



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

February 13, 2017

Michael Yox  
Regulatory Affairs Director  
Southern Nuclear Operating Company  
7835 River Road, Bldg. 140, Vogtle 3 & 4  
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 - NRC  
INTEGRATED INSPECTION REPORTS 05200025/2016004,  
05200026/2016004

Dear Mr. Yox:

On December 31, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Vogtle Electric Generating Plant (VEGP) Units 3 and 4. The enclosed inspection report documents the inspection results, which the inspectors discussed on January 11<sup>th</sup>, 2017 with Mr. Mark Rauckhorst 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.

Two NRC-identified findings of very low safety significance (Green) were identified during this inspection. These findings were determined to involve violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCV) in accordance with Section 2.3.2.a of the NRC Enforcement Policy.

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

If you disagree with the cross-cutting aspects assigned to either finding, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector office at the Vogtle Electric Generating Plant Units 3 and 4.

In accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," of the NRC's "Agency Rules of Practice and Procedure," 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 Publicly 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). To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the public without redaction.

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

Sincerely,

**/RA/**

Jamie Heisserer, Chief  
Construction Inspection Branch 1  
Division of Construction Oversight (DCO)

Docket Nos.: 05200025, 05200026

License Nos: NPF-91, NPF-92

Enclosure: NRC Inspection Report (IR) 05200025/2016004, 05200026/2016004  
w/attachment: Supplemental Information

Letter to M. Yox from Jamie Heisserer dated

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 - NRC  
 INTEGRATED INSPECTION REPORTS 05200025/2016004,  
 05200026/2016004

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 See Next Page

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**U.S. NUCLEAR REGULATORY COMMISSION**

**Region II**

Docket Numbers: 5200025  
5200026

License Numbers: NPF-91  
NPF-92

Report Numbers: 05200025/2016004  
05200026/2016004

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Vogtle Electric Generating Plant Unit 3  
Vogtle Electric Generating Plant Unit 4

Location: Waynesboro, GA  
Cranberry Township, PA

Inspection Dates: October 1, 2016 through December 31, 2016

Inspectors: P. Braxton, Resident Inspector, DCO  
T. Brimfield, Resident Inspector, DCO  
L. Castelli, Senior Construction Inspector, DCO  
T. Chandler, Resident Inspector, DCO  
C. Cheung, Construction Project Inspector, DCO  
J. Christensen, Construction Inspector, DCO  
G. Crespo, Senior Construction Inspector, DCO  
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S. Temple, Resident Inspector, DCO  
J. Vasquez, Construction Inspector, DCO

Accompanying Personnel: Lauren Kent, Reactor Operations Engineer, NRO  
Alexander Tsirigotis, Mechanical Engineer, NRO  
Yuken Wong, Senior Mechanical Engineer, NRO

Approved by: Jamie Heisserer, Branch Chief  
Construction Inspection Branch 1  
Division of Construction Oversight

Enclosure



## SUMMARY OF FINDINGS

Inspection Report (IR) 05200025/2016004, 05200026/2016004; 10/01/2016 through 12/31/2016; Vogtle Electric Generating Plant Unit 3 and 4, Welding and Foundations and Buildings.

This report covers a three month period of inspection by regional and resident inspectors and announced Inspections, Tests, Analysis, and Inspection Criteria (ITAAC) inspections by regional inspectors. Two green non-cited violations (NCVs) associated with Construction/Installation and the Inspection/Testing cornerstones were identified consistent with the NRC Enforcement Policy, Section 2.3 and the enforcement guidance outlined in enforcement guidance memorandum number EGM-11-006. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 2519, "Construction Significance Determination Process." Construction Cross Cutting Aspects are determined using IMC 0613, "Power Reactor Construction Inspection Reports." The NRC's program for overseeing the construction of commercial nuclear power reactors is described in IMC 2506, "Construction Reactor Oversight Process General Guidance and Basis Document."

### A. NRC-Identified and Self Revealed Findings

Green: The inspectors identified an ITAAC finding of very low safety significance (Green) and associated NCV of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to identify nonconforming welds between seismic category I embed plates and structural modules inside the Vogtle Unit 3 and Unit 4 containment building. The licensee entered this finding into their corrective action program as Condition Reports (CRs) 10308295, 10308213, Corrective Action, Prevention, and Learning (CAPAL) 100436977, SV3-CA01-GNR-000958, SV3-CA02-GNR-000069, and SV4-CA05-GNR-000028.

The inspectors concluded this finding was associated with the Construction Reactor Safety - Inspection/Testing Cornerstone. The finding was considered more-than-minor because the issue was not isolated, similar to example 11 from Appendix E, "Examples of Minor Construction Issues," of IMC 0613, and represented a substantive failure to implement a quality oversight function. Specifically, the inspectors identified at least 33 nonconforming welds that were accepted by at least eight different quality control (QC) inspectors. The inspectors determined the finding was of very low safety significance (Green) because the finding was associated with Row 1 of the AP1000 Construction Significance Determination Matrix and the containment internal structures basemat was associated with the Intermediate Risk of the Systems/Structures Risk Importance Table for AP1000 Construction Significance Determination Process (SDP) Matrix X-Axis. Furthermore, the licensee was able to provide reasonable assurance that the structure would have been able to meet its design function. The inspectors determined the finding represented an ITAAC finding because it was material to the acceptance criteria of Vogtle Unit 3 and Unit 4 ITAAC 760, in that, if left uncorrected, the licensee could not show that the acceptance criteria of these ITAAC were met. The acceptance criteria of Vogtle

Unit 3 and Unit 4 ITAAC 760 requires that all deviations between the as-built containment internal structures and the approved design be reconciled (evaluated) such that the as-built structure would withstand the design basis loads without a loss of structural integrity or other safety-related functions. The inspectors determined that the failure of these welds to meet the American Welding Society (AWS) D1.1:2000 and AWS D1.6:1999 visual weld acceptance criteria represented a nonconformance with the approved structural design, which if left uncorrected, represented a deviation from the design that would not have been reconciled by the licensee. The inspectors screened the finding for a possible construction safety focus component (CSFC) aspect in accordance with Appendix F, "Construction Cross-Cutting Areas and Aspects," of IMC 0613, "Power Reactor Construction Inspection Reports." This finding has a cross-cutting aspect in the area of Safety Conscious Work Environment, avoid complacency, because the licensee did not assure that individuals adequately recognized and planned for the possibility of mistakes, latent issues, and inherent risk while expecting successful outcomes, in that multiple QC inspectors failed to consider that the ends of the Complete Joint Penetration (CJP) welds were within the scope of the inspection and even though the front sides of the welds were satisfactory the ends were nonconforming. [H.12]. (Section 1A32)

Green: The inspectors identified an ITAAC finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion IX, "Control of Special Processes" for Southern Nuclear Operating Company's (SNC) failure through their contractor Westinghouse Electric Company (WEC) to adequately implement measures to assure that special processes, including welding, are accomplished in accordance with applicable codes. The licensee entered this finding into their corrective action program as SNC CR 10320757 and WEC CAPAL System Issue ID 100436639.

The inspectors concluded the finding was associated with the Construction/Installation Cornerstone. The finding was considered more-than-minor because the performance deficiency represented a substantive failure to adequately implement a quality assurance (QA) measure that rendered the quality of an SSC indeterminate. The finding is also similar to IMC 0613, "Power Reactor Construction Inspection Report", Appendix E, example 6 which indicates, in part, that a WPS qualification issue is not minor if it is related to a change in an essential variable, and the WPS was required to be re-qualified. The inspectors evaluated the finding in accordance with IMC 2519, "Construction Significance Determination Process," and determined the finding was of very low safety significance (Green) because the finding affected a portion of a structure in the intermediate column of the risk importance table. The inspectors determined that the finding represented an ITAAC finding because it was material to the acceptance criteria of VEGP Unit 3 ITAAC 761, in that, if left uncorrected, the licensee may not have been able to demonstrate that the acceptance criteria of this ITAAC was met. The acceptance criteria of this ITAAC require 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 determined that the failure to adequately implement measures to assure that special processes, including welding, are accomplished in accordance with applicable codes may have resulted in a deviation from the approved design that would not have been reconciled by the licensee. The inspectors

reviewed the finding for a possible cross-cutting aspect in accordance with IMC 0613 Appendix F, "Construction Cross-Cutting Areas and Aspects," and determined the finding has a cross-cutting aspect in the Human Performance area because the licensee did not recognize that the WPS was not qualified in accordance with AWS D1.4-98. [H.9]. (Section 1A34)

**B. Licensee-Identified Violations**

None

## REPORT DETAILS

### Summary of Plant Construction Status

During this reporting period in Unit 3 the Shield building course 05 and 06 modules were placed into the Nuclear Island, the first reinforced concrete wall of the East Shield building was poured and floors at the 100' elevation began construction. In containment, concrete was placed up to 98' in the reactor vessel cavity compartment and 96' in other parts of containment. The direct vessel injection modules Q223 and Q233 arrived onsite and were placed in containment and the Reactor Vessel was installed.

In Unit 4, in containment, concrete was placed up to 83'6". In the Auxiliary building, floors at 82'6" were installed. CA01, which makes up the reactor vessel cavity, refueling canal, and portions of the steam generator compartments was installed in the Nuclear Island. In the shield building, the first structural steel module was placed. Onsite fabrication began of CA03, which makes up the west wall of the In-containment Refueling Water Storage Tank (IRWST) and CA02, which forms the north east wall of the IRWST.

### 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 2.1.01.06.ii (7) / Family 13E  
(Unit 4) ITAAC Number 2.1.01.06.ii (7) / Family 13E

#### a. Inspection Scope

The inspectors performed document reviews associated with ITAAC Number 2.1.01.06.ii (7). The inspectors used the following NRC Inspection Procedures (IPs)/sections to perform this inspection:

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

The inspectors reviewed the Equipment Qualification Data Packages (EQDPs) for the following components:

- Refueling Machine (FHS-FH-01)
- Fuel Handling Machine (FHS-FH-02)

For the components listed above, the inspectors reviewed the analysis reports to verify that the design codes and standards, analysis methodology, and seismic response spectra were consistent with the WEC design specifications, and the acceptance criteria as stated in the design specifications and ITAAC were met. The inspectors determined whether the design specifications and analysis reports used the most up-to-date seismic response spectrum input.

b. Findings

No findings were identified.

1A02 (Unit 3) ITAAC Number 2.1.01.07.iv (11) / Family 13F  
(Unit 4) ITAAC Number 2.1.01.07.iv (11) / Family 13F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.01.07.iv (11). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed the following technical reports associated with the spent fuel storage racks to determine if the racks could withstand design basis dropped spent fuel assembly loads and maintain the calculated effective neutron multiplication factor required by 10 CFR 50.68(1) limits:

- APP-GW-GLR-033, "Spent Fuel Storage Racks Structural/Seismic Analysis", Rev. 5
- APP-GW-GLR-029, "AP1000 Spent Fuel Storage Racks Criticality Analysis", Rev. 4

b. Findings

No findings were identified.

1A03 (Unit 3) ITAAC Number 2.1.02.02b (14) / Family 03F  
(Unit 4) ITAAC Number 2.1.02.02b (14) / Family 03F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.02b (14). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.16-02.02 - Design Input
- 65001.16-02.03 - Design Documents
- 65001.16-02.04 - Design Analysis
- 65001.16-02.05 - Design Verification
- 65001.20-Inspection of Safety-Related Piping DAC-Related ITAAC

The inspectors interviewed personnel and reviewed documents associated with the reactor coolant system (RCS) piping design at the Westinghouse world headquarters facility at Cranberry Township, PA, to verify if the piping design was completed in accordance with the requirements contained in the Updated Final Safety Analysis Report (UFSAR), American Society of Mechanical Engineers (ASME) Code Section III, and 10 CFR 50.55a. Specifically, the inspectors performed this review to determine if:

- processes used for piping design calculations, design control, and records control met the technical and quality requirements contained in the UFSAR and the ASME Code, Section III, Subsections NCA and NB; and
- design drawings, specifications, and records were consistent with the analyzed configurations.

The inspectors performed these reviews for the following lines:

- Reactor Coolant Loop Hot and Cold Legs (RCS-L001A/B and RCS-L002A/B/C/D)
- Pressurizer Spray Piping (RCS-L106, RCS-L110A/B, RCS-L212A/B, RCS-L213, and RCS-L215)

The inspectors reviewed the applicable piping design specifications for each line to verify the methodology used and the design inputs were as specified in the UFSAR and as required by the ASME Code. The inspectors reviewed aspects such as the code year and edition and code cases; materials, manufacturing, testing and examination, and QA requirements; design inputs; and load conditions and combinations. The inspectors reviewed the Design Reports/Stress Reports to determine if the design met the applicable design specification and that the design was developed using the methodology called out in the UFSAR and the ASME Code.

The inspectors reviewed piping analysis reports to determine if:

- calculations were readily retrievable, controlled, and identified by subject, originator, reviewer, approver, and date and revisions were easily retrievable and subjected to the same rigor of the original approval;
- documentation included the objective, inputs and their sources, background data, assumptions, and computer inputs and conclusions; and
- design verification was performed by a competent individual or group other than those who performed the original design.

For the piping analyses calculations, the inspectors reviewed the Design Reports/Stress Reports to verify if the resulting design met the Design Specification and that the design was developed using the methodology called out in the UFSAR and

the ASME Code. The inspectors reviewed the piping analyses to determine if the following were adequately evaluated:

- pipe size, schedule, wall thickness, and materials;
- loading combinations;
- modeling of additional masses due to weight from support members/snubbers/springs and branch piping;
- assumptions and open items (e.g., valve weight) in the design report;
- piping package model scope including decoupling criteria;
- thermal and seismic analysis including damping value, response spectra/time history input, and seismic anchor movement;
- dynamic analysis considerations such as valve open/closure events;
- ASME Code stress qualification delineated in Subsection NB-3600; and
- the overall functional capability of the piping system

b. Findings

No findings were identified.

1A04 (Unit 3) ITAAC Number 2.1.02.08d.vii (38) / Family 03A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.08d.vii (38). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed documents and records identified by the licensee to support the closure of ITAAC 2.1.02.08d.vii. Specifically, the inspectors reviewed the ITAAC Principal Closure Document (PCD), SV3-MW01-Z0R-002, "AP1000 ADS Sparger - Vogtle Unit 3 (SV3) Flow Area As-Built Analysis," Revision 0, along with the PCD's references, to verify inspection of each Automatic Depressurization System (ADS) sparger was conducted to determine the flow area through the sparger holes was greater than 274 square inches.

The inspectors reviewed the as-built dimensions and area calculations for ADS spargers SV3-PXS-MW-01A and SV3-PXS-MW-01B to verify the measurements met the requirements of Appendix C of the COL, Chapters 5 and 15 of the FSAR, and design changes approved in Engineering & Design Coordination Report (E&DCR) APP-MW01-GEF-007, "Revised Dimensions of MW01 Sparger with No Changes in Geometry," Revision 0. Specifically, the inspectors reviewed the supporting documentation to verify:

- each sparger had four arms, with 350 flow holes apiece, totaling to 1400 flow holes per ADS sparger;
- each flow hole diameter was 0.500" +0.015"/-0.000";

- the measuring and test equipment (M&TE) used to measure each flow hole was properly calibrated; and
- the total flow area of each sparger was greater than 274 square inches.

b. Findings

No findings were identified.

1A05 (Unit 3) ITAAC Number 2.1.03.02c (71) / Family 05A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.02c (71). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.05 - Inspection of ITAAC-Related Installation of Reactor Pressure Vessel and Internals
- 65001.05-02.07 - Records Review
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors reviewed the as-built drawings for the Unit 3 reactor vessel to identify any deviations associated with the Reactor Vessel key dimensions and to verify the inside diameter of the inlet nozzles and outlet nozzles met design tolerances. The inspectors also performed direct measurements of the inside diameter of the inlet nozzles and outlet nozzles prior to reactor vessel installation. The inspectors determined there were no deviations associated with the reactor vessel key dimensions. The inspectors also determined that the following reactor vessel dimensions, as shown on Vogtle Unit 3 COL Appendix C Figure 2.1.3-3, "Reactor Vessel Arrangement," were within the acceptable variation as listed in Vogtle Unit 3 COL Appendix C Table 2.1.3-4, "Key Dimensions and Acceptable Variations of the Reactor Vessel and Internals":

- Dimension D: Reactor Vessel inlet nozzle inside diameter at safe end; and
- Dimension E: Reactor Vessel outlet nozzle inside diameter at safe end.

b. Findings

No findings were identified.

1A06 (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:

- 65001.02 - Inspection of ITAAC-Related Installation of Structural Concrete
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.03 - Special Considerations
- 65001.05 - Inspection of ITAAC-Related Installation of Reactor Pressure Vessel and Internals
- 65001.05-02.02 - Storage and Handling
- 65001.05-02.03 - RPV Installation
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.03-Observation of Fabrication Activities

The inspectors performed an inspection of construction activities associated with the installation of the Unit 3 reactor vessel. Prior to concrete placement inside the Unit 3 reactor cavity to elevation 98'-0", the inspectors reviewed the installation of the reactor vessel main embedments and the interior anchor bolts of the four reactor vessel supports to determine if:

- Embedments and anchor bolts were installed in accordance with the approved procedures and drawings; and
- Embedments and anchor bolts were located properly in the structure, were secured properly and free of concrete and excessive rust, and had proper clearances.

