01-V2-008, AP1000 REACTOR VESSEL AND CLOSURE HEAD ASSEMBLY DVI NOZZLE DETAILS, REV. 0
APP-MV01-V6-126, AP1000 REACTOR VESSEL VENT PIPE, REV. 4
APP-MV01-V6-131, AP1000 REACTOR VESSEL LATCH HOUSING PENETRATIONS, REV. 4
APP-MV01-V6-202, AP1000 REACTOR VESSEL UPPER VESSEL MACHINING & CLADDING, REV. 4
APP-MV01-V6-204, AP1000 REACTOR VESSEL UPPER VESSEL MACHINING, REV. 3
APP-RXS-V2-002, AP1000 REACTOR GENERAL ASSEMBLY, REV. 7

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APP-RCS-GEF-002, E&DCR for Removal of Heat Generation Specific Transients from APP-RCS-M1-001, Rev. 0
APP-MI01-GEF-379, RVI Reconciliation of Locked Rotor Event, Rev. 0

MISCELLANEOUS:
LTR-CRA-13-34, Equipment Qualification (EQ) Containment Temperature and Pressure Profiles Applicability for the AP1000 Plant to All Locations Inside Containment, Rev. 0,
LTR_MRCDA_13-36 (APP-MV01-Z0C-021, Rev. 5) Major Reactor Component Design Analysis-II (MRCDA-II) Qualifications,
LTR-MRCDA-16-59, Safety Assessment of the AP1000 Reactor Vessel and Pressurizer in Response to United Kingdom (UK) Generic Design Assessment (GDA) Structural Integrity (SI05) Comments from the UK Office for Nuclear Regulation (ONR),
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LTR-NCE-16-217, Impact Assessment of UK GDA ONR Comments on Westinghouse Operating Plants (Extent of Condition Assessment),
LTR-NCE-17-46, Use of ASME Code Section III Checklist,
WEC Internal Audit Report No. WEC-16-131, Rev. 0

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SV3-MV50-V1-015, "AP1000 Containment Vessel Penetrations List", Rev. 1
SV3-MV50-V1-018, "AP1000 Containment Vessel Mechanical Penetration Sleeve Rings", Rev. 6
SV3-MV50-V1-019, "AP1000 Containment Vessel Mechanical Penetration Sleeves Bottom Head", Rev. 2
SV3-1100-P0-906, "Steel Containment Vessel Mechanical Penetration Details", Rev. 1
SV3-1100-P0-908, "Steel Containment Vessel Mechanical Penetration Details", Rev. 1

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V-18-RT-302-0248, "Computed Radiography Examination Report," for weld SV3-SGS-PY-C02A-4," 5/15/18 (including digitized film for all shots in report)
V-18-RT-301-0165, "Radiography Examination Report," for weld SV3-CVS-PY-C03-1," 3/29/18 (including film for all shots in report)
Stone & Webster Weld Data Sheet for Weld No. SV3-CVS-PY-C03-1 (penetration sleeve to flued head)
MISTRAS procedure 521-RT-301, "Radiographic Examination in Accordance with ASME Section V, Article 2," Rev. 3
MISTRAS procedure 521-RT-302, "Radiographic Examination Using Computed Radiography in Accordance with ASME Section V, Article 2", Rev. 0

Section 1A07

Drawings
APP-SFS-PLW-510, " SFS Auxiliary Building Room 12254 Return from Containment Area", Rev. 1
APP-SFS-PH-12R00291, "Pipe Support Drawing SFS System SFS-PH-12R0029", Rev. 0
SV3-SFS-PHK-875638, "Weld Map to Install Support SV3-SFS-PH-12R0029", Rev. 0
SV3-SFS-PHK-875639, "Weld Map to Install Support SV3-SFS-PH-12R0306", Rev. 1
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100100267, ES work Violates of ASME Certificate Scope and ASME B&PVC
100297375, WESTEMS 4.5.2 Identified Software Error - Thermal Stress Ratchet Yield Strength Calculation
100377138, Potential ASME Code Calculation Errors (RPV and PZR)
100382797 Deficiency in ASME Calculations for AP1000,
100382797, Apparent Cause Analysis Report