The inspectors observed the concrete placement inside the Unit 3 reactor cavity from elevation 87'-6" to 98'-0". The inspectors observed in process testing of the fresh concrete, reviewed concrete batch tickets, and observed the final finish and curing techniques used. The inspectors observed the pour, reviewed the applicable concrete procedures and specifications, and reviewed the work package to determine whether:

- Contractors had approved implementing procedures, which addressed the requirements of applicable American Concrete Institute (ACI) codes, prescribed adequate methods of QC inspection, and specified appropriate quantitative and qualitative acceptance criteria;
- Batch plant was producing the specified mix, using the proper qualified and approved constituents;
- Concrete form work, embedments, and reinforcing steel were free of foreign materials and excess rust;
- Concrete was placed and consolidated by properly trained individuals using the proper equipment;
- Vibrators were used in accordance with the approved concrete placement plan;
- Fresh concrete tests; including slump, air content, temperature, and unit weight were performed by qualified personnel and equipment at the appropriate intervals; and

- Proper finishing, curing, and temperature monitoring techniques and equipment were utilized.

In addition, inspectors reviewed applicable design specifications, E&DCRs, nonconformance reports, and corrective action reports associated with concrete placement inside the Unit 3 reactor cavity from elevation 87'-6" to 98'-0" and embedment installation to determine if:

- Licensee was identifying problems at an appropriate threshold and entering them into the corrective action program;
- Nonconforming items were adequately identified and segregated; and
- Deviations from requirements were effectively dispositioned.

The inspectors observed the installation and mounting of the Unit 3 reactor vessel supports. The inspectors observed machining of the embedment plates and positioning of the reactor vessel supports on the embedment plates. The inspectors observed the boring and tapping of dowel stud holes through the reactor vessel support flange and embedment plates to determine if:

- Nonconformance reports documenting deficiencies identified during the machining of embedment plates had been documented and properly dispositioned prior to placement of the reactor vessel supports;
- Nonconformance reports documenting deficiencies identified during the boring and tapping of dowel stud holes through the reactor vessel support flange and embedment plates had been documented and properly dispositioned;
- Dowel stud holes were machined in accordance with the approved procedures and drawings;
- Individuals performing the machining activities were qualified to perform the associated work procedures;
- Supervisors and QC inspectors provided appropriate oversight during the installation activities; and
- Adequate foreign material exclusion controls were put in place following the boring of the dowel stud holes.

The inspectors observed the grout placement below the Unit 3 reactor vessel supports. The inspectors observed in process testing of the grout, and observed the final finish and curing techniques used. The inspectors observed the pour, reviewed the applicable placement procedures and specifications, and reviewed the work package to determine whether:

- Contractors had approved implementing procedures, which addressed the requirements of applicable ACI codes, prescribed adequate methods of QC inspection, and specified appropriate quantitative and qualitative acceptance criteria;
- Grout form work, embedments, and reinforcing steel were free of foreign materials and excess rust; and
- Grout was placed by properly trained individuals using the proper equipment.

The inspectors attended the readiness review which was held to discuss the process of transporting, rigging, and lifting of the reactor vessel and also attended the pre-job brief. The inspectors observed the upending and installation of the Unit 3 reactor vessel onto

the reactor vessel supports in the reactor cavity. The inspector observed the upending and installation of the reactor vessel, reviewed the approved installation procedure, and reviewed the applicable rigging plan to ensure that the:

- Reactor vessel rigging was properly installed on the heavy lift derrick prior to the lift;
- Reactor vessel and J-skid were upended in accordance with the approved lift procedure;
- Foreign material (e.g., tape and sheet plastic) were removed from the exterior of the vessel prior to installation in the reactor cavity;
- Reactor vessel did not make physical contact with the metal reflective (MRI) insulation package while being inserted into the reactor cavity; and
- Reactor vessel was properly placed on the reactor vessel support leveling screws.

b. Findings

No findings were identified.

1A07 (Unit 3) ITAAC Number 2.1.03.06.ii (76) / Family 05E  
(Unit 4) ITAAC Number 2.1.03.06.ii (76) / Family 05E

a. Inspection Scope

The inspectors performed document reviews associated with ITAAC Number 2.1.03.06.ii (76). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.E-02.01-Design Basis Requirements
- 65001.E-02.03-Qualification
- 65001.E-02.04-Documentation
- 65001.E-02.06-Problem Identification and Resolution
- 65001.E-Inspection of the ITAAC-Related Qualification Program

The inspectors reviewed the EQDPs for the following components:

- Excore Source Range Detectors (RXS-JE-NE001A, RXS-JE-NE001B, RXS-JE-NE001C, and RXS-JE-NE001D)
- Excore Intermediate Range Detectors (RXS-JE-NE002A, RXS-JE-NE002B, RXS-JE-NE002C, and RXS-JE-NE002D)
- Excore Power Range Detectors (RXS-JE-NE003A, RXS-JE-NE003B, RXS-JE-NE003C, RXS-JE-NE003D, RXS-JE-NE004A, RXS-JE-NE004B, RXS-JE-NE004C, and RXS-JE-NE004D)

The inspectors reviewed the WEC design specifications to verify that the seismic classification, and implementation of standards from the Institute of Electrical and Electronic Engineers (IEEE) 344-1987 and ASME QME-1-2007, test methodologies, and required response spectra were consistent with the FSAR descriptions. The inspectors reviewed the test reports to verify that the design codes and standards, test methodology, and seismic response spectra were consistent with the design

specifications, and the acceptance criteria as stated in the design specifications and ITAAC were met. The inspectors reviewed test reports to verify that the test response spectra enveloped the required response spectra, including a 10 percent margin, as specified in IEEE 344 - 1987. Additionally, the inspectors verified that the functionality of the detectors were monitored during and after the tests as specified in IEEE 344-1987.

The inspectors reviewed seismic design criteria to verify that the number of safe shutdown earthquake cycles for the test was consistent with the provisions in IEEE 344-1987. The inspectors reviewed the Seismic Floor Response Spectra and Soil Structure Interaction Analysis of High Frequency Spectra to verify that required response spectra enveloped the certified seismic design response spectra and hard rock high frequency spectra for high frequency sensitive equipment as stated in the FSAR. The inspectors also reviewed the revised response spectra from the later seismic analysis to verify that the test response spectra used in the test enveloped the revised response spectra with the margin specified in IEEE 344-1987.

b. Findings

No findings were identified.

1A08 (Unit 3) ITAAC Number 2.1.03.09a.i (81) / Family 09F  
(Unit 4) ITAAC Number 2.1.03.09a.i (81) / Family 09F

a. Inspection Scope

The inspectors performed document reviews associated with ITAAC Number 2.1.03.09a.i (81). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.E-02.01-Design Basis Requirements
- 65001.E-02.03-Qualification
- 65001.E-02.04-Documentation
- 65001.E-Inspection of the ITAAC-Related Qualification Program

The inspectors reviewed the EQDPs for the following components:

- Excore Source Range Detectors (RXS-JE-NE001A, RXS-JE-NE001B, RXS-JE-NE001C, and RXS-JE-NE001D)
- Excore Intermediate Range Detectors (RXS-JE-NE002A, RXS-JE-NE002B, RXS-JE-NE002C, and RXS-JE-NE002D)
- Excore Power Range Detectors (RXS-JE-NE003A, RXS-JE-NE003B, RXS-JE-NE003C, RXS-JE-NE003D, RXS-JE-NE004A, RXS-JE-NE004B, RXS-JE-NE004C, and RXS-JE-NE004D)

The inspectors reviewed WEC documentation including qualification reports, test plans, and evaluations that were developed as required by 10 CFR 50.49. The inspectors also interviewed WEC staff responsible for the environmental qualification of the source range, intermediate range, and power range nuclear instrument detectors. The inspectors reviewed EQDPs and related documents for Nuclear Instrumentation Detectors to verify that the components covered by this commodity code were adequately qualified. The inspectors focused on:

- Harsh Environment Qualifications
- Thermal Aging
- Radiation Aging
- LOCA Testing

The inspectors reviewed applicable test procedures and test records related to qualification for harsh environment to verify that qualification activities were adequately controlled and that methodologies conformed to applicable regulatory guidance and industry standards.

The inspectors reviewed the environmental profiles to determine if they enveloped the accident analysis data documented in APP-GW-VP-030, AP1000 Plant Environmental Conditions, and APP-GW-VPR-008, Evaluation of Environmental Conditions Envelope Exceedances. The inspectors reviewed WEC's component specific evaluations of the impacts on the qualification testing that was performed. The inspectors reviewed the evaluation of intermediate range detectors contained in WEC document APP-JE92-VPR-001 to determine if the WEC specified zone 1 (in-containment) profile utilized for performing the testing was conservative and provided appropriate margins for pressure and temperature.

b. Findings

No findings were identified.

1A09 (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:

- 65001.11-02.11 - Problem Identification and Resolution
- 65001.A.02.03 - Independent Assessment/Masurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed a functional arrangement walk-down for three containment vessel (CV) penetrations:

- SV3-RNS-PY-C01 - P19, RCS to Residual Heat Removal System (RHR) Pump Out;
- SV3-RNS-PY-C02 - P20, RHR Pump to RCS In, and;
- SV3-SFS-PY-C02 - P22, IRWST Reference Cavity Purification Out.

Specifically, the inspectors reviewed the as-built condition to verify compliance with Figure 2.2.1-1 of Appendix C of the COL, such that the sampled CV penetrations are located as per the design. The inspectors reviewed the as-built survey records and compared them to the isometric design drawings to ensure that the three penetrations are within acceptable design tolerances, as described in APP-GW-P0-008. The inspectors also reviewed associated non-conformances and deficiency reports to ensure any deviations were adequately addressed.

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:

- 65001.11-02.07 - Offsite Fabrication of Assemblies
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) fabrication records associated with the assembly of the upper equipment hatch (H01) cover to verify conformance with the requirements of the WEC CV Design Specification and ASME Section III, Subsection NE. Specifically, the inspectors reviewed the ASME Form N-2 code data report (manufactured and certified by IHI for CB&I Services, now WECTEC) to determine whether the hatch cover was traceable, fabricated to the correct dimensions and design thicknesses, hydrostatically tested at a pressure of 59 psig, and approved by an Authorized Nuclear Inspector (ANI).

The inspectors reviewed two base material Certified Material Test Reports (CMTRs) of the hatch cover to determine whether the chemical compositions, mechanical properties, impact testing, heat treatments, and nondestructive examination (NDE) met the applicable requirements of ASME Section II and III. The inspectors also visually

inspected the hatch cover to verify that the nameplate was traceable to the fabrication records.

b. Findings

No findings were identified.

1A11 (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.B-02.06-Records

The inspectors reviewed the CMTRs for penetrations SV3-RNS-PY-C01 (P19), SV3-RNS-PY-C02 (P20), and SV3-SFS-PY-C02 (P22) to determine whether the materials used for the flued heads, penetration sleeves, guard pipe (P19 only), and sleeve extensions were consistent with the materials specified by SV3-MV50-V8-001, "AP1000 Containment Vessel Penetration Installation Specification." The inspectors reviewed the CMTRs to determine whether the materials met the requirements of the relevant specifications for heat treatment, chemical and physical requirements, and required NDE.

b. Findings

No findings were identified.

1A12 (Unit 3) ITAAC Number 2.2.01.03a (93) / Family 06B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.03a (93). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.11-02.04 - Post Weld Heat Treatment
- 65001.11-02.05 - Nondestructive Examination
- 65001.B-02.03-Welder Qualification
- 65001.B-02.06-Records
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed IHI fabrication records associated with the assembly of the upper equipment hatch (H01) cover. Specifically, the inspectors reviewed NDE records of four pressure boundary welds (WF23-AA-C, WF23-AA-CL, WF23-AA-L1, and WF23-AA-L2) to verify conformance with the requirements of ASME Section III, Subsection NE

The inspectors reviewed three weld filler metal CMTRs associated with four welds (WF23-AA-C, WF23-AA-CL, WF23-AA-L1, and WF23-AA-L2) on the hatch cover to determine whether the chemical compositions, mechanical properties, impact testing, heat treatments, and NDE met the applicable requirements of ASME Section II and III. The inspectors also visually inspected the hatch cover to verify the welds looked acceptable.

The inspectors reviewed final NDE reports to verify NDE was performed and found acceptable by the proper certification level of NDE personnel and in accordance with applicable sections of the ASME Code. Specifically, the inspectors reviewed eight magnetic particle examination (MT) records to verify the proper method, flux type, yoke lifting power, visible light source, and surface temperature requirements were met, and there were no unacceptable defects on the surface of the weld. The inspectors also reviewed two radiography examination records and the associated film to verify the density and sensitivity measurements were within the allowable ranges, and there were no rejectable indications in the welds.

In addition, the inspectors reviewed the welding procedure specification (WPS) for all four pressure boundary welds to verify the following were permitted:

- The postweld heat treatment (PWHT) hold times and temperatures indicated on the PWHT record for the entire hatch cover; and
- The qualified ranges of essential variables recorded on a sample of reviewed welder qualification records.

b. Findings

No findings were identified.

1A13 (Unit 3) ITAAC Number 2.2.01.03a (93) / Family 06B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.03a (93). The inspectors used the following NRC IPs/sections to perform this inspection:

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



- 65001.B-02.06-Records

The inspectors reviewed the completed weld data sheet records for three CV penetrations SV3-RNS-PY-C01 (P19, RCS to RHR Pump Out), SV3-RNS-PY-C02 (P20, RHR Pump to RCS In), and SV3-SFS-PY-C02 (P22, IRWST Reference Cavity Purification Out). Specifically, the inspectors reviewed welding records for the following welds:

- Weld Number SV3-RNS-PY-C01-1 (P19 Sleeve Extension to Penetration Sleeve, Pressure Boundary)
- Weld Number SV3-RNS-PY-C01-2 (P19 Guard Pipe to Penetration Sleeve, Pressure Boundary)
- Weld Number SV3-RNS-PY-C01-3 (P19 Flued Head to Guard Pipe, Pressure Boundary)
- Weld Number SV3-RNS-PY-C02-1 (P20 Sleeve Extension to Penetration Sleeve, Non-Pressure Boundary)
- Weld Number SV3-RNS-PY-C02-2 (P20 Flued Head to Penetration Sleeve, Pressure Boundary)
- Weld Number SV3-SFS-PY-C01-1 (P22 Sleeve Extension to Penetration Sleeve, Non-Pressure Boundary)
- Weld Number SV3-SFS-PY-C01-2 (P22 Flued Head to Penetration Sleeve, Pressure Boundary)

The inspectors reviewed these records to determine whether:

- the welding activity was properly documented in the work traveler;
- records provided adequate traceability to all aspects of the welding activity, including traceability to the welder who performed the work;
- the records adequately documented the following attributes: reference to procedure and welder qualifications, inspector qualifications, weld material certifications and receipt inspection reports, weld data or process records (travelers), weld maps, weld inspection records, NDE records;
- the records were appropriately retained and stored in accordance with QA program requirements;
- required inspections were identified in the traveler with hold points, as appropriate
- accepted, rejected, and repaired items were documented in written reports; and
- records of receipt inspections were appropriately referenced.

The inspectors reviewed final radiography examination for the outside CV welds between the flued head and penetration sleeves and the inside CV welds between the extension sleeves and penetration sleeves for the following mechanical penetrations (and associated weld numbers):

- P19: SV3-RNS-PY-C01-1 (inside containment) and SV3-RNS-PY-C01-2 (outside containment);
- P20: SV3-RNS-PY-C02-1 (inside containment) and SV3-RNS-PY-C02-2 (outside containment); and
- P22: SV3-SFS-PY-C02-1 (inside containment) and SV3-SFS-PY-C02-2 (outside containment).

Specifically, the inspectors reviewed the radiography examination reports and the associated film to verify (1) the density and sensitivity measurements were within the allowable ranges, (2) the examinations were performed and reviewed by qualified NDE Level II or III personnel, and (3) there were no rejectable indications in accordance with the acceptance criteria of ASME Section III.

b. Findings

No findings were identified.

1A14 (Unit 3) 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 IHI Corporation welding records associated with pressure boundary materials of the Unit 3 CV upper equipment hatch (H01) cover to verify that fracture toughness requirements were met in accordance with ASME Code Section II, Part A, SA 738 and Part C, SFA 5.28, as well as Section III, Division 1, Subsection NE. Specifically, the inspectors reviewed two CMTRs for the base metal and three CMTRs for the weld filler metal to verify the materials met all applicable Charpy V-Notch impact testing requirements.

b. Findings

No findings were identified.

1A15 (Unit 3) ITAAC Number 2.2.01.05.ii (99) / Family 11E  
(Unit 4) ITAAC Number 2.2.01.05.ii (99) / Family 11E

a. Inspection Scope

The inspectors performed document reviews associated with ITAAC Number 2.2.01.05.ii (99). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed associated EQDP and Equipment Qualification Summary Report (EQSR) limited to valve CAS-PL-V204 to determine if the valve qualification provided evidence that WEC design specifications acceptance criteria requirements were met.

The inspectors reviewed the design change to the WEC design specification to verify that the impact on the EQDP and EQSR were properly evaluated, to determine whether they received a proper level of engineering review, and if the changes were incorporated into all affected documents. The inspectors reviewed the licensing impact determination screening associated with Appendix 3D of the UFSAR. The inspectors evaluated these changes to verify that the identified departures were adequately described and justified, and were supported by screening evaluations that conformed to the requirements of site-approved procedures and the requirements of 10 CFR Part 52, Appendix D, Section VIII, Processes for Changes and Departures.

b. Findings

No findings were identified.

1A16 (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
- 65001.06-02.03 - Post Installation Activities
- 65001.06-02.04 - Testing and Verification
- 65001.06-02.05 - Problem Identification and Resolution
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors reviewed the module design and fabrication records for PXS module Q2-33, which contains valves and pipe sections that make up portions of the Direct Vessel Injection (DVI) line A, manufactured by AECON Industrial.

The inspectors reviewed CMTRs and certificate of conformance (COC) on six weld filler material purchases and one pipe spool module to verify compliance with ASME Section IX and Section III. The inspectors also reviewed numerous NDE reports covering both accepted and rejected examination results to verify that the tests were performed in

accordance with vendor procedure and were performed by qualified personnel. These NDE reports were for MT, liquid penetrant testing (PT), radiographic testing, ultrasonic testing (UT), and visual testing (VT). This included a review of calibration record/information and the pre service verification information for the equipment used, if required.

Additionally, the inspectors reviewed hydrostatic test results for sections of the module Q2-33. The inspectors reviewed the calibration records for the hydrostatic test equipment to verify that they were properly calibrated and within calibration date. Finally, the inspectors reviewed a sample of nonconformance reports, specifically those with "repair" or "use-as-is" resolutions to verify that the nonconforming condition was repaired or accepted in accordance with ASME code, regulation, and quality and technical requirements.

b. Findings

No findings were identified.

1A17 (Unit 3) ITAAC Number 2.2.03.02b (160) / Family 03F  
(Unit 4) ITAAC Number 2.2.03.02b (160) / Family 03F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.02b (160). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.16-02.02 - Design Input
- 65001.16-02.03 - Design Documents
- 65001.16-02.04 - Design Analysis
- 65001.16-02.05 - Design Verification
- 65001.20-Inspection of Safety-Related Piping DAC-Related ITAAC

The inspectors interviewed personnel and reviewed documents associated with the passive core cooling system (PXS) piping design at the Westinghouse world headquarters facility at Cranberry Township, PA, to verify if the piping design was completed in accordance with the requirements contained in the UFSAR, ASME Section III, and 10 CFR 50.55a. Specifically, the inspectors performed this review to determine if:

- processes used for piping design calculations, design control, and records control met the technical and quality requirements contained in the UFSAR and the ASME Code, Section III, Subsections NCA and NB; and
- design drawings, specifications, and records were consistent with the analyzed configurations.

The inspectors performed these reviews for the following lines:

- Core Makeup Tank (CMT) A Inlet Line (RCS-L118A; PXS-L007A, PXS-L015A, PXS-L016A, PXS-L017A, PXS-L018A, PXS-L020A, and PXS-L021A)

The inspectors reviewed the applicable piping design specifications for each line to verify the methodology used and the design inputs were as specified in the UFSAR and as required by the ASME Code. The inspectors reviewed aspects such as the code year and edition and code cases; materials, manufacturing, testing and examination, and QA requirements; design inputs; and load conditions and combinations. The inspectors reviewed the Design Reports/Stress Reports to determine if the design met the applicable design specification and that the design was developed using the methodology called out in the UFSAR and the ASME Code.

The inspectors reviewed piping analysis reports to determine if:

- calculations were readily retrievable, controlled, and identified by subject, originator, reviewer, approver, and date and revisions were easily retrievable and subjected to the same rigor of the original approval;
- documentation included the objective, inputs and their sources, background data, assumptions, and computer inputs and conclusions; and
- design verification was performed by a competent individual or group other than those who performed the original design.

For the piping analyses calculations, the inspectors reviewed the Design Reports/Stress Reports to verify if the resulting design met the Design Specification and that the design was developed using the methodology described in the UFSAR and the ASME Code. The inspectors reviewed the piping analyses to determine if the following were adequately evaluated:

- pipe size, schedule, wall thickness, and materials;
- loading combinations;
- modeling of additional masses due to weight from support members/snubbers/springs and branch piping;
- assumptions and open items (e.g., valve weight) in the design report;
- piping package model scope including decoupling criteria;
- thermal and seismic analysis including damping value, response spectra/time history input, and seismic anchor movement;
- dynamic analysis considerations such as valve open/closure events;
- ASME Code stress qualification delineated in Subsection NB-3600; and
- the overall functional capability of the piping system

b. Findings

No findings were identified.

1A18 (Unit 3) ITAAC Number 2.2.03.02b (160) / Family 03F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.02b (160). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.03-02.07 - Review of Records
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors reviewed the module design and fabrication records for PXS module Q2-33, which contains valves and pipe sections that make up portions of the DVI line A, manufactured by AECON Industrial.

The inspectors reviewed CMTRs and COCs on one pipe spool module to verify compliance with ASME Section III. Additionally, the inspectors reviewed hydrostatic test results for sections of the module Q2-33. The inspectors reviewed the calibration records for the hydrostatic test equipment to verify that they were properly calibrated and within calibration date. Finally, the inspectors reviewed a sample of nonconformance reports, specifically those with "repair" or "use-as-is" resolutions to verify that the nonconforming condition was repaired or accepted in accordance with ASME code, regulation, and quality and technical requirements.

b. Findings

No findings were identified.

1A19 (Unit 3) ITAAC Number 2.2.03.03b (162) / Family 03B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.03b (162). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.03-02.03 - Installation and Welding
- 65001.B-02.06-Records
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors reviewed the module design and fabrication records for PXS module Q2-33, which contains valves and pipe sections that make up portions of the DVI line A, manufactured by AECON Industrial.

The inspectors reviewed CMTRs and COCs on six weld filler material purchases to verify compliance with ASME Section IX and Section III. The inspectors also reviewed numerous NDE reports covering both accepted and rejected examination results to verify that the tests were performed in accordance with vendor procedure and were performed by qualified personnel. These NDE reports were for MT, PT, radiographic testing, UT, and VT. This included a review of calibration record/information and the pre-service verification information for the equipment used, if required.

b. Findings

No findings were identified.

1A20 (Unit 3) ITAAC Number 2.2.03.05a.ii (166) / Family 14E  
(Unit 4) ITAAC Number 2.2.03.05a.ii (166) / Family 14E

a. Inspection Scope

The inspectors performed document reviews associated with ITAAC Number 2.2.03.05a.ii (166). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed the EQDPs for the following components:

- PXS Passive Residual Heat Removal (PRHR) Heat Exchangers (PXS-ME-01)
- PXS Core Makeup Tanks (PXS-MT-02A and PXS-MT-02B)
- PXS Accumulator Tanks (PXS-MT-01A and PXS-MT-01B)

The inspectors reviewed WEC design specifications to verify if the following are consistent with the UFSAR descriptions:

- seismic and quality group classifications,
- design codes (ASME Boiler and Pressure Vessel Code edition 1998 – 2000),
- analysis methodologies,
- load combinations,
- damping ratio, and
- required response spectra.

The inspectors reviewed the analysis reports to verify that the design code, analysis methodology, and seismic response spectra were consistent with the design specifications, and the acceptance criteria as stated in the design specifications and ITAAC were met. The inspectors verified that the WEC seismic analysis used the certified seismic design response spectra for the component seismic analysis is

consistent with the UFSAR. The inspectors reviewed the updated seismic response spectra and the acceptance criteria in the reconciliation document to verify that the seismic analysis based on the earlier seismic response spectra were valid.

b. Findings

No findings were identified.

1A21 (Unit 3) ITAAC Number 2.2.03.08c.ix (194) / Family 06A

a. Inspection Scope

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

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

The inspectors performed an inspection of construction activities associated with the installation of the MRI installed around the exterior of the Unit 3 reactor vessel. The inspectors observed the installation of the MRI on the inside surface of the Unit 3 reactor vessel cavity before the installation of the reactor vessel. The inspectors reviewed the approved installation procedure, observed the installation of the brackets on the reactor cavity walls, interviewed the installers, and observed placement of the MRI and associated flow panels on the brackets to determine if:

- All packing materials were removed from the MRI and flow panels prior to installation;
- Precautions were taken to prevent damage to the MRI and flow panels during placement and mounting;
- Correct drawings and procedures were available to the installers;
- Personnel performing the installation were qualified; and
- Individual MRI panels were located and installed in accordance with the drawings.

b. Findings

No findings were identified.

1A22 (Unit 3) ITAAC Number 2.2.03.08c.x (195) / Family 14F

a. Inspection Scope



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

- 65001.14-02.02 - Design Modification Review
- 65001.14-02.04 - Qualification Criteria
- 65001.14-02.05 - Problem Identification and Resolution
- 65001.F-02.01-Design Document Review
- 65001.F-02.04-General QA Review

The inspectors interviewed personnel and reviewed nonconformance reports, design change documents, specifications, procedures, test reports, and other documents to determine if the service level II (SL II) coatings used inside containment met the design basis requirements for failure as chips (vs. particulates) and for minimum required density to ensure non-transport to the containment recirculation sumps. Specifically, the inspectors:

- reviewed a sample of test and COCs to determine if the approved SL II coatings met the minimum required density of 100 lb/ft<sup>3</sup>;
- reviewed nonconformance reports to determine if the conditions were adequately evaluated by the responsible design organizations and if the disposition was completed in accordance codes, standards, regulations, and quality and technical requirements.
- reviewed a sample of design changes/modifications related to SL II coatings to determine if the changes were completed in accordance codes, standards, regulations, and quality and technical requirements; and
- reviewed the results of design basis testing for the approved SL II coatings and transport calculations to determine if the approved SL II coatings conformed to staff's March 28, 2008 guidance for treatment as degraded qualified coatings as discussed in Section 6.2.1.8.2.3 of NUREG-1793, Supplement 2, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design."

b. Findings

No findings were identified.

1A23 (Unit 3) ITAAC Number 2.2.03.08c.xi (196) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.xi (196). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A- As-Built Attributes for SSCs associated with ITAAC

The inspectors reviewed documents and records identified by the licensee to support the closure of ITAAC 2.2.03.08c.xi. Specifically, the inspectors reviewed the following two documents to verify the CMT inlet diffuser still has a flow area greater than or equal to 165 square inches:

- ITAAC PCD, SV3-MT01-Z0R-201, “AP1000 Core Makeup Tank – Vogtle Unit 3 (SV3) As-Built Analysis,” Revision 0
- ITAAC Completion Package, SVP\_SV0\_004040, “Submittal of Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) Completion Package for Unit 3 ITAAC 2.2.03.08c.xi [COL Index Number 196] (Core Makeup Tank Inlet Diffuser),” dated 07/28/2016

b. Findings

No findings were identified.

1A24 (Unit 3) ITAAC Number 2.2.03.09b (204) / Family 07A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.09b (204). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed documents and records identified by the licensee to support the closure of ITAAC 2.2.03.09b. Specifically, the inspectors reviewed the ITAAC PCD, SV3-PV03-PVR-002, “Inspection Report Confirming Discharge Check Valve Type for the Passive Core Cooling System Accumulator Discharge Check Valves and Core Makeup Tank Discharge Valves,” Revision 0, along with the PCD’s references, to verify the accumulator discharge check valves are of a different check valve type than the CMT discharge check valves.

The inspectors reviewed Westinghouse’s inspection report as well as associated design drawings to confirm the following two different types of check valves were fabricated:

- the accumulator discharge check valves (SV3-PXS-PL-V028A, SV3-PXS-PL-V028B, SV3-PXS-PL-V029A, and SV3-PXS-PL-V029B) utilize a “swing” type check valve; and
- the CMT discharge check valves (SV3-PXS-PL-V016A, SV3-PXS-PL-V016B, SV3-PXS-PL-V017A, and SV3-PXS-PL-V017B) utilize an “inline” type check valve, also known as a “nozzle” check valve.

b. Findings

No findings were identified.

1A25 (Unit 3) ITAAC Number 2.3.02.02b (286) / Family 03F  
(Unit 4) ITAAC Number 2.3.02.02b (286) / Family 03F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.3.02.02b (286). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.16-02.02 - Design Input
- 65001.16-02.03 - Design Documents
- 65001.16-02.04 - Design Analysis
- 65001.16-02.05 - Design Verification
- 65001.20-Inspection of Safety-Related Piping DAC-Related ITAAC

The inspectors interviewed personnel and reviewed documents associated with the chemical and volume control system (CVS) piping design at the Westinghouse world headquarters facility at Cranberry Township, PA, to verify if the piping design was completed in accordance with the requirements contained in the UFSAR, ASME Section III, and 10 CFR 50.55a. Specifically, the inspectors performed this review to determine if:

- processes used for piping design calculations, design control, and records control met the technical and quality requirements contained in the UFSAR and the ASME Code, Section III, Subsections NCA, NC, and ND; and
- design drawings, specifications, and records were consistent with the analyzed configurations.

The inspectors performed these reviews for the following lines:

- CVS Letdown Containment Penetration Line (CVS-L051); and
- CVS Makeup Containment Penetration Line (CVS-L053).

The inspectors reviewed the applicable piping design specifications for each line to verify the methodology used and the design inputs were as specified in the UFSAR and as required by the ASME Code. The inspectors reviewed aspects such as the code year and edition and code cases; materials, manufacturing, testing and examination, and QA requirements; design inputs; and load conditions and combinations. The inspectors reviewed the Design Reports/Stress Reports to determine if the design met the applicable design specification and that the design was developed using the methodology called out in the UFSAR and the ASME Code.

The inspectors reviewed piping analysis reports to determine if:

- calculations were readily retrievable, controlled, and identified by subject, originator, reviewer, approver, and date and revisions were easily retrievable and subjected to the same rigor of the original approval;

- documentation included the objective, inputs and their sources, background data, assumptions, and computer inputs and conclusions; and
- design verification was performed by a competent individual or group other than those who performed the original design.

For the piping analyses calculations, the inspectors reviewed the Design Reports/Stress Reports to verify if the resulting design met the Design Specification and that the design was developed using the methodology described in the UFSAR and the ASME Code. The inspectors reviewed the piping analyses to determine if the following were adequately evaluated:

- pipe size, schedule, wall thickness, and materials;
- loading combinations;
- modeling of additional masses due to weight from support members/snubbers/springs and branch piping;
- assumptions and open items (e.g., valve weight) in the design report;
- piping package model scope including decoupling criteria;
- thermal and seismic analysis including damping value, response spectra/time history input, and seismic anchor movement;
- dynamic analysis considerations such as valve open/closure events;
- ASME Code stress qualification delineated in Subsection NX-3600; and
- the overall functional capability of the piping system

b. Findings

No findings were identified.

1A26 (Unit 3) ITAAC Number 2.3.06.03b (358) / Family 03B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.3.06.03b (358). 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)
- 65001.03-02.07 - Review of Records
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records

The inspectors observed fit-up, in-process welding, and nondestructive testing activities associated with the installation of piping for the Normal Residual Heat Removal (RNS) System. The inspectors performed this inspection to determine whether work activities related to piping systems met requirements for the installation, inspection, and testing in accordance with design specifications, approved drawings and procedures, UFSAR,

and applicable codes and standards. The inspectors also reviewed in-process and completed records to verify that these records were adequate to support the receipt, storage, installation, examination, testing, and material traceability requirements for ASME Class III piping systems.

The inspectors observed the fit-up, root pass, and in-process weld-out for the following welds:

- SV3-RNS-PLW-09A-5; 1" drain line socket weld between Line Numbers L036A and L009A (RNS Pump MP 01A Suction Line);
- SV3-RNS-PLW-161-1; 6" Schedule 80 CJP weld between Line Number L011B (Spool Piece SV3-RNS-PLW-161-1) and RNS Pump MP 01B;
- SV3-RNS-PLW-09B-15; 10" Schedule 80 CJP weld between Line Number L009B and RNS Pump MP 01B;

During the inspection of the above welds, the inspectors reviewed a sample of welding variables to verify they were within the ranges allowed by WPS number WPS1-8.8T01 and the ASME Boiler and Pressure Vessel Code Sections III and IX (1998 edition through 2000 addenda). Specifically, the inspectors reviewed the following attributes: filler metal size and classification, voltage, amperage, travel speed, shielding gas composition, and shielding gas flow rate. The inspectors also verified that the necessary purge had been established for the root pass of weld SV3-RNS-PLW-09B-15.