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APP-MV20-V6-001, AP1000 PRESSURIZER SURGE NOZZLE MACHINING, REV. 2
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APP-MV20-V6-007, AP1000 PRESSURIZER UPPER SHELL MANWAY MACHINING, REV. 1
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APP-MV20-V6-023, AP1000 PRESSURIZER MANWAY NUT, WASHER & INSERT PLATE SCREW DETAILS, REV. 0
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APP-MV20-V6-026, AP1000 PRESSURIZER MANWAY GASKET, REV. 2
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10006356, WEC Calculation Assumption Discrepancy,
10105934, Consortium Response found to be inadequate was initiated documenting the conditions SNC reviewed WEC CAPAL 100072674,
10105934, Consortium Response found to be inadequate was initiated documenting the conditions SNC reviewed WEC CAPAL 100072674,
10354036, UFSAR Discrepancy for Number of Specimen in RVMS Capsules

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260141, Track and Evaluate WEC CAPAL 100321881
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100072674, SNC ICAP CR 10006356 WEC Calculation (APP-RCS-M3C-003) Assumption,
100321881 SNC ICAP CR 10105934 Consortium Response to CAPAL 10072674 found to be inadequate
100000382 (CAP Issue: 13-087-M041) Errors in Development of EQ Pressure and Temperature Profiles from AP1000 DBA Results,
100107634, (13-148-M050), Incorrect Inputs used in AP1000 Calculations,

100296118, WESTEMS 4.5.2 Identified Software Error - NB3600 Equation 13 Temperature for Allowables,
100100267, ES work Violates of ASME Certificate Scope and ASME B&PVC,
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100377138, Potential ASME Code Calculation Errors (RPV and PZR),
100382797 Deficiency in ASME Calculations for AP1000,
2018-13086, RCS Cold Leg Thermal Stratification Conditions,
100382797, Apparent Cause Analysis Report

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ESAB, 2-57929-00-0-NUC, ENi4, 3/32" dia., Heat-No. 093096, 08/04/16
ESAB, 2-57967-00-0-NUC, Flux 10.72, Lot-No. ME616012, 07/15/2016
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NMP-ES-098, Interface Procedure for NISP-EN-02 "Standard Item Equivalency Process", Version 1.0
NMP-GM-011, Interface Procedure for NISP-EN-02 "Standard Item Equivalency Process", Version 27.0
SCM-002, Definitions and References, Version 13.0
SCM-COO-001, Supply Chain Management, Version 8.1
SCM-ENG-001, Development of Technical / Quality Requirements, Version 12.0
SCM-ENG-002, Functional Classification of Components, Parts, and Materials, Version 7.0
SCM-ENG-003, Functional Classification of Services , Version 5.0
SCM-ENG-004, Determination of 10 CFR 21 and 10 CFR 50.55(e) Applicability , Version 4.0
SCM-ENG-011, TQR Terms Preparation and Review , Version 5.0
SCM-ENG-007, Material Acceptability Determinations, Version 6
SCM-ENG-011, TQR Terms Preparation and Review , Version 5.0
SCM-ENG-007, Material Acceptability Determinations, Version 6
SCM-ENG-005, Determining Acceptance Methods and Receipt Inspection Requirements, Version 6
ND-SC-001, Procurement, Receipt, and Control of Materials and Services, Version 11
NDQAM, Nuclear Development Quality Assurance Manual, Rev. 19
26139-000-4MP-T81C-N6104, Material receiving, Rev. 2

Audits:
Final 2018 NDQA Audit Schedule, 2018 Nuclear Development Quality Assurance Audit Schedule, Rev. 3
Audit Report No. V2016-18, Implementation Audit of Cives Steel Company, dated April 5, 2016
Audit Report No. WES-2017-092-R, CES Vendor Audit Package V17- 05 for Lisega, Inc. NIAC Audit Member No. 22099, dated May 18, 2017
Audit Report No. WES-2018-095-R, Vendor Audit Package for Dubose NES NIAC Member Audit No. 23011, dated May 24, 2018
Audit Report No. WES-2018-156-R Vendor Audit Package for Paxton & Vierling Steel Company, NIAC Member Audit, dated October 25, 2018