Furthermore, during the in-process welding, the inspectors reviewed the following attributes to determine if:

- the work was conducted in accordance with a traveler (weld data sheet) that provided for the proper sequencing of the work and that this weld data sheet properly referenced the applicable procedures, drawings, specifications;
- the weld data sheet established adequate hold points as required by the quality inspection plan;
- the weld joint was sufficiently protected from inclement conditions such as high wind;
- surfaces to be welded were smooth, uniform, and free from significant surface discontinuities such as cracks or seams, and free from paint, oil, rust, scale, slag, grease, moisture or other harmful foreign materials that would be detrimental to welding;
- the weld joint geometry, including root opening and fit-up tolerances, was in accordance with the applicable WPS;
- the temperature of the base material at the joint prior to welding met the minimum preheat requirements specified in the welding procedure; and
- the maximum inter-pass temperature was checked to ensure that it did not exceed the value specified in the welding procedure;
- other welding variables specified in the WPS were routinely verified by QC;
- the weld was traceable to the welder;
- the filler metal used in the joint was traceable; and
- tack welds between base materials were fabricated by qualified welders using qualified WPSs.

The inspectors observed the final PT examination of the following welds to determine whether the examination was performed in accordance with the contractor's procedure and the ASME Code:

- SV3-RNS-PLW-09A-1; 10" Schedule 80 Pipe Weld between Line Number L009A and RNS Pump MP01A (Pump Inlet);
- SV3-RNS-PLW-141-10; 6" Schedule 80 Pipe Weld between Line Number L011A and RNS Pump MP01A (Pump Outlet);

The inspectors reviewed the examination reports for the above welds and also the reports for weld numbers SV3-RNS-PLW-09A-5 and SV3-RNS-PLW-09B-15 to determine whether the examination reports were compliant with the contractor's NDE procedure (100-PT-301). The inspectors also reviewed the NDE personnel certification records, calibration records for M&TE, and certifications for PT consumables.

The inspectors performed independent visual inspections of the above welds to evaluate the weld quality. Specifically, the inspectors reviewed the condition of the welds to determine if they met the requirements of Subsection ND-4000 of the ASME Boiler and Pressure Vessel Code, Section III, "Rules for Construction of Nuclear Power Plant Components," 1998 Edition including addenda through 2000.

The inspectors reviewed the in-process and completed weld records for the above welds to determine whether:

- the welding activity was properly documented in the work traveler;
- records provided adequate traceability to all aspects of the welding activity, including traceability to the welder who performed the work;
- records adequately documented the following attributes: reference to procedure and welder qualifications, inspector qualifications, weld material certifications and receipt inspection reports, weld data or process records (travelers), weld maps, weld inspection records, and NDE records;
- records were appropriately retained and stored in accordance with QA program requirement;
- required inspections were identified in the traveler with hold points, as appropriate; and
- accepted, rejected, and repaired items were documented in written reports.

The inspectors independently verified that the suction piping (Lines L009A and L009B) for both RNS Pumps, MP01A and MP01B, respectively, were installed with the required slope requirements.

b. Findings

No findings were identified.

1A27 (Unit 3) ITAAC Number 2.5.02.02.ii (523) / Family 10E  
(Unit 4) ITAAC Number 2.5.02.02.ii (523) / Family 10E

a. Inspection Scope

The inspectors performed document reviews associated with ITAAC Number 2.5.02.02.ii (523). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed seismic qualification test results and associated EQDP and EQSR for the AP1000 Main Control Room (MCR)/ Remote Shutdown Workstation (RSW) transfer panels to verify that qualification activities were adequately controlled and that methodologies conformed to applicable regulatory guidance and industry standards. The inspectors reviewed calculations to determine if the testing results provided evidence that the MCR/RSW Transfer Panel was shown to bound the revised combined Certified Seismic Design Response Spectra and Hard Rock High Frequency spectra (including a 10% margin as specified by IEEE Standard 323-1974) and the spectrum defined in subsection 3.7.2 of the UFSAR. The inspectors reviewed calibration date information to verify that the calibration of test measuring and recording equipment was up-to-date.

b. Findings

No findings were identified.

1A28 (Unit 3) ITAAC Number 2.5.02.03 (525) / Family 10E  
(Unit 4) ITAAC Number 2.5.02.03 (525) / Family 10E

a. Inspection Scope

The inspectors performed document reviews associated with ITAAC Number 2.5.02.03 (525). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed the EQDP and EQSR for the AP1000 MCR/RSW transfer panels to verify that qualification activities were adequately controlled and that methodologies conformed to applicable regulatory guidance and industry standards. The inspectors reviewed test results of applied and induced electrical

interferences as specified by the electromagnetic compliance qualification report including:

- surge withstand capabilities;
- electromagnetic interference;
- radio frequency interference, and;
- electrostatic discharge.

The inspectors reviewed the test results to verify that signal applied to the MCR/RSW Transfer Panel maintained the signal integrity throughout the tests. The inspectors reviewed the test set up and interviewed the engineering staff to verify that methods used to test the transfer switches under each of these interference conditions were adequate, as specified in the Equipment Qualification Electromagnetic Compatibility (EMC) Test Procedure.

b. Findings

No findings were identified.

1A29 (Unit 3) ITAAC Number 2.5.02.04 (526) / Family 10E  
(Unit 4) ITAAC Number 2.5.02.04 (526) / Family 10E

a. Inspection Scope

The inspectors performed document reviews associated with ITAAC Number 2.5.02.04 (526). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed the EQDP and EQSR for the AP1000 MCR/RSW transfer panels, which is located in stairwell S05 and considered a mild environment, to verify that qualification activities were adequately controlled and that methodologies conformed to applicable regulatory guidance and industry standards.

The inspectors reviewed test results that covered ambient temperature, humidity, pressure, and mechanical vibration conditions of the MCR/RSW Transfer Panel to verify compliance with WEC design specification acceptance criteria requirements. The inspectors reviewed Zone 2 environmental conditions stated in APP-GW-VP-030, AP1000 Plant Environmental Conditions, to verify that Zone 2 conditions enveloped the mild environment.



The inspectors reviewed the method used to simulate anticipated life time operating cycles of the equipment. The inspectors verified that the method used to determine the number of cycles provided adequate operational aging effects in accordance with IEEE Standard 323-1974 (including a 10% margin as specified by IEEE Standard 323-1974).

b. Findings

No findings were identified.

1A30 (Unit 3) ITAAC Number 2.6.09.01 (641) / Family 17X

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.6.09.01 (641).

The inspectors performed an inspection for the above ITAAC. The details of this inspection are Security Related and included in the non-public security report 05200025/2016404 and 05200026/2016404.

b. Findings

No findings were identified.

1A31 (Unit 3) ITAAC Number 3.2.00.01a (739) / Family 16F  
(Unit 4) ITAAC Number 3.2.00.01a (739) / Family 16F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.2.00.01a (739). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.23-App A.03.06 - ISV Performance Tests

The inspectors reviewed documents and records identified by the licensee to support the closure of ITAAC 3.2.00.01.a (739). The review was performed to verify that the inspected activities appropriately support ITAAC closure and included interviews with responsible licensee personnel. Specifically, the inspectors reviewed the changes from APP-OCS-GER-220, "Human Factors Engineering Task Support Verification" Revision 0 to Revision 1 to determine if the revision was in conformance with the implementation plan APP-OCS-GEH-220, "AP1000 Human Factors Engineering Task Support Verification Plan", Revision 4. The inspectors reviewed GER-220 to verify that the Task Support Verification (TSV) included verification that the information and controls

provided by the HSI match the display and control requirements generated by the function-based task analysis and the operational sequence analysis and to verify that any additional exceptions were documented as human engineering discrepancies (HEDs). APP-OCS-GER-220 is the summary report for the TSV activity and the PCD for ITAAC 739. In addition, the inspectors assessed the licensee's review and acceptance of GER-220 Revision 1 to verify that the PCD review was completed and documented in accordance with procedure, ND-RA-001-008, "Southern Nuclear ITAAC Principal Closure Document Review", Version 3.1."

b. Findings

No findings were identified.

1A32 (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.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.B-02.05-Inspection

On October 17, 2016, the inspectors observed MISTRAS perform a PT examination on the following complete joint penetration welds between the embed plates and the south wall of the west steam generator compartment:

- Embed B-169, Weld CV8246-3;
- Embed B-166, Weld CV8246-6; and
- Embed B-165, Weld CV8246-7.

The inspectors observed the examinations on these three welds to determine whether the MISTRAS inspector performed the test in accordance with procedure 100-PT-304, "Liquid Penetration Examination in Accordance with the AWS Structural Welding Code," Revision 7. The inspectors verified that the cleaner, penetrant, and developer materials were approved for use and within the manufacturer's shelf life recommendations. The inspectors also observed the in-process final visual examination for weld numbers CV8246-2 and CV8246-4 to determine whether the inspection was performed in accordance with the QC inspection plan number F-S561-004. The inspectors performed an independent visual inspection of all five welds described above, to determine whether the final weld satisfied the requirements of AWS D1.6:1999.

On December 12, 2016, the inspectors performed an independent visual inspection of the following CJP welds between the embed plates and the west wall of the west steam generator compartment to determine whether the welds met the requirements of AWS D1.6:

- Embed B-150, Weld CV8246-20;
- Embed B-149, Weld CV8246-19;
- Embed B-148, Weld CV8246-18;
- Embed B-146, Weld CV8246-16;
- Embed B-145, Weld CV8246-15; and
- Embed B-144, Weld CV8246-14.

## b. Findings

### Introduction

The inspectors 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 the licensee's failure to identify nonconforming welds between seismic category I embed plates and structural modules inside the Vogtle Unit 3 and Unit 4 containment buildings.

### Description

On December 12, 2016, the inspectors performed an independent visual inspection of a sample of complete joint penetration welds between the embed plates and the west wall of the Unit 3 west steam generator compartment to determine if the welds met the requirements of AWS D1.6. The inspectors identified that three of the five welds inspected did not meet section 6.28.1, "Visual Inspection," of the American Welding Society (AWS) D1.6, "Structural Welding Code - Stainless Steel," 1999 edition. The inspectors observed a lack of fusion between adjacent layers of weld metal that at the ends of the welds, which was contrary to section 6.28.1.2 of the code. The inspectors noted that these welds were previously inspected and accepted by QC.

Upon identification of this issue, the licensee performed an extent of condition review and identified additional nonconforming welds in Unit 3 and Unit 4. At the time of the exit meeting, the review was not complete, but the licensee identified at least 33 nonconforming welds associated with Unit 3 CA01, Unit 3 CA02, and Unit 4 CA05 that had been previously accepted by QC. The inspectors also noted that approximately eight QC inspectors had been involved with the inappropriate acceptance of these nonconforming welds. The licensee initiated the following corrective action documents to address this finding:

- CRs 10308295, 10308213;
- CAPAL 100436977;
- SV3-CA01-GNR-000958 (Unit 3 CA01) - 19 welds;
- SV3-CA02-GNR-000069 (Unit 3 CA02) - 8 welds; and

- SV4-CA05-GNR-000028 (Unit 4 CA05) - 6 welds;

The engineering dispositions for the nonconformance and disposition (N&D) reports listed above were "rework"; therefore, the licensee intends to restore each nonconforming weld to original requirements.

### Analysis

The inspectors determined that the failure to identify nonconforming welds was contrary to 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," and was a performance deficiency. The finding was determined to be more than minor because the issue was not isolated, similar to example 11 from Appendix E, "Examples of Minor Construction Issues," of Inspection Manual Chapter 0613, and represented a substantive failure to implement a quality oversight function. Specifically, the inspectors identified at least 33 nonconforming welds that had been accepted by at least eight different QC inspectors.

The inspectors determined the finding represented an ITAAC finding because it was material to the acceptance criteria of Vogtle Unit 3 and Unit 4 ITAAC 760, in that, if left uncorrected, the licensee could not show that the acceptance criteria of these ITAAC were met. The acceptance criteria of Vogtle Unit 3 and Unit 4 ITAAC 760 requires that all deviations between the as-built containment internal structures and the approved design be reconciled (evaluated) such that the as-built structure would withstand the design basis loads without a loss of structural integrity or other safety-related functions. The inspectors determined that the failure of these welds to meet the AWS D1.1:2000 and AWS D1.6:1999 visual weld acceptance criteria represented a nonconformance with the approved structural design, which if left uncorrected, represented a deviation from the design that would not have been reconciled by the licensee.

The inspectors concluded this finding was associated with the Construction Reactor Safety - Inspection/Testing Cornerstone. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 2519, "Construction Significance Determination Process," Appendix A, "AP 1000 Construction Significance Determination Process" because the finding was not related to either a security or operational program.

The inspectors determined the finding was of very low safety significance (Green) because the finding was associated with Row 1 of the AP1000 Construction Significance Determination Matrix and the containment internal structures basemat was associated with the Intermediate Risk of the Systems/Structures Risk Importance Table for AP1000 Construction SDP Matrix X-Axis. Furthermore, the licensee was able to provide reasonable assurance that the structure would have been able to meet its design function.

The inspectors screened the finding for a possible CSFC aspect in accordance with Appendix F, "Construction Cross-Cutting Areas and Aspects," of IMC 0613, "Power Reactor Construction Inspection Reports." This finding has a cross-cutting aspect in the area of Safety Conscious Work Environment, avoid complacency, because the licensee did not assure that individuals adequately recognized and planned for the possibility of mistakes, latent issues, and inherent risk while expecting successful outcomes, in that multiple QC inspectors, failed to consider that the end of the CJP welds were within the scope of the inspection and even though the front side of the welds were satisfactory the ends were nonconforming. [H.12]

### 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.

Table 6.1, "Visual Inspection Acceptance Criteria," of AWS D1.1, "Structural Welding Code - Steel," 2000 edition and Section 6.28.1.2 of AWS D1.6 - 1999 edition, states in part, "Weld/Base-Metal Fusion - thorough fusion shall exist between adjacent layers of weld metal and between weld metal and base metal."

Contrary to the above, as of December 12, 2016, the licensee failed to identify and correct conditions adverse to quality, in that QC inspectors failed to identify at least 33 nonconforming welds between Unit 3 and Unit 4 structural modules and the containment internal structures basemat. Specifically, QC inspectors failed to identify that the welds documented in the following N&Ds did not have thorough fusion between adjacent layers of weld metal and therefore did not meet the visual acceptance criteria established by the AWS D1.1:2000 and AWS D1.6:1999 codes:

- SV3-CA01-GNR-000958 (Unit 3 CA01) - 19 welds;
- SV3-CA02-GNR-000069 (Unit 3 CA02) - 8 welds;
- SV4-CA05-GNR-000028 (Unit 4 CA05) - 6 welds;

Because this violation was of very low safety significance (Green) and it was entered into the licensee's corrective action program as CR 10308295 and CAPAL 100436977, this violation is being treated as an NCV (NCV 05200025/2016004-01 and 05200026/2016004-01, "Failure to identify nonconforming embed plate welds," consistent with Section 2.3 of the NRC Enforcement Policy and EGM 11-006.

This NCV will remain open until the licensee restores the welds to an acceptable condition (closure of the above N&Ds), and the acceptance criteria for ITAAC 760 is no longer impacted.

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
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records

The inspectors observed the in-process welding between the Unit 3 CA03 module and existing CA01 and CA02 modules inside the containment. The inspectors observed the in-process welding for weld numbers:

- 880301-09 (CA03 to CA02);
- 880301-10 (CA03 to CA02);
- 880268-71 (CA03 to CA01); and
- 880268-01A (CA03 to CA01).

During the in-process welding, the inspectors verified that the welding was performed within the ranges allowed by WPS numbers WPS5-10H.10HT70 and WPS5-10H.10HM70, and the requirements of the AWS D1.6:1999 Code. Specifically, the inspectors verified that the following welding parameters were within the ranges allowed by the WPS: filler metal size and classification, voltage, amperage, travel speed, wire feed speed, shielding gas composition, and shielding gas flow rate.

The inspectors reviewed the in-process welding records to determine whether:

- the welding activity was properly documented in the work traveler;
- records provided adequate traceability to all aspects of the welding activity, including traceability to the welder who performed the work;
- the records adequately documented the following attributes: reference to procedure and welder qualifications, inspector qualifications, weld material certifications and receipt inspection reports, weld data or process records (travelers), weld maps, weld inspection records, NDE records;
- the records were appropriately retained and stored in accordance with QA program requirement;
- required inspections were identified in the traveler with hold points, as appropriate; and
- accepted, rejected, and repaired items were documented in written reports.

The inspectors reviewed a sample of the phased array UT and PT examination records for the above welds to determine whether the required examinations were performed in

accordance with the contractor's procedures and the AWS D1.6:1999, Structural Welding Code - Stainless Steel.

The inspectors performed an independent visual inspection of the above welds, to determine whether the final weld satisfied the requirements of the AWS D1.6:1999 Code and QC inspection plan F-S561-004, "Structural Weld Inspection - Modules, and Fabrication and Submodule Assembly Tolerances."

The inspectors reviewed a sample of the CMTRs and COC report for weld filler material Heat number 1203C.