ND-18-0624, Nuclear Development Quality Assurance Audit Report for the WEC QA and ASME Programs, SNC-ND-2018.01-WEC-Site-Corp-QA-ASME (002), dated May 1, 2018
ND-18-0624, Nuclear Development Quality Assurance Audit Report for the WEC QA and ASME Programs, SNC-ND-2018.01-WEC-Site-Corp-QA-ASME, dated May 1, 2018
ND-18-1278 SCM-ND-SC-SCM-2018, Nuclear Development Quality Assurance (NDQA) Audit Report for Supply Change Management (SCM), ND-SC-SCM-2018, dated October 3, 2018

Specifications:
APP-SS01-Z0-004, Furnishing of Steel Decking and Stay-In-Place Forms, Westinghouse Seismic Category I, Safety Class C: Nuclear Safety Related, Rev. 4
APP-SS01-Z0-003-ADD, Addendum to Embeds and Miscellaneous Steel Specification, Rev. 3
SV0-SS01-Z0-001, Shop Fabrication of Structural Steel, Rev. 1
SV3-G1-SX-001, AP1000 Coating of Shop Fabricated Steel Nuclear Safety Related (Safety Classification C, Seismic Category NS), Rev. 9
SV3-SS01-Z0-001, Shop Fabrication of Structural Steel, Westinghouse Class C, Seismic Category 1 (Nuclear Safety Related), Rev. 5
SV3-SS01-Z0-003-ADD, Commercial Grade Dedication Requirements for Embedment and Miscellaneous Steel, Addendum No.: SV3-SS01-Z0-003-ADD: Rev. 0
SV3-SS01-Z0-004, Furnishing of Steel Decking and Stay-In-Place Forms, Westinghouse Seismic Category 1, Safety Class C, (Nuclear Safety Related) , Rev. 4
SV4-G1-SX-001, AP1000 Coating of Shop Fabricated Steel Nuclear Safety Related (Safety Classification C, Seismic Category NS), Rev. 9
SV4-SS01-Z0-001, Shop Fabrication of Structural Steel, Rev. 1
SV3-G1-SX-001, AP1000 Coating of Shop Fabricated Steel Nuclear Safety Related (Safety Classification C, Seismic Category NS), Rev. 5
APP-G1-V8-001-ADD-01, Summarized Electrical Installation Specification for Seismic CAT I and Non Seismic Raceway Supports, Rev. 0
Material Receiving Reports:
26139-SV0-MRI-18-21978, 5582449: Unistructs, dated 11/2/2018
J132175-MRR-18-03270-PL1277, Material Receipt Report: Legacy PO 132175SS01.00, dated 9/14/2018
MRR-18-16498-PL-L-2176-3195, Material Receipt Report: Legacy PO 132176SS01.00, dated 10/8/2018

Miscellaneous:
132176-SS01.00-SORVD-01, Shop Fabrication of Safety Related Structural Steel and Steel Decking and Stay-In-Place Forms SORVD [Auxiliary and Containment Bldg], Rev. 3
777777-PH02.01-TDL, Package Technical Document List, Rev. 86

3. OPERATIONAL READINESS

Section 3P01

Procedures and Requirements:
WDI-STD-1099, "Generic AP1000 Pre-Service Inspection Procedure for Ultrasonic Examination of Austenitic Pipe Welds in Accordance with PDI-UT-2", Rev. 4
PDI-UT-2, "PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds", Rev. H

Isometrics:

SV3-PXS-PLW-022-ISI, Vogtle Electric Generating Plant Inservice Inspection Isometric Passive Core Cooling System Containment Building Room 11207 Common Injection Header to DVI-B, Rev. 2
SV3-PXS-PLW-025-ISI, Vogtle Electric Generating Plant Inservice Inspection Isometric Passive Core Cooling System Containment Building Rooms 11204/11207 DVI-B to Reactor Vessel, Rev. 3