The inspectors also reviewed a sample of nonconformance reports associated with the above welds to determine whether the conditions were adequately reviewed and accepted, rejected, repaired, or reworked in accordance with 10 CFR Part 50, Appendix B, Criterion XV, "Nonconforming Materials, Parts, or Components," and Supplement 15S-1, "Supplementary Requirements for the Control of Nonconforming Items," of ASME NQA-1-1994. The inspectors reviewed these nonconformance reports, which documented a difference between the as-designed and as-built to determine whether the difference was properly documented, evaluated, and incorporated into the as-built drawings. The inspectors reviewed the supporting technical justification for each nonconformance report and verified that the engineering disposition was subjected to design control measures commensurate with those applied to the original design. The inspectors verified that these conditions were properly evaluated against the current licensing basis.

b. Findings

No findings were identified.

1A34 (Unit 3) ITAAC Number 3.3.00.02a.i.b (761) / Family 01F

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 - Procedures
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities

- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.B-02.01-Program and Procedures Review
- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed the design, procurement, and construction of the portion of the shield building cylindrical reinforced concrete wall located approximately between azimuths 350 and 53 degrees and elevation 100'-0" to 117'-6". Specifically, the inspectors reviewed detailed design and procurement documents, E&DCRs, and N&Ds to confirm:

- The design was being implemented in accordance with regulatory requirements and licensee commitments, including applicable sections of the UFSAR and relevant codes and standards;
- Any design changes were appropriately evaluated and implemented in accordance with established QA measures; and
- Any design deviations or nonconforming conditions were appropriately identified, documented, and dispositioned in accordance with established QA measures.

The inspectors observed in-process installation of reinforcing steel and embedments to verify work was performed in accordance with the applicable design documents, construction specifications, QA procedures, and code requirements. Specifically, the inspectors reviewed the following:

- Reinforcing steel properties, size, location, lap splices, and details;
- Concrete embedment details; and
- Mechanical and welded reinforcing steel splices.

## b. Findings

### Introduction

The inspectors identified an ITAAC finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion IX, "Control of Special Processes" for SNC's failure through their contractor WEC to adequately implement measures to assure that special processes, including welding, are accomplished in accordance with applicable codes.

### Description

During the week of November 28th, 2016, the inspectors determined that the complete joint penetration welded reinforcing steel splices in the Unit 3 shield building reinforced concrete cylindrical wall did not meet the commitments established by the VEGP Unit 3 UFSAR. Specifically, the splices were not qualified in accordance with AWS D1.4-98, "Structural Welding Code – Reinforcing Steel."



The inspectors observed welded CJP direct butt splices of #11 vertical bars in VEGP Unit 3 shield building cylindrical reinforced concrete wall between azimuths 350 and 53 degrees at approximately elevation 105'-0". The observed production splices appeared to have been installed using a single-bevel in the upper bar with split pipe backing.

The inspectors noted that VEGP U3 UFSAR Section 3.4.4.4.1, "Seismic Category I Structures," states, in part, that the design and analysis procedures for the seismic Category I concrete structures are in accordance with the Code Requirements for Nuclear Safety Related Concrete Structures (ACI 349-01).

ACI 349-01, Sections 3.8.2 and 12.14.3.2 require, in part, that, welded splices conform to AWS D1.4-98, "Structural Welding Code - Reinforcing Steel".

AWS D1.4-98 subsection 6.2.1.4 requires WPS requalification for any changes beyond the essential variable limitations of AWS D1.4-98 Table 6.1.

AWS D1.4-98, Table 6.1 essential variable 11 is defined as "a change in groove type (e.g., flare-V to flare-bevel groove)."

The inspectors determined that WECTEC WPS Number WPS8-1.1S03, Revision 6 allows the use of groove types not qualified by the supporting procedure qualification records (PQRs): all the PQRs referenced by WPS8-1.1S03 (PQ109, PQ109-1, PQ110, and PQ110-1) indicate the groove type as double-V-groove. No PQRs are referenced for single-V-groove welds, single-bevel-groove welds, or double-bevel-groove welds, although, these groove types are allowed by WPS8-1.1S03. The type of groove, however, is an essential variable as indicated in AWS D1.4-98 Table 6.1. Changes to essential variables beyond the limitations of AWS D1.4-98 Table 6.1 require WPS requalification in accordance with AWS D1.4-98 subsection 6.2.1.4. As a result, the inspectors concluded that the CJP direct butt splices that were observed to be installed using single-bevel groove welds were not qualified in accordance with AWS D1.4-98 and, therefore, the welded reinforcing steel splices were of indeterminate quality.

### Analysis

The inspectors determined that the failure to adequately implement measures to assure that WPSs are qualified in accordance with applicable codes was contrary to the requirements of 10 CFR Part 50, Appendix B, Criterion IX, and was a performance deficiency.

The finding was considered more-than-minor because the performance deficiency represented a substantive failure to adequately implement a QA measure that

rendered the quality of an SSC indeterminate. The finding is also similar to IMC 0613, Power Reactor Construction Inspection Report, Appendix E, example 6 which indicates, in part, that a WPS qualification issue is not minor if it is related to a change in an essential variable, and the WPS was required to be re-qualified.

The inspectors determined that the finding represented an ITAAC finding because it was material to the acceptance criteria of VEGP Unit 3 ITAAC 761, in that, if left uncorrected, the licensee may not have been able to demonstrate that the acceptance criteria of this ITAAC was met. The acceptance criteria of this ITAAC require 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 determined that the failure to adequately implement measures to assure that that special processes, including welding, are accomplished in accordance with applicable codes may have resulted in a deviation from the approved design that would not have been reconciled by the licensee.

The inspectors concluded the finding was associated with the Construction/ Installation Cornerstone. The inspectors evaluated the finding in accordance with IMC 2519, "Construction Significance Determination Process," and determined the finding was of very low safety significance (Green) because the finding affected a portion in the intermediate column of the risk importance table.

The inspectors reviewed the finding for a possible cross-cutting aspect in accordance with IMC 0613 Appendix F, "Construction Cross-Cutting Areas and Aspects," and determined the finding has a cross-cutting aspect in the Human Performance area because the licensee did not recognize that the WPS was not qualified in accordance with AWS D1.4-98. [H.9].

### Enforcement

10 CFR Part 50, Appendix B, Criterion IX, "Control of Special Processes," requires in part, that "measures shall be established to assure that special processes, including welding, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements."

VEGP U3 UFSAR Section 3.8.4.4.1, "Seismic Category I Structures," states, in part that the design and analysis procedures for the seismic Category I concrete structures are in accordance with ACI 349.

ACI 349-01, Section 12.14.3, "Welded Splices and Mechanical Connections," requires, in part, that, all welding shall conform to "Structural Welding Code - Reinforcing Steel" (AWS D1.4).

AWS D1.4-98, subsection 6.2.1.4, states, in part, that “any changes beyond the essential variable limitations of Table 6.1 shall require WPS requalification.”

AWS D1.4, Table 6.1 essential variable 11 is defined as “a change in groove type (e.g., flare-V to flare-bevel groove).”

Contrary to the above, on or before November 28, 2016, the licensee failed to adequately implement measures to assure that special processes, including welding, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.” Specifically, WPS8-1.1S03 allows the use of groove types not qualified by the supporting PQR: all the PQRs referenced by WPS8-1.1S03 (PQ109, PQ109-1, PQ110, and PQ110-1) indicate the groove type as double-V-groove. No PQRs are referenced for single-V-groove welds, single-bevel-groove welds, or double-bevel-groove welds. The type of groove, however, is an essential variable as indicated in AWS D1.4-98 Table 6.1. Changes to essential variables beyond the limitations of AWS D1.4-98 Table 6.1 require WPS requalification in accordance with AWS D1.4-98 subsection 6.2.1.4.

Because this violation was of very low safety significance (Green) and was entered into the licensee’s corrective action program as SNC CR 10320757 and WEC CAPAL System Issue ID 100436639, it is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy (NCV 05200025/2016004-02).

Since the corrective actions have not been fully implemented, this NCV will remain open until the NRC can verify that the acceptance criteria of Unit 3 ITAAC 761 is not impacted.

1A35 (Unit 3) 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:

- 65001.01-02.01 - Procedures
- 65001.01-02.04 - Key Dimensions and Volumes

The inspectors interviewed personnel in charge of surveying activities and reviewed training records for the surveyors to verify that the survey measurements were performed by qualified individuals. The inspectors also reviewed procedures and

equipment specifications and calibration records to determine if the equipment was properly maintained, and controlled at the time when surveying activities took place. The inspectors reviewed specific procedures and surveying inspection reports to determine if:

- surveying activities were performed by qualified individuals other than those who performed the work being inspected;
- M&TE used for the surveys were calibrated at the required frequency for each work operation, as described in the implementing documents;
- survey results indicated acceptability and compliance with commitments contained in the FSAR; and
- surveys were performed in accordance with inspection plans and procedures.

b. Findings

No findings were identified.

1A36 (Unit 3) 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:

- 65001.01-02.01 - Procedures
- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.A.02.02 - Installation Records Review

The inspectors reviewed the Vogtle Unit 3 COL, Appendix C, Table 3.3-1, and the acceptance criteria for ITAAC 777 associated with the Unit 3 reactor vessel cavity radiation shielding requirements. The inspectors performed a review of the survey program to determine if key dimensions of containment internal structures were verified through a quality controlled process.

The inspectors interviewed personnel in-charge of surveying activities and reviewed training records for the surveyors to verify that the survey measurements were performed by qualified individuals. The inspectors also reviewed associated survey reports to determine that reactor vessel cavity wall dimensions complied with the Vogtle Unit 3 COL, Appendix C, Table 3.3-1. The inspectors also reviewed procedures, equipment specifications and calibration records to determine if the equipment was properly maintained, and controlled at the time when surveying activities took place.

The inspectors reviewed specific procedures and surveying inspection reports to determine if:

- surveying activities were performed by qualified individuals other than those who performed the work being inspected;
- M&TE used for the surveys were calibrated at the required frequency for each work operation, as described in the implementing documents;
- survey results indicated acceptability and compliance with commitments contained in the FSAR; and
- surveys were performed in accordance with inspection plans and procedures.

The inspectors also reviewed concrete density reports associated with the north, east, and west reactor vessel cavity walls, between EL. 83'-0" to 98'-0", to determine that they meet the minimum requirement of 140 pounds per cubic foot as per Design Specification No. SV3-CC01-Z0-026, Section 4.2.2.3, Rev. 6

b. Findings

No findings were identified.

1A37 (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:

- 65001.01-02.01 - Procedures
- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.A.02.02 - Installation Records Review

The inspectors reviewed the Vogtle Unit 3 COL, Appendix C, Table 3.3-1, Revision 19 and the acceptance criteria for ITAAC 779 associated with the Unit 3 Auxiliary Building non-rad area walls radiation shielding requirements. The inspectors performed a review of the survey program to determine if the wall thickness of the auxiliary building structures were conducted under a quality controlled process.

The inspectors interviewed personnel in-charge of surveying activities and reviewed training records for the surveyors to verify that the survey measurements were performed by qualified individuals. The inspectors also reviewed associated survey reports to determine that reactor vessel cavity wall dimensions complied with the Vogtle Unit 3 COL, Appendix C, Table 3.3-1. The inspectors also reviewed procedures and equipment specifications and calibration records to determine if the equipment was properly maintained, and controlled at the time when surveying activities took place.

The inspectors reviewed specific procedures and surveying inspection reports to determine if:

- surveying activities were performed by qualified individuals other than those who performed the work being inspected;
- M&TE used for the surveys were calibrated at the required frequency for each work operation, as described in the implementing documents;
- survey results indicated acceptability and compliance with commitments contained in the FSAR; and
- surveys were performed in accordance with inspection plans and procedures.

The inspectors also reviewed concrete density reports associated with auxiliary building wall 7.3 wall, from EL. 82'-6" to 100'-0", to determine that they meet the minimum requirement of 140 pounds per cubic foot as per Design Specification No. SV3-CC01-Z0-026, Section 4.2.2.3, Rev. 6

b. Findings

No findings were identified.

1A38 (Unit 3) ITAAC Number 3.3.00.14 (820) / Family 17E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.14 (820).

The inspectors performed an inspection for the above ITAAC. The details of this inspection are Security Related and included in the non-public security report 05200025/2016404 and 05200026/2016404.

b. Findings

No findings were identified.

1A39 (Unit 3) ITAAC Number C.3.8.02.01 (843) / Family 03F  
(Unit 4) ITAAC Number C.3.8.02.01 (843) / Family 03F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number C.3.8.02.01 (843). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.16-02.02 - Design Input
- 65001.16-02.03 - Design Documents
- 65001.16-02.04 - Design Analysis
- 65001.16-02.05 - Design Verification

- 65001.20.02.04-Design Inspection
- 65001.20-02.03-Inspection Planning/Scoping
- 65001.20-Inspection of Safety-Related Piping DAC-Related ITAAC

The inspectors interviewed personnel and reviewed documents associated with the piping design acceptance criteria (DAC) ITAAC at the Westinghouse world headquarters facility at Cranberry Township, PA, to verify if the piping design was completed in accordance with the requirements contained in the UFSAR, ASME Section III, and 10 CFR 50.55a. Specifically, the inspectors performed this review to determine if:

- licensee records established an adequate basis for the eventual closure of the piping DAC ITAAC;
- processes used for piping DAC engineering calculations, design control, and records control met the technical and quality requirements contained in the UFSAR and the ASME Code, Section III, Subsections NCA, NB, NC, ND, and NF; and
- design drawings, specifications, and records were consistent with the analyzed configurations.

The inspectors performed these reviews for the following piping DAC lines:

- APP-CVS-PLR-100, CVS Letdown from Penetration 002 IRC 2
- APP-CVS-PLR-530, CVS Makeup from Penetration C03 ORC
- APP-PXS-PLR-010, Direct Vessel Injection Line A
- APP-PXS-PLR-050, CMT 2A Supply Line
- APP-RCS-PLR-020, Pressurizer Spray, Auxiliary Spray, and CVS Supply and Return
- APP-RCS-PLR-050, Reactor Coolant Loop

The inspectors reviewed the applicable piping design specifications for each piping segment to verify the methodology used and the design inputs were as specified in the UFSAR and as required by the ASME Code. The inspectors reviewed aspects such as the code year and edition and code cases; materials, manufacturing, testing and examination, and QA requirements; design inputs; and load conditions and combinations. The inspectors reviewed the Design Reports/Stress Reports to determine if the design met the applicable design specification and that the design was developed using the methodology called out in the UFSAR and the ASME Code. The inspectors reviewed the computer codes used to perform safety-related calculations to verify they were adequately validated and verified. The inspectors also observed a demonstration of the computer codes to verify if the design inputs (such as pipe dimensions, diameters, orientations, materials, welds, and supports) matched the as designed isometrics and drawings.

The inspectors reviewed the licensee's engineering and QA procedures related to piping DAC design control and design change to determine if:

- piping design activities were being properly performed in compliance with the approved engineering procedures and applicable design documents such as specifications, drawings, and calculations;

- specifications, analyses, and other design documents were sufficiently integrated to ensure adequate control and consistent practices; and
- design inputs and assumptions were maintained, controlled and updated as required, and were readily available to the licensee.

The inspectors reviewed piping analysis and pipe hanger reports to determine if:

- calculations were readily retrievable, controlled, and identified by subject, originator, reviewer, approver, and date and revisions were easily retrievable and subjected to the same rigor of the original approval;
- documentation included the objective, inputs and their sources, background data, assumptions, and computer inputs and conclusions; and
- design verification was performed by a competent individual or group other than those who performed the original design.

For the piping analyses and pipe hanger stress calculations, the inspectors reviewed the Design Reports/Stress Reports to verify if the resulting design met the Design Specification and that the design was developed using the methodology described in the UFSAR and the ASME Code. The inspectors reviewed the piping analyses to determine if the licensee adequately evaluated the following:

- pipe size, schedule, wall thickness, and materials;
- loading combinations;
- modeling of additional masses due to weight from support members/snubbers/springs and branch piping;
- assumptions and open items (e.g., valve weight) in the design report;
- piping package model scope including decoupling criteria;
- thermal and seismic analysis including damping value, response spectra/time history input, and seismic anchor movement;
- dynamic analysis considerations such as valve open/closure events;
- ASME Code stress qualification delineated in Subsections NX-3600; and
- the overall functional capability of the piping system

The inspectors reviewed the pipe hanger calculations to determine if the licensee adequately evaluated the following:

- pipe support inputs and load combinations;
- pipe support base plate and anchor bolt design;
- seismic self-weight excitation;
- design of supplementary steel;
- consideration of friction forces;
- pipe support gaps and clearances;
- instrumentation line support criteria; and
- pipe deflection limits

b. Findings

No findings were identified.



a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.08d.vii (38). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed documents and records identified by the licensee to support the closure of ITAAC 2.1.02.08d.vii. Specifically, the inspectors reviewed the ITAAC PCD, SV4-MW01-Z0R-003, "AP1000 ADS Sparger - Vogtle Unit 4 (SV4) Flow Area As-Built Analysis," Revision 0, along with the PCD's references, to verify inspection of each ADS sparger was conducted to determine the flow area through the sparger holes was greater than 274 square inches.

The inspectors reviewed the as-built dimensions and area calculations for ADS spargers SV4-PXS-MW-01A and SV4-PXS-MW-01B to verify the measurements met the requirements of Appendix C of the COL, Chapters 5 and 15 of the FSAR, and design changes approved in E&DCR APP-MW01-GEF-007, "Revised Dimensions of MW01 Sparger with No Changes in Geometry," Revision 0. Specifically, the inspectors reviewed the supporting documentation to verify:

- each sparger had four arms, with 350 flow holes apiece, totaling to 1400 flow holes per ADS sparger;
- each flow hole diameter was 0.500" +0.015"/-0.000";
- the M&TE used to measure each flow hole was properly calibrated; and
- the total flow area of each sparger was greater than 274 square inches.

b. Findings

No findings were identified.

1A41 (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:

- 65001.11-02.07 - Offsite Fabrication of Assemblies
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed IHI fabrication records associated with the assembly of the lower equipment hatch (H02) cover to verify conformance with the requirements of the

WEC CV Design Specification and ASME Section III, Subsection NE. Specifically, the inspectors reviewed the ASME Form N-2 code data report (manufactured and certified by IHI for CB&I Services, now WECTEC) to determine whether the hatch cover was traceable, fabricated to the correct dimensions and design thicknesses, hydrostatically tested at a pressure of 59 psig, and approved by an ANI.

The inspectors reviewed four base material CMTRs on the hatch cover to determine whether the chemical compositions, mechanical properties, impact testing, heat treatments, and NDE met the applicable requirements of ASME Section II and III.

b. Findings

No findings were identified.

1A42 (Unit 4) ITAAC Number 2.2.01.03a (93) / Family 06B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.03a (93). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.11-02.04 - Post Weld Heat Treatment
- 65001.11-02.05 - Nondestructive Examination
- 65001.B-02.03-Welder Qualification
- 65001.B-02.06-Records
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed IHI fabrication records associated with the assembly of the lower equipment hatch (H02) cover. Specifically, the inspectors reviewed NDE records of four pressure boundary welds (WF14-AA-C, WF14-AA-CL, WF14-AA-L1, and WF14-AA-L2) to verify conformance with the requirements of ASME Section III, Subsection NE.

The inspectors reviewed one weld filler metal CMTRs associated with four welds (WF14-AA-C, WF14-AA-CL, WF14-AA-L1, and WF14-AA-L2) on the hatch cover to determine whether the chemical compositions, mechanical properties, impact testing, heat treatments, and NDE met the applicable requirements of ASME Section II and III.

The inspectors reviewed final NDE reports to verify NDE was performed and found acceptable by the proper certification level of NDE personnel and in accordance with applicable sections of the ASME Code. Specifically, the inspectors reviewed ten MT examination records to verify the proper method, flux type, yoke lifting power, visible light source, and surface temperature requirements were met, and there were no

unacceptable defects on the surface of the weld. The inspectors also reviewed two radiography examination records and the associated film to verify the density and sensitivity measurements were within the allowable ranges, and there were no rejectable indications in the welds.

In addition, the inspectors reviewed the WPS for all four pressure boundary welds to verify the following were permitted:

- The PWHT hold times and temperatures indicated on the PWHT record for the entire hatch cover; and
- The qualified ranges of essential variables recorded on a sample of reviewed welder qualification records.

b. Findings

No findings were identified.

1A43 (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 IHI Corporation welding records associated with pressure boundary materials of the Unit 4 CV lower equipment hatch (H02) cover to verify that fracture toughness requirements were met in accordance with ASME Code Section II, Part A, SA 738 and Part C, SFA 5.28, as well as Section III, Division 1, Subsection NE. Specifically, the inspectors reviewed four CMTRs for the base metal and one CMTR for the weld filler metal to verify the materials met all applicable Charpy V-Notch impact testing requirements.

b. Findings

No findings were identified.

1A44 (Unit 4) ITAAC Number 2.2.03.08c.x (195) / Family 14F

a. Inspection Scope

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

- 65001.14-02.02 - Design Modification Review
- 65001.14-02.04 - Qualification Criteria
- 65001.14-02.05 - Problem Identification and Resolution
- 65001.F-02.01-Design Document Review
- 65001.F-02.04-General QA Review

The inspectors interviewed personnel and reviewed nonconformance reports, design change documents, specifications, procedures, test reports, and other documents to determine if the service level II (SL II) coatings used inside containment met the design basis requirements for failure as chips (vs. particulates) and for minimum required density to ensure non-transport to the containment recirculation sumps. Specifically, the inspectors:

- reviewed a sample of test and COC to determine if the approved SL II coatings met the minimum required density of 100 lb/ft<sup>3</sup>;
- reviewed nonconformance reports to determine if the conditions were adequately evaluated by the responsible design organizations and if the disposition was completed in accordance codes, standards, regulations, and quality and technical requirements.
- reviewed a sample of design changes/modifications related to SL II coatings to determine if the changes were completed in accordance codes, standards, regulations, and quality and technical requirements; and
- reviewed the results of design basis testing for the approved SL II coatings and transport calculations to determine if the approved SL II coatings conformed to staff's March 28, 2008 guidance for treatment as degraded qualified coatings as discussed in Section 6.2.1.8.2.3 of NUREG-1793, Supplement 2, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design."

b. Findings

No findings were identified.

1A45 (Unit 4) ITAAC Number 2.2.03.08c.xi (196) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.xi (196). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A- As-Built Attributes for SSCs associated with ITAAC

The inspectors reviewed documents and records identified by the licensee to support the closure of ITAAC 2.2.03.08c.xi. The inspectors also reviewed the scope and results of a previous NRC inspection, documented under Inspection Report

05200026/2015003 (ML15301A424), to determine whether these documents were previously inspected and no findings of significance were identified. Specifically, the inspectors reviewed the following two documents to verify the CMT inlet diffuser has a flow area greater than or equal to 165 square inches:

- ITAAC PCD, SV4-MT01-Z0R-201, “AP1000 Core Makeup Tank – Vogtle Unit 4 (SV4) As-Built Analysis,” Revision 0
- ITAAC Completion Package, SVP\_SV0\_004041, “Submittal of Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) Completion Package for Unit 4 ITAAC 2.2.03.08c.xi [COL Index Number 196] (Core Makeup Tank Inlet Diffuser),” dated 07/28/2016

b. Findings

No findings were identified.

1A46 (Unit 4) ITAAC Number 2.2.03.09b (204) / Family 07A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.09b (204). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed documents and records identified by the licensee to support the closure of ITAAC 2.2.03.09b. Specifically, the inspectors reviewed the ITAAC PCD, SV4-PV03-PVR-002, “Inspection Report Confirming Discharge Check Valve Type for the Passive Core Cooling System Accumulator Discharge Check Valves and Core Makeup Tank Discharge Valves,” Revision 0, along with the PCD’s references, to verify the accumulator discharge check valves are of a different check valve type than the CMT discharge check valves.

The inspectors reviewed Westinghouse’s inspection report as well as associated design drawings to confirm the following two different types of check valves were fabricated:

- the accumulator discharge check valves (SV4-PXS-PL-V028A, SV4-PXS-PL-V028B, SV4-PXS-PL-V029A, and SV4-PXS-PL-V029B) utilize a “swing” type check valve; and
- the CMT discharge check valves (SV4-PXS-PL-V016A, SV4-PXS-PL-V016B, SV4-PXS-PL-V017A, and SV4-PXS-PL-V017B) utilize an “inline” type check valve, also known as a “nozzle” check valve.

b. Findings

No findings were identified.

1A47 (Unit 4) ITAAC Number 2.6.09.01 (641) / Family 17X

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.6.09.01 (641).

The inspectors performed an inspection for the above ITAAC. The details of this inspection are Security Related and included in the non-public security report 05200025/2016404 and 05200026/2016404.

b. Findings

No findings were identified.

1A48 (Unit 4) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records
- 65001.F-02.02-Fabrication Records Review

The inspectors performed an independent visual inspection of the Unit 4 CA03-01, CA03-02, and CA03-17 submodules, which form a portion of the west steel wall of the IRWST, to determine whether the critical attributes of the submodules were compliant with the approved design and licensing basis. The inspectors performed this inspection after the licensee's contractor had completed the relevant receipt inspections and had released the submodules for construction.

Specifically, the inspectors verified that a sample of the following attributes were consistent with Figure 3.8.3-8, Sheet 3, "Structural Modules – Typical Design Details," of the UFSAR; and the design drawings listed in the documents reviewed section of this report:

- IRWST wall thickness;

- steel sections and welding;
- the use, spacing, and size of angles and tees to stiffen the wall;
- the number, size, and use of studs provided to anchor the module; and
- the number and size of rebar couplers welded to the sub-modules;

The inspectors performed independent visual inspections of a sample of the stud and coupler welds to determine whether the final welds met the requirements of the AWS D1.6:1999 and AWS D1.1:2000 Code. In addition, the inspectors observed the structural stainless steel welds of the sub-modules to determine if final welds met the requirements of the AWS D1.6:1999.

The inspectors reviewed structural calculations for the CA03 module to determine that the calculations met applicable codes and standards. In addition, the inspectors reviewed a sample of shop drawings, engineering and design change requests, as-built drawings and WEC design drawings for the submodules to determine whether these documents adequately translated the relevant regulatory requirements and design basis described in the UFSAR.

The inspectors reviewed the COC to determine whether it adequately furnish evidence of activities affecting quality. The inspectors also reviewed a sample of welding records to determine whether they were adequate to demonstrate compliance with the AWS D1.6:1999 code. The inspectors reviewed the nonconformances listed on the COC and verified that the module was properly tagged indicating the status of the N&Ds.

The inspectors also reviewed a sample of nonconformance reports associated with the fabrication of CA03-01, CA03-02, and CA03-17 to determine whether the conditions were adequately reviewed and accepted, rejected, repaired, or reworked in accordance with 10 CFR Part 50, Appendix B, Criterion XV, "Nonconforming Materials, Parts, or Components," and Supplement 15S-1, "Supplementary Requirements for the Control of Nonconforming Items," of ASME NQA-1-1994. The inspectors reviewed these nonconformance reports, which documented a difference between the as-designed and as-built sub-module to determine whether the difference was properly documented, evaluated, and incorporated into the as-built drawings. The inspectors reviewed the supporting technical justification for each nonconformance report and verified that the engineering disposition was subjected to design control measures commensurate with those applied to the original design. The inspectors verified that these conditions were properly evaluated against the current licensing basis.

The inspectors observed the on-site storage of CA03-01, CA03-02, and CA03-17 to determine whether the storage conditions were consistent with the contractor's QA program, 10 CFR Part 50, Appendix B, and ASME NQA-1-1994.

b. Findings

No findings were identified.

1A49 (Unit 4) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed documentation of completed welds associated with Unit 4 containment internal structure CA-02, which is located in the northeast corner of the IRWST. Specifically, the inspectors reviewed welding records associated with welds SV4-CA02-S4K-880657-1, located between submodules CA02-02 and CA02-03, and weld SV4-CA02-S4K-880657-2, located between submodules CA02-01 and CA02-02 to determine if welding activities were performed in accordance with the approved WPSs.

The inspectors reviewed the respective work package, weld data sheets, field sketches, and approved WPSs to verify if they met the requirements of AWS D1.1-2000. The welds, located on the east side of the module, joined two A572 grade 60 carbon steel members and one A572 grade 60 carbon steel plate to a A240 S32101 stainless steel plate respectively. The inspectors also reviewed E&DCRs to verify whether design deviations were properly evaluated, approved and dispositioned in accordance with the applicable technical and QA requirements.

b. Findings

No findings were identified.

1A50 (Unit 4) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.06 - Record Review



- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A.02.02 - Installation Records Review
- 65001.B-02.06-Records
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review

The inspectors performed a documentation review for completed carbon steel welds associated with the Unit 4 containment internal structure CA-01 which houses the steam generators, pressurizer, and reactor vessel. Specifically, the inspectors reviewed records associated with work package SV4-CA01-S4W-CV6484, for seam welds located between submodules CA01-34 and CA01-46, and work package SV4-CA01-S4W-CV6472, for seam welds located between submodules CA01-31 and CA01-46.

These seam welds were located along the shared wall between the south wall of the pressurizer compartment and the north wall of the west steam generator compartment. In addition, inspectors also reviewed the associated work packages, weld data sheets, weld maps, NDE reports, and approved WPSs to verify that they met the requirements of AWS D1.1-2000. Finally, inspectors reviewed a sample of E&DCRs and N&Ds associated with these structural modules to verify that nonconforming conditions were being appropriately identified, evaluated, and dispositioned according to approved procedures and processes.

b. Findings

No findings were identified.

1A51 (Unit 4) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 - Procedures
- 65001.01-02.07 - Identification and Resolution of Problem
- 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 reviewed quality records and performed direct inspection of construction activities associated with the non-radiologically controlled area of the Auxiliary Building for Vogtle Unit 4. Specifically, the inspectors observed construction activities associated with the wall section along column line 7.3 between column lines I and the shield wall from elevation 66'-6" to 82'-6" to determine if they were performed in accordance with design specification SV4-CC01-Z0-031, Rev. 4.

The inspectors performed independent inspection and measurements to determine whether the steel reinforcement, embedments, and formwork conformed to the design specifications. The inspectors reviewed documentation associated with steel reinforcement installation and observed installation associated with formwork, embedments, and horizontal and vertical reinforcing steel reinforcement, and bar splices, to determine whether:

- the latest approved-for-construction procedures, drawings and other work instructions were available at the installation area
- the installation activities met applicable quality and technical requirements established by approved procedures, specifications, and drawings;
- reinforcing steel, and embedments were located properly in the structure, were sized as specified in drawings, and had proper clearances;
- reinforcing steel and embedments were secured and free of concrete or excessive rust;
- forms were secure, leak tight, and free from debris or excess water;
- nonconforming items are clearly identified, segregated and dispositioned; and
- design changes and field modifications associated with the work observed were properly controlled and processed in accordance with the approved QA program.

The inspectors reviewed documentation associated with the testing of threaded Lenton mechanical couplers used to splice horizontal reinforcement to determine whether:

- sampling and testing were performed at proper frequencies;
- acceptance criteria were defined and confirmed as being satisfied; and
- vendor instructions were properly implemented.

The inspectors also reviewed a sample of design changes, discrepancies, and nonconformances to determine whether the conditions were properly evaluated and dispositioned and any differences between documents used for construction and the corresponding document used for a design analysis were appropriately reconciled.

b. Findings

No findings were identified.

1A52 (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
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed quality records and performed direct inspection of construction activities associated with the radiologically controlled area of the Auxiliary Building for Vogtle Unit 4. Specifically, the inspectors observed construction activities associated with the wall section along column line N between column lines 2 and 4 from elevation 66'-6" to 82'-6".

The inspectors observed installation activities and performed independent inspection and measurements associated with formwork and steel shear reinforcement to determine whether:

- the installation activities met applicable quality and technical requirements established by approved procedures, specifications, and drawings included in the work packages;
- reinforcing steel was located properly in the structure, was sized as specified in drawings and calculations, and had proper clearances; and
- reinforcing steel was secured and free of concrete or excessive rust.

The inspectors reviewed a sample of design changes and nonconformances to verify:

- the licensee was identifying problems at an appropriate threshold and entering them into the corrective action program;
- any differences between the as-built and as-designed SSCs were documented and dispositioned in accordance with approved modification or change procedures; and
- the nonconformances were resolved and their dispositions had adequate technical bases.

b. Findings

No findings were identified.

1A53 (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:

- 65001.01-02.01 - Procedures
- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.A.02.02 - Installation Records Review

The inspectors reviewed the Vogtle Unit 4 COL, Appendix C, Table 3.3-1, Revision 19 and the acceptance criteria for ITAAC 777 associated with the Unit 4 shield wall, between the reactor vessel cavity and the reactor coolant drain tank (RCDT), radiation shielding requirements. The inspectors performed a review of the survey program to determine if the measurements of containment internal structures were conducted under a quality controlled process.

The inspectors interviewed personnel in-charge of surveying activities and reviewed training records to verify that the survey measurements were performed by qualified individuals. The inspectors also reviewed associated survey reports to determine that the dimensions of the wall between the reactor vessel cavity and the RCDT complied with the Vogtle Unit 4 COL, Appendix C, Table 3.3-1. The inspectors also reviewed procedures, equipment specifications, and calibration records to determine if the equipment was properly maintained, and controlled at the time when surveying activities took place.

The inspectors reviewed specific procedures and surveying inspection reports to determine if:

- surveying activities were performed by qualified individuals other than those who performed the work being inspected;
- M&TE used for the surveys were calibrated at the required frequency for each work operation, as described in the implementing documents;
- survey results indicated acceptability and compliance with commitments contained in the FSAR; and
- surveys were performed in accordance with inspection plans and procedures.