UT Exam Reports:
19-000941, UT Report for SV3-PXS-PLW-022-SW3 (0 degrees) - PXS Common Injection Header to DVI-B, 2/26/19
19-000942, UT Report for SV3-PXS-PLW-022-SW3 (45 degrees) - PXS Common Injection Header to DVI-B, 2/27/19
19-000965, UT Report for SV3-PXS-PLW-022-FW4 (0 degrees) - PXS Common Injection Header to DVI-B, 2/26/19
19-000966, UT Report for SV3-PXS-PLW-022-FW4 (45 degrees) - PXS Common Injection Header to DVI-B, 2/26/19
19-000984, UT Report for SV3-PXS-PLW-025-FW1 (0 degrees) - PXS DVI-B to Reactor Vessel, 2/26/19
19-001085, UT Report for SV3-PXS-PLW-025-FW1 (45 degrees) - PXS DVI-B to Reactor Vessel, 2/26/19

Certifications:
Sonic Systems International, Inc. (SSI) certification records for Serth, UT, Level II-PDI (Certification Date: 11/28/18, Expiration Date: 11/27/21)
WesDyne International certification records for Smith, UT, Level III-PDI (Certification Date: 11/12/18, Expiration Date: 11/10/23)
Visual Acuity record for Serth (Exam date:11/27/18)
Visual Acuity record for Smith (Exam date: 1/09/19)

4. OTHER INSPECTION RESULTS

4OA5

SNC Corrective Action Documents
50010653, Not All Documents Needed For NRC To Reinspect NCV For Closure Were Closed, 01/09/2019
10451090, NRC ASME EOC Enhancement For PRHR HX And CMT ACA, 01/17/2018
10402072, AP1000 PRHR HX Tubesheet Analysis Issues, 08/25/02017
10402069, AP1000 Core Makeup Tank Inlet/Outlet Analysis Concerns, 08/25/2017

Westinghouse Corrective Action Documents
IR-2017-878
100489810, Ap1000 PRHR HX Tubesheet Analysis Issues, 08/24/2017
100489811, AP1000 Core Makeup Tank Inlet/Outlet Analysis Concerns, 08/24/2017

Analyses
APP-MT01-Z0R-001, AP1000 Core Makeup Tank ASME Generic Design Report, Rev. 7
APP-MT01-Z0R-011, AP1000 Core Makeup Tank Inlet And Outlet Nozzle Analysis, Rev. 7
APP-ME02-Z0C-042, AP1000 PRHR HX Tube Sheet Analysis, Rev. 6

APP-ME02-Z0R-100, AP1000 Passive Residual Heat Removal Heat Exchanger Generic Design Report, Rev. 4
APP-ME02-GEF-121, AP1000 PRHR HX, Rev. 0
APP-ME02-Z0C-064, PRHR HX Inlet Tubesheet Thermal Response To RX Trip With Safeguard Actions And Inadvertent PRHR HX Actuation using ANSYS, Rev. 0

Engineering & Design Coordination Reports
APP-MT01-GEF-081, AP1000 Core Makeup Tank (CMT) Inlet/Outlet Nozzle Stress Range Revision To Address CAPAL 100489811, Rev. 0
APP-ME02-GEF-121, AP1000 PRHR HX Tube Sheet Calculation Note Update Using ANSYS Thermal Lag Heat Transfer Analysis, Rev. 0
APP-ME02-GEF-119, AP1000 PRHR HX Tube Sheet Calculation Note Update, Rev. 1

Procedures
APP-GW-GAP-420, Engineering And Design Coordination Reports, Rev. 16
2

Corrective Action Documents:
Condition Report #10180672
Condition Report #10181738
Corrective Action Report #263177
Corrective Action Report #263554
Technical Evaluation #954623
Technical Evaluation #965635

Nonconformance and Disposition Reports:
SV0-CE01-GNR-000031, Coupler Welds on CS Embeds from Cives Lacking N690 NDE, Rev. 0
SV3-1000-GNR-000007, Joseph Oat Embeds with PJP Lacking AISC N690 Required NDE, Rev. 0