The inspectors also reviewed concrete density reports associated with the shield wall between the reactor vessel and RCDT to determine that it meets the minimum requirement of 140 pounds per cubic foot as per Design Specification No. SV4-CC01-Z0-026, Section 4.2.2.3, Rev. 6

b. Findings

No findings were identified.

1A54 (Unit 4) ITAAC Number 3.3.00.14 (820) / Family 17E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.14 (820).

The inspectors performed an inspection for the above ITAAC. The details of this inspection are Security Related and included in the non-public security report 05200025/2016404 and 05200026/2016404.

b. Findings

No findings were identified.

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

1P01 Construction QA Criterion 10

- 35007-A10 - Appendix 10. Inspection of Criterion X – Inspection
- 35007-A10.04 - Inspection Requirements and Guidance
- 35007-A10.04.01 - Inspection of QA Implementing Documents
- 35007-A10.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors performed a review of the survey program to determine whether the licensee's QA implementing documents for conducting inspections of SSCs were consistent with the NRC-approved Quality Assurance Program Document (QAPD), met commitments in the FSAR, and were adequately implemented for verification of ITAAC.

The inspectors interviewed personnel in-charge of surveying activities and reviewed training records for the surveyors to verify that the survey measurements were performed by qualified individuals. The inspectors reviewed a sample of surveying procedures, equipment specifications, and calibration records to determine if the equipment was properly maintained and controlled at the time when surveying activities took place. The inspectors observed ongoing surveying activities and reviewed surveying inspection reports to determine whether:

- surveying activities were performed by qualified individuals other than those who performed the work being inspected;
- measurement and test equipment used to perform surveys was calibrated at the required frequency for each work operation, as described in the implementing documents;
- survey results were documented and indicated acceptability and compliance with commitments contained in the FSAR;
- surveys were performed in accordance with approved inspection plans and procedures; and
- effective oversight in accordance with specifications and program requirements was implemented.

b. Findings

No findings were identified.

1P02 Construction QA Criterion 16

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

a. Inspection Scope

Daily Corrective Action Program Review

As part of the various inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during inspection activities and plant status reviews to verify they were being entered into the licensee's corrective action program at an appropriate threshold. The inspectors reviewed whether adequate attention was given to timely corrective actions and any adverse trends were identified and addressed. The inspectors reviewed corrective action program procedures and evaluated implementation of these procedures to determine whether the procedures contained guidance for the following attributes:

- classification, prioritization, and evaluation for reportability (i.e., 10 CFR 50.55(e)) of conditions adverse to quality;
- complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery;
- screening of items entered into the CAP to determine the proper level of evaluation;
- identification and correction of procurement documents errors, deviations from procurement document requirements, defective items, poor workmanship, incorrect vendor instructions, significant recurring deficiencies at both vendor shops and on site, and generic procurement related deficiencies;
- identification and correction of design deficiencies;
- consideration of extent of condition, generic implications, common cause, and previous occurrences;
- classification and prioritization of the resolution of the problem commensurate with its safety significance;
- identification of corrective actions that are appropriately focused to correct the problem;
- identification of root and contributing causes, as well as actions to preclude recurrence for significant conditions adverse to quality;
- completion of corrective actions in a timely manner commensurate with the safety significance of the issue;
- provisions for escalating to higher management those corrective actions that are not adequate or not timely; and
- conditions adverse to quality were trended to proactively identify potential adverse trends and potential common cause problems, and the trending results were reported to management.

Routine Review of Items Entered into the Corrective Action Program

On a routine basis, the inspectors screened a sample of issues entered into the licensee and contractor's corrective action programs. The inspectors attended several weekly management review committee meetings at the site and held discussions with licensee and contractor personnel responsible for the screening and correction of the issues to determine if:

- the licensee and the contractors were identifying equipment, human performance, and program issues at an appropriate threshold and were entering the issues into their respective corrective action programs;
- the licensee and the contractors appropriately classified the issues and took appropriate short-term corrective actions;
- conditions adverse to quality were controlled in accordance with each company's QA program; and
- potential adverse trends were appropriately identified and corrected by the licensee or their contractors.

The inspectors observed the Interface of Corrective Action Processes (ICAP) Corrective Action Review Board (CARB) Meeting held on October 11, 2016 and the WECTEC CARB meeting held on October 6, 2016.

#### Annual Follow-up of Selected Issues

For the inspection period, the resident inspectors performed a focused inspection of the licensee and contractor's corrective action program implementation to determine whether issues and concerns were entered into the corrective action program at an appropriate threshold, issues were screened appropriately, and were transferred to the contractor's corrective action program when appropriate. Specific corrective action documents reviewed are listed in the "documents reviewed" section of this report. Specifically, the inspectors:

- observed licensee and contractor management review committee (MRC) meetings;
- observed ICAP MRC meetings;
- observed contractor and ICAP corrective action review board meetings;
- reviewed weekly ICAP packages, specifically the list of CRs that were pending acceptance by the contractor for entry into their corrective action program;
- reviewed daily licensee-initiated corrective action documents;
- observed several ad hoc meetings related to licensee-initiated CRs that were pending acceptance by the contractor for entry into the corrective action program; and
- interviewed licensee and contractor corrective action program management.

The inspectors verified that the licensee and contractor assigned the proper significance to corrective action records according to the relevant procedures. Specifically, the inspectors confirmed that the ICAP Significance Level Matrix contained in ND-AD-VNP-001, "Interface of Corrective Action Processes," Version 6.0 was followed. The inspectors also verified that license CRs received the proper significance level and event (trend) code in accordance with ND-AD-002,

“Nuclear Development Corrective Action Program,” Version 24.0. The inspectors also confirmed that the contractor, WECTEC, assigned the proper significance level to issues entered into their corrective action program in accordance with W2-5.1-102, “Issue Review Committee,” Revision 1.0.

The inspectors reviewed the 3rd quarter trend reports issued by the licensee and contractor to determine whether conditions adverse to quality were properly trended so as to identify any programmatic and common cause issues would warrant more comprehensive corrective actions. The inspectors verified that adequate corrective action documents had been initiated by the licensee and contractor to address documented adverse trends or trends that were being monitored.

b. Findings

No findings were identified.

**3. OPERATIONAL READINESS**

**Cornerstones: Operational Programs**

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

3P01 Environmental Qualification

- 51080-02.02 - Pre-Inspection Tasks
- 51080-02.03 - Inspection Tasks

a. Inspection Scope

The inspectors reviewed the EQDPs and interviewed the WEC staff responsible for the environmental qualification of the MCR/RSW Transfer Panel and the following Nuclear Instrumentation Detectors:

- Excore Source Range Detectors (RXS-JE-NE001A, RXS-JE-NE001B, RXS-JE-NE001C, and RXS-JE-NE001D)
- Excore Intermediate Range Detectors (RXS-JE-NE002A, RXS-JE-NE002B, RXS-JE-NE002C, and RXS-JE-NE002D)
- Excore Power Range Detectors (RXS-JE-NE003A, RXS-JE-NE003B, RXS-JE-NE003C, RXS-JE-NE003D, RXS-JE-NE004A, RXS-JE-NE004B, RXS-JE-NE004C, and RXS-JE-NE004D)

Specifically, the inspectors reviewed the qualification files to determine if they contained:

- the qualification specification for the equipment,
- adequate documentation of the qualification of the equipment; and



- a definitive statement that the documentation has been reviewed and approved and that the equipment was determined to be qualified for its application.

b. Findings

No findings were identified.

3P02 (Unit 3) Preservice Inspection

- 73054 - Part 52, Preservice and Inservice Inspection - Review of Program
- 73054-02.01 - Program Approval
- 73054-02.02 - Program Organization
- 73054-02.04 - Quality Assurance Program
- 73054-02.05 - Code Repair/Replacement Program Review
- 73054-02.06 - Records
- 73054-02.07 - Qualification of Personnel
- 73054-02.08 - Reporting Requirements
- 73054-02.09 - Relief Requests
- 73754-02.02 - Personnel Qualification & Certification
- 73754-02.03 - Non-destructive Examination (NDE) Review
- 73757-02.01 - General Records Review

a. Inspection Scope

The inspectors performed a review of the Vogtle Unit 3 Preservice Inspection (PSI) program plan using IP 73054, "Part 52, Preservice and Inservice Inspection – Review of Program." In addition, the inspectors reviewed the NDE examination procedures and observed the NDE using IP 73754, "Part 52 – Preservice Inspection - Non-Destructive Examination".

The inspectors reviewed SV3-GW-GEI-100, "AP1000 Preservice Inspection Program Plan for Vogtle Unit 3", Rev. 1 to determine if the program conformed with the regulatory requirements of 10 CFR Part 50.55a and the license commitments. Specifically, the inspectors reviewed the PSI program plan to determine if:

- site management and the authorized nuclear inservice inspector (ANII) reviewed and approved the PSI program plan in accordance with article IWA-2120 of the ASME section XI code;
- ASME code cases were in accordance with 10 CFR 50.55a and Regulatory Guide (RG) 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1", Rev 17;
- licensee commitments and regulatory requirements pertinent to PSI testing and monitoring were adequately captured and described in the PSI program plan;
- the ASME code edition and addenda to be used for PSI is identified and in accordance with 10 CFR 50.55a;

- repair/replacement activities will be performed in accordance with ASME Section XI requirements;
- submittal of written reports of PSI/ISI results and repairs/replacements are in accordance with ASME Section XI, IWA-6000; and
- guidance regarding the identification and processing of requests for relief from, and alternatives to, ASME Code requirements is in accordance with 10 CFR 50.55a(g)(5)(iii).

The inspectors reviewed a sample of the licensee's and contractor's QA program, implementing procedures, audit records, written practices, training records, and certification records to determine if the QA program and site procedures will support execution of the PSI activities. Specifically, the inspectors reviewed those documents to determine if:

- procedures adequately defined the authority and responsibilities of persons or organizations involved with the final evaluation of PSI examination results for the licensee;
- procedures were in place and adequate for the generation and maintenance of required PSI records;
- procedures received a quality review to ensure accuracy and acceptableness prior to issuance;
- procedures had been established for corrective actions concerning flaws identified during preservice examination;
- contractor personnel had been trained on the licensee's corrective action program;
- audits and surveillances of PSI activities are performed and done so by qualified auditors;
- procedures had been established to effectively oversee contractor PSI activities;
- procedures had adequately implemented the requirements of ASME Section XI, IWA-6000; and
- written practices had specified personnel qualification requirements consistent with the ASME Section XI, ANSI/ASNT CP-189, and 10 CFR 50.55a.

The inspectors directly observed or reviewed the following NDE activities. These activities were mandated by the ASME Boiler and Pressure Vessel Code (Code of Record: 2007 Edition with 2008 Addenda). The inspectors evaluated the NDE activities for compliance with the requirements in Section XI and Section V of the ASME Code. The inspectors also evaluated if any identified indications or defects were dispositioned in accordance with either the ASME Code or an NRC-approved alternative requirement. Additionally, the inspectors reviewed the qualifications of the NDE technicians performing the examinations to determine if they were in compliance with ASME Code requirements.

- Observation: UT of SV3-SG-A-7101-71, Upper Shell D-to-Transition Cone Weld, ASME Class 2
- Observation: UT of SV3-SG-A-101-35, Transition Cone-to-Lower Shell C Weld, ASME Class 2
- Observation: UT of SV3-SG-A-101-21, Elliptical Head Knuckle-to-Upper Shell-E Weld, ASME Class 2
- Observation: MT Examination of SV3-PRZ-LLS-P01, Pressurizer Lower Lateral Welded Support Pad, ASME Class 1

- Observation: MT of SV3-PRZ-LLS-P03, Pressurizer Lower Lateral Welded Support Pad, ASME Class 1
- Observation: MT of SV3-PRZ-LLS-P04, Pressurizer Lower Lateral Welded Support Pad, ASME Class 1
- Review: MT of SV3-PRZ-LLS-P02, Pressurizer Lower Lateral Welded Support Pad, ASME Class 1
- Review: Visual Examination (VT) of SV3-SG-A-PMW-A01, Primary Manway Studs, ASME Class 1
- Review: VT of SV3-SG-B-PMW-B01, Primary Manway Studs, ASME Class 1

b. Findings

No findings were identified.

3P03 (Unit 4) Preservice Inspection

- 73054 - Part 52, Preservice and Inservice Inspection - Review of Program
- 73054-02.01 - Program Approval
- 73054-02.02 - Program Organization
- 73054-02.04 - Quality Assurance Program
- 73054-02.05 - Code Repair/Replacement Program Review
- 73054-02.06 - Records
- 73054-02.07 - Qualification of Personnel
- 73054-02.08 - Reporting Requirements
- 73054-02.09 - Relief Requests
- 73754 - Part 52 - Preservice Inspection - Non-Destructive Examination
- 73754-02.02 - Personnel Qualification & Certification
- 73754-02.03 - Non-destructive Examination (NDE) Review
- 73757-02.01 - General Records Review

a. Inspection Scope

The inspectors performed a review of the Vogtle Unit 4 PSI program plan using IP 73054, "Part 52, Preservice and Inservice Inspection – Review of Program." In addition, the inspectors reviewed the NDE examination procedures and observed the NDE using IP 73754, "Part 52 – Preservice Inspection - Non-Destructive Examination".

The inspectors reviewed SV4-GW-GEI-100, "AP1000 Preservice Inspection Program Plan for Vogtle Unit 4", Rev. 1 to determine if the program conformed with the regulatory requirements of 10 CFR Part 50.55a and the license commitments. Specifically, the inspectors reviewed the PSI program plan to determine if:

- site management and the ANII reviewed and approved the PSI program plan in accordance with article IWA-2120 of the ASME Section XI code;

- ASME code cases were in accordance with 10 CFR 50.55a and RG 1.147, “Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1”, Rev 17;
- licensee commitments and regulatory requirements pertinent to PSI testing and monitoring were adequately captured and described in the PSI program plan;
- the ASME Code edition and addenda to be used for PSI is identified and in accordance with 10 CFR 50.55a;
- repair/replacement activities will be performed in accordance with ASME Section XI requirements;
- submittal of written reports of PSI/ISI results and repairs/replacements are in accordance with ASME Section XI, IWA-6000; and
- guidance regarding the identification and processing of requests for relief from, and alternatives to, ASME Code requirements is in accordance with 10 CFR 50.55a(g)(5)(iii).

The inspectors reviewed a sample of the licensee's and contractor's QA program, implementing procedures, audit records, written practices, training records, and certification records to determine if the QA program and site procedures will support execution of the PSI activities. Specifically, the inspectors reviewed those documents to determine if:

- procedures adequately defined the authority and responsibilities of persons or organizations involved with the final evaluation of PSI examination results for the licensee;
- procedures were in place and adequate for the generation and maintenance of required PSI records;
- procedures received a quality review to ensure accuracy and acceptableness prior to issuance;
- procedures had been established for corrective actions concerning flaws identified during preservice examination;
- contractor personnel had been trained on the licensee's corrective action program;
- audits and surveillances of PSI activities are performed and done so by qualified auditors;
- procedures had been established to effectively oversee contractor PSI activities;
- procedures had adequately implemented the requirements of ASME Section XI, IWA-6000; and
- written practices had specified personnel qualification requirements consistent with the ASME Section XI, ANSI/ASNT CP-189, and 10 CFR 50.55a.

The inspectors directly observed or reviewed the following NDE activities. These activities were mandated by the ASME Boiler and Pressure Vessel Code (Code of Record: 2007 Edition with 2008 Addenda). The inspectors evaluated the NDE activities for compliance with the requirements in Section XI and Section V of the ASME Code. The inspectors also evaluated if any identified indications or defects were dispositioned in accordance with either the ASME Code or an NRC-approved alternative requirement. Additionally, the inspectors reviewed the qualifications of the NDE technicians performing the examinations to determine if they were in compliance with ASME Code requirements.

- Observation: MT of SV4-PRZ-LLS-P02, Pressurizer Lower Lateral Welded Support Pad, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B05, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B06, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B07, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B08, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B09, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B10, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B11, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B12, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B13, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B14, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B15, Upper Lateral/ADS Welded Support Bracket, ASME Class 1
- Review: PT of SV4-PRZ-ULS-B16, Upper Lateral/ADS Welded Support Bracket, ASME Class 1

b. Findings

No findings were identified.

**4. OTHER INSPECTION RESULTS**

4OA6 Meetings, Including Exit  
Exit Meeting.