SNC Corrective Action Documents
50010653, Not All Documents Needed For NRC To Reinspect NCV For Closure Were Closed, 01/09/2019
10451090, NRC ASME EOC Enhancement For PRHR HX And CMT ACA, 01/17/2018
10402072, AP1000 PRHR HX Tubesheet Analysis Issues, 08/25/02017
10402069, AP1000 Core Makeup Tank Inlet/Outlet Analysis Concerns, 08/25/2017

Westinghouse Corrective Action Documents
IR-2017-878
100489810, Ap1000 PRHR HX Tubesheet Analysis Issues, 08/24/2017
100489811, AP1000 Core Makeup Tank Inlet/Outlet Analysis Concerns, 08/24/2017

Analyses
APP-MT01-Z0R-001, AP1000 Core Makeup Tank ASME Generic Design Report, Rev. 7
APP-MT01-Z0R-011, AP1000 Core Makeup Tank Inlet And Outlet Nozzle Analysis, Rev. 7
APP-ME02-Z0C-042, AP1000 PRHR HX Tube Sheet Analysis, Rev. 6
APP-ME02-Z0R-100, AP1000 Passive Residual Heat Removal Heat Exchanger Generic Design Report, Rev. 4
APP-ME02-GEF-121, AP1000 PRHR HX, Rev. 0
APP-ME02-Z0C-064, PRHR HX Inlet Tubesheet Thermal Response To RX Trip With Safeguard Actions And Inadvertent PRHR HX Actuation using ANSYS, Rev. 0

Engineering & Design Coordination Report s
APP-MT01-GEF-081, AP1000 Core Makeup Tank (CMT) Inlet/Outlet Nozzle Stress Range Revision To Address CAPAL 100489811, Rev. 0
APP-ME02-GEF-121, AP1000 PRHR HX Tube Sheet Calculation Note Update Using ANSYS Thermal Lag Heat Transfer Analysis, Rev. 0
APP-ME02-GEF-119, AP1000 PRHR HX Tube Sheet Calculation Note Update, Rev. 1

Procedures
APP-GW-GAP-420, Engineering And Design Coordination Reports, Rev. 16

Corrective Action Documents:
Condition Report #10180672
Condition Report #10181738
Corrective Action Report #263177
Corrective Action Report #263554
Technical Evaluation #954623
Technical Evaluation #965635

Nonconformance and Disposition Reports:
SV0-CE01-GNR-000031, Coupler Welds on CS Embeds from Cives Lacking N690 NDE, Rev. 0

LIST OF ACRONYMS

ACC	accumulator
ACI	American Concrete Institute
ADS	automatic depressurization system
ANI	authorized nuclear inspector
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASTM	American Society of Testing and Materials
AWS	American Welding Society
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
CVTH	containment vessel top head
DBA	design basis accident
DVI	direct vessel injection
E&DCR	engineering and design coordination report
EPA	electrical penetration assemblies
FCAW	flux cored arc welding
FCN	field change notices
GTAW	gas tungsten arc welding
IMC	inspection manual chapter
IQI	image quality indicator
ITAAC	Inspections, Tests, Analysis, and Acceptance Criteria
MCR	main control room
N&D	nonconformance and disposition
NCR	nonconformance report
NDE	nondestructive examination
NQA-1	ASME Nuclear Quality Assurance Program
PRHR HX	passive residual heat removal heat exchanger
PT	liquid penetrant test
PWHT	post weld heat treatment
PXS	passive core cooling system
PZR	pressurizer
QC	quality control
RCS	reactor coolant system
RPE	registered professional engineer
RPV	reactor pressure vessel
RT	radiographic test
SFS	spent fuel pool cooling system
SMAW	shielded metal arc welding
SNC	Southern Nuclear Company
SSC	structures, systems, and components
UFSAR	Updated Final Safety Analysis Report
UT	ultrasonic test

WDS	weld data sheet
WEC	Westinghouse
WMR	welding material requisition

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	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested. Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability. Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.	The ASME Code Section III design reports exist for the as-built components and piping identified in Tables 2.1.2□1 and 2.1.2□2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Table 2.1.2□1 and Table 2.1.2□2 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that each of the as-built lines identified in Table 2.1.2-2 for which functional capability is required meets the requirements for functional capability. An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the dynamic effects of a line break is provided.

		Table 2.1.2-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability. 6. Each of the as-built lines identified in Table 2.1.2-2 as designed for LBB meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.		
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.

90	2.2.01.01	1. The functional arrangement of the CNS and associated systems is as described in the Design Description of this Section 2.2.1.	Inspection of the as-built system will be performed.	The as-built CNS conforms with the functional arrangement as described in the Design Description of this Section 2.2.1.

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.

96	2.2.01.04a.ii	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.	ii) Impact testing will be performed on the containment and pressure-retaining penetration materials in accordance with the ASME Code Section III, Subsection NE, to confirm the fracture toughness of the materials.	ii) A report exists and concludes that the containment and pressure-retaining penetration materials conform with fracture toughness requirements of the ASME Code Section III.
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	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested. Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability. Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.	The ASME Code Section III design reports exist for the as□built components and piping identified in Table 2.2.3□1 and 2.2.3-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Table 2.2.3□1 and 2.2.3-2 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that each of the as-built lines identified in Table 2.2.3-2 for which functional capability is required meets the requirements for functional capability. An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the dynamic effects of a line break is provided.

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

760	3.3.00.02a.i.a	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.a) A report exists which reconciles deviations during construction and concludes that the as-built containment internal structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.
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.
764	3.3.00.02a.ii.a	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.	ii) An inspection of the as□built concrete thickness will be performed.	ii.a) A report exists that concludes that the containment internal structures as-built concrete thicknesses conform to the building sections defined in Table 3.3-1.
766	3.3.00.02a.ii.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.	ii) An inspection of the as□built concrete thickness will be performed.	ii.c) A report exists that concludes that as-built concrete thicknesses of the non-radiologically controlled area of the auxiliary building sections conform to the building sections defined in Table 3.3-1.

767	3.3.00.02a.ii.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.	ii) An inspection of the as□built concrete thickness will be performed.	ii.d) A report exists that concludes that the as-built concrete thicknesses of the radiologically controlled area of the auxiliary building sections conform to the building sections defined in Table 3.3-1.
774	3.3.00.02f	2.f) The key dimensions of nuclear island structures are defined on Table 3.3-5.	An inspection will be performed of the as-built configuration of the nuclear island structures.	A report exists and concludes that the key dimensions of the as-built nuclear island structures are consistent with the dimensions defined on Table 3.3□5.
777	3.3.00.03a	3. Walls and floors of the nuclear island structures as defined on Table 3.3□1 except for designed openings or penetrations provide shielding during normal operations.	Inspection of the as-built nuclear island structures wall and floor thicknesses will be performed.	a) A report exists and concludes that the shield walls and floors of the containment internal structures as defined in Table 3.3-1, except for designed openings or penetrations, are consistent with the concrete wall thicknesses provided in Table 3.3-1.
779	3.3.00.03c	3. Walls and floors of the nuclear island structures as defined on Table 3.3□1 except for designed openings or penetrations provide shielding during normal operations.	Inspection of the as-built nuclear island structures wall and floor thicknesses will be performed.	c) A report exists and concludes that the shield walls and floors of the non□radiologically controlled area of the auxiliary building as defined in Table 3.3-1 except for designed openings or penetrations are consistent with the concrete wall thicknesses provided in Table 3.3-1.

780	3.3.00.03d	3. Walls and floors of the nuclear island structures as defined on Table 3.3□1 except for designed openings or penetrations provide shielding during normal operations.	Inspection of the as-built nuclear island structures wall and floor thicknesses will be performed.	d) A report exists and concludes that the shield walls and floors of the radiologically controlled area of the auxiliary building as defined in Table 3.3-1 except for designed openings or penetrations are consistent with the concrete wall thicknesses provided in Table 3.3-1.
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.