On January 11, 2017, the inspectors presented the inspection results to Mark Rauckhorst, Executive Vice President Vogtle 3&4 Construction, along with other licensee and contractor staff members. The inspectors stated that no proprietary information would be included in the inspection report.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licenses and Contractor Personnel**

M. Washington, SNC Licensing  
B. Harrison, SNC Engineering  
P. Shaw, WEC Licensing  
J. Tokarsky, WEC QA Manager  
M. Yox, SNC Regulatory Affairs Director  
F. Willis, SNC Licensing Manager  
J. O'Dell, SNC Licensing  
C. Rocco, WEC Engineering  
B. Hirmanpour, SNC Regulatory Affairs  
G. Fechter, SNC Engineering  
D. Midlik, SNC Licensing  
B. Chamberlain, SNC Engineering  
M. Wilson SNC Engineering  
A. Quarles, SNC Licensing  
K. Accornero, Principal Engineer, WEC Engineering Center of Excellence Quality  
T. Nowicki, Principal Engineer, WEC AP1000 Piping, Supports, and Mechanical Modules  
P. Kotwicki, Fellow Engineer, WEC AP1000 Piping, Supports, and Mechanical Modules  
N. Costanzo, Principal Engineer, WEC AP1000 Piping, Supports, and Mechanical Modules  
M. Palaria, Manager, WEC AP1000 Piping, Supports, and Mechanical Modules  
M. Wilkie, Director, WEC Mechanical Engineering  
S. DiTommaso, Manager, WEC AP1000 ITAAC & Inspection Support  
P. Russ, Director, U.S Licensing & Regulatory Support  
M. Klinvex, Sr. Licensing Engineer, WEC AP1000 ITAAC & Inspection Support  
J. Semanco, Principal Engineer, WEC Technical Integration  
M. Shaqqo, Technical Services Director, WEC Vogtle 3 & 4 Project  
A. Wank, Sr. Licensing Engineer, WEC AP1000 ITAAC & Inspection Support  
B. Bedford, Director, WEC Site Mechanical & Electrical Engineering

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

<u>Item Number</u>	<u>Type</u>	<u>Status</u>	<u>Description</u>
05200025/2016004-01	Non Cited Violation	Open	Failure to identify nonconforming embed plate weld
05200026/2016004-01	Non Cited Violation	Open	Failure to identify nonconforming embed plate weld
05200025/2016004-02	Non Cited Violation	Open	Failure to qualify WPS in accordance with applicable code

## LIST OF DOCUMENTS REVIEWED

### Section 1A01

APP-1000-S2C-056, "Nuclear Island Seismic Floor Response Spectra," Rev. 1.  
 APP-1000-S2C-056, "Nuclear Island Seismic Floor Response Spectra", Rev. 2  
 APP-1000-S2C-181, "AP1000 Nuclear Island Seismic Floor Response Spectra Envelopes," Rev. 0  
 APP-1000-S2C-160, "Design Input of Nuclear Island Floor Response Spectra," Rev. 1.  
 APP-1000-S2C-172, "Design Nuclear Island Floor response Spectra for AP1000 Fuel Handling Equipment," Rev. 0  
 APP-GW-S2R-012, "Reconciliation of Design Floor Response Spectra for AP1000 Nuclear Island," Rev. 1.  
 APP-GW-G1-002, "AP1000 Equipment Qualification Methodology," Rev. 5  
 APP-GW-G1-003, "AP1000 Seismic Design Criteria," Rev. 6.  
 APP-FH01-Z0-001, "Design Specification for AP1000 Refueling Machine," Rev. 2.  
 APP-FH01-S2C-001, "AP1000 Refueling Machine Seismic Analysis Report," Rev. 1.  
 APP-FH01-S2C-003, "AP1000 Refueling Machine Seismic Analysis," Rev. 0.  
 APP-FH02-Z0-001, "Design Specification for AP1000 Refueling Machine," Rev. 2.  
 APP-FH02-S2C-001, "AP1000 Fuel Handling Machine Seismic Analysis Report," Rev. 1.  
 APP-FH02-S2C-002, "AP1000 Fuel Handling Machine Seismic Analysis Report," Rev. 1.

### Section 1A02

APP-GW-GLR-033, "Spent Fuel Storage Racks Structural/Seismic Analysis", Rev. 5  
 APP-GW-GLR-029, "AP1000 Spent Fuel Storage Racks Criticality Analysis", Rev. 4

### Section 1A03

#### Design Specifications:

APP-GW-P1-001, "Piping Design Criteria for AP1000," Revision 1  
 APP-PH02-Z0-001, "AP1000 ASME Section III Class 1, 2, and 3 and Seismic Category II Pipe Supports/Tubing Supports/Instrument Rack Supports," Revision 3  
 APP-PL02-Z0-101, "AP1000 Class 1 Piping and Non-Class 1 Extensions Design Specification," Revision 4

#### Procedures:

W2-8.4-102, "Design Document Verification," Revision 0.0

#### Piping Analysis Reports:

APP-RCS-PLR-020, "AP1000 RCS Pressurizer Spray, Auxiliary Spray, and CVS Supply and Return Piping PIPESTRESS Analysis and PSFATSTR," Revision 2  
 APP-RCS-PLR-050, "AP1000 Reactor Coolant Loop (RCL): Piping Qualification," Revision 4

### Section 1A04

APP-MW01-GEF-007, "Revised Dimensions of MW01 Sparger with No Changes in Geometry," Revision 0  
 CALIBR-036150, "Certificate of Calibration" for Coordinate Measuring Machine (CMM), ZEISS CONTURA G2, E-1300, 08/18/2016  
 SV3-MW01-Z0R-002, "AP1000 ADS Sparger - Vogtle Unit 3 (SV3) Flow Area As-Built Analysis," Revision 0

### Section 1A05

D-AA-11104-M02, AP1000 Reactor Vessel, Vogtle #3 Vessel As-Built, Rev. 1  
 Vogtle Unit 3 COL Appendix C Figure 2.1.3-3, "Reactor Vessel Arrangement"  
 Vogtle Unit 3 COL Appendix C Table 2.1.3-4, "Key Dimensions and Acceptable Variations of the Reactor Vessel and Internals"

### Section 1A06

APP-PH01-V8-001, "Reactor Vessel Support, RPV Support Installation Procedure", Steps 1-4, Rev. 2  
 APP-PH01-V8-002, "Reactor Vessel Support, RPV Support Installation Procedure", Steps 5-6, Rev. 2  
 APP-PH01-V8-003, "Reactor Vessel Support, RPV Support Installation Procedure", Steps 7-14, Rev. 2  
 APP-PH01-V8-004, "Reactor Vessel Support, RPV Support Installation Procedure", Steps 15A-20, Rev. 2  
 APP-PH01-V1-011, "Reactor Vessel Support, RPV Support General Assembly", Rev. 4  
 APP-PH01-V1-012, "Reactor Vessel Support, RPV Support Concrete Embedment General Assembly", Rev. 4  
 APP-PH01-V2-217, "Reactor Vessel Support, Interior Anchor Bolt Assembly and Details", Rev. 2  
 APP-PH01-V2-218, "Reactor Vessel Support, Main Embedment Assembly and Details", Rev. 3  
 APP-PH01-V2-219, "Reactor Vessel Support, RPV Support Hardware Details", Rev. 0  
 909964-001, "Reactor Vessel Support NE, Machining of Embedments and Reactor Vessel Support Installation", Rev. 1  
 909964-002, "Reactor Vessel Support NW, Machining of Embedments and Reactor Vessel Support Installation", Rev. 1  
 909964-003, "Reactor Vessel Support SE, Machining of Embedments and Reactor Vessel Support Installation", Rev. 1  
 909964-004, "Reactor Vessel Support SW, Machining of Embedments and Reactor Vessel Support Installation", Rev. 1  
 SV3-PH01-CEW-CV7666, "RV Installation", Rev. 1  
 SV3-MV01-MHH-007, "Upending and Installation of Unit 3 Reactor Vessel", Rev. 0  
 NCSP 03-08, "Rigging, Lifting, and Transportation", Rev. 4

### N&Ds

SV3-PH01-GNR-000010, "RV Interior Anchor Bolts Location and Elevation", Rev.0  
 SV3-PH01-GNR-000013, "NE RV Support/Embed Contact", Rev.0  
 SV3-PH01-GNR-000014, "SE RV Support/Embed Contact", Rev.0  
 SV3-CA04-GNR-000042, "RV Interior Anchor Bolts Construction Aid Weld Size", Rev.0  
 SV3-CR01-GNR-000667, "Foreign Object in RV Concrete", Rev.0

### E&DCRs

SV0-PH01-GEF-000015, "No-Go Gauge Pitch Diameter for RV Support Tapped Holes", Rev.0  
 APP-1100-GEF-306, "E&DCR for Removing the CA-04 Top Flange", Rev.0

### Section 1A07

APP-1000-S2C-056, "Nuclear Island Seismic Floor Response Spectra", Rev. 1  
 APP-1000-S2C-056, "Nuclear Island Seismic Floor Response Spectra", Rev. 2  
 APP-1000-S2C-181, "AP1000 Nuclear Island Seismic Floor Response Spectra Envelopes", Rev. 0.  
 APP-1000-S2C-160, "Design Input of Nuclear Island Floor Response Spectra", Rev. 1.



APP-1100-S2C-106, "Seismic Inputs for Dynamic Analysis of AP1000 Core Makeup Tanks", Rev. 0  
 APP-1000-S2C-172, "Design Nuclear Island Floor response Spectra for AP1000 Fuel Handling Equipment", Rev. 0.  
 APP-GW-S2R-012, "Reconciliation of Design Floor Response Spectra for AP1000 Nuclear Island", Rev. 1.  
 APP-GW-G1-002, "AP1000 Equipment Qualification Methodology", Rev. 5.  
 APP-GW-G1-003, "AP1000 Seismic Design Criteria", Rev. 6.  
 APP-JE92-VBR-001, "Equipment Qualification Summary Report for Nuclear Instrumentation System Detectors for Use in the AP1000 Plant", Rev. 3.  
 APP-JE92-VBR-002, "Equipment Qualification Data Package for Nuclear Instrumentation System Detectors for Use in the AP1000 Plant", Rev. 3.  
 APP-JE92-Z0-001, "AP1000 Excore Source Range Detector Design Specification", Rev. 4.  
 APP-JE92-Z0-002, "AP1000 Excore Intermediate Range Detector Design Specification", Rev. 6.  
 APP-JE92-Z0-003, "AP1000 Excore Power Range Detector Design Specification", Rev. 4  
 APP-JE92-VPC-002, "AP1000 Nuclear Instrumentation System Intermediate Range Excore Neutron Detector Floor Response Spectra Reconciliation", Rev. 0

### **Section 1A08**

APP-GW-G1-002, "AP1000 Qualification Methodology," Revision 5, dated 10/21/2016  
 APP-GW-VP-030, "AP1000 Environmental Conditions," Revision 6, dated 10/19/2016  
 APP-SSAR-GSC-157, "AP1000 Long-Term LOCA Containment Integrity Analysis with WGOthic," Revision 1, dated 2/2/2015  
 APP-SSAR-GSC-166, "AP1000 Steamline Break Containment Integrity Analysis," Revision 1, dated 11/26/2014  
 APP-GW-VPR-008, "Evaluation of Environmental Conditions Envelope Exceedances," Revision 0, dated 11/25/2015  
 APP-JE92-VBR-001, "Equipment Qualification Summary Report for Nuclear Instrument Detectors for Use in the AP1000 Plant," Revision 3, dated 10/17/2016.  
 WNA-AR-00448-WAPP, "Detector Evaluation for Thermal and Radiation Aging," Revision 1, dated March 2015.  
 APP-JE92-VPH-001, "AP1000 Excore Nuclear Detectors Equipment Qualification Test Plan," Revision 0, dated July 2011.  
 NCTR 11-013, "Mirion Technology Technical Manual for NY-10865 – Source Range Detector Assembly," Revision 4, dated 8/4/2016  
 NCTR 11-014, "Mirion Technology Technical Manual for NY-10866 – Intermediate Range Detector Assembly," Revision 5, dated 8/4/2016  
 APP-JE92-Z0-002, "AP1000 Excore Intermediate Range Detector Specification," Revision 6, dated 10/6/2016  
 Memo from RJ Lee Group, Thermogravimetric Analysis for Calculation of Activation Energy Purchase Order Number 4500385534, dated 5/16/2011  
 APP-JE92-Z0-001, "AP1000 Excore Source Range Detector Design Specification," Revision 4, dated 10/6/2016  
 APP-JE92-Z0-003, "AP1000 Excore Power Range Detector Design Specification," Revision 4, dated 10/6/2016  
 APP-JE92-VBR-002, "Equipment Qualification Data Package for Nuclear Instrumentation System Detectors for Use in the AP1000 Plant," Revision 3, dated 10/17/2016  
 K-015991-RA-001, "Kinectrics Inc Test Report for Qualification Testing of AP1000 Excore Neutron Detector Assemblies (IR Detector)," Revision 1, dated 8/11/2014  
 K-015991-PSWI-0001, "Kinectrics Inc Test Procedure for Qualification Testing of AP1000 Excore Neutron Detector Assemblies," Revision 7, dated 1/9/2014

K-015991-PSWI-0001, "Kinectrics Inc Test Procedure for Qualification Testing of AP1000 Excure Neutron Detector Assemblies," Revision 6, dated 1/9/2014  
 APP-JE92-VPR-001, "DBA Pressure and Temperature Envelope Evaluation for the Mirion Technologies NY-10866A Intermediate Range Neutron Detectors," Revision 0, dated 1/24/2015

### **Section 1A09**

Isometric Design Drawings  
 APP-RNS-PLW-015, Revision 8  
 APP-RNS-PLW-180, Revision 3  
 APP-SFS-PLW-789, Revision 6

Deviation Notice  
 SV3-RNS-GNR-006, Revision 0

Specification  
 APP-GW-P0-008 Revision 6, "AP1000 Specification for Field Fabricated Piping and Installation, ASME Section III, Code Classes 1, 2, and 3, and ASME B31.1."

### **Section 1A10**

#### Code Data Reports

Form N-2 Certificate Holders' Data Report for Identical Nuclear Parts and Appurtenances for Serial No. IN-4654, National Board No. 2708, 10/05/2012  
 Supplemental Information for Form N-2 Certificate Holders' Data Report for Serial No. IN-4654, National Board No. 2708, 10/05/2012

#### Drawings

225B011, "Detail Drawing of Upper and Lower Equipment Hatches Cover Assembly," Revision 1

#### Base Metal Certified Material Test Reports

5973-2 for Heat No. 5-0533 and Lot No. C5164 A, 05/13/2010  
 5975-3 for Heat No. 4-8088 and Lot No. CH057 A, B, C, D, 08/27/2010

#### Miscellaneous

APP-MV50-Z0-001, "AP1000 Containment Vessel Design Specification," Revision 9  
 APP-MV50-Z0-002, "AP1000 Containment Vessel Equipment Hatch," Revision 5  
 APP-MV50-Z0-037, "AP1000 Containment Vessel: SA-738 Grade B Plates," Revision 4  
 GS603-5-2, "General Specification for Fabrication of Elliptical Steel Head Plates With and Without Nozzles," Revision 4  
 IHI Document No. 026F602, "Manufacture's Specification for Plates SA-738 Gr. B," Revision 8  
 LT-003-U3-UEH-004-4009, Leak Testing Record for F23-AA-1A, 1B, 2A, 2B, 03/08/2011  
 Weld Traveler No. 165766 for F23 Upper Equipment Hatch Cover Nameplate, U3-S3-F23-Nameplate, "Removed Nameplate Assembly," 10/29/2015

### **Section 1A11**

#### Certified Material Test Reports & Certificates of Conformance:

Westinghouse Quality Release and Certificate of Conformance QR-12-1212 (SV3-ML10-VQQ-001);

Certified Material Test Report for P19 (CMTR-1112-003 Revision 1)

Certified Material Test Report for P20 (CMTR-1112-025 Revision 1)

Certified Material Test Report for P22 (CMTR-1112-027 Revision 1)

**Section 1A12**

Magnetic Particle Examination Records

MT-003-AP-WF23-AA-C, After PWHT  
 MT-003-BG-WF23-AA-C, Back Groove  
 MT-003-BG-WF23-AA-L1, L2, Back Groove  
 MT-003-BP-WF23-AA-C, Before PWHT  
 MT-003-BR-WF23-AA-C, Back Groove Root Pass  
 MT-003-EP-WF23-AA-C, Weld Edge Preparation  
 MT-003-EP-WF23-AA-L1, L2, Weld Edge Preparation  
 MT-003-RP-WF23-AA-C, Root Pass

Filler Metal Certified Material Test Reports

RINJQ-225-3-1 for Heat No. 8U7724(1), 06/13/2012  
 RINJQ-225-3-2 for Heat No. 9D7894(1), 06/04/2012  
 RINJQ-225-3-4 for Heat No. 9K7972(1), 06/04/2012

Radiographic Examination Records

RT-003-WF23-AA-CL, After Completion of Weld  
 RT-003-WF23-AA-L1, 2, After Completion of Weld

Miscellaneous

003-SRB-017B, Postweld Heat Treatment Record for F23-A, 01/12/2011  
 Manufacturer's Record of Welder Performance Qualification Test (WPQ) for W-0397, W-2006,  
 and W-2273  
 WPS I-11R2G, Welding Procedure Specification, Revision 3

**Section 1A13**

Weld Data Sheets:

Weld Number SV3-RNS-PY-C01-1 (P19 Sleeve Extension to Penetration Sleeve, Pressure Boundary)  
 Weld Number SV3-RNS-PY-C01-2 (P19 Guard Pipe to Penetration Sleeve, Pressure Boundary)  
 Weld Number SV3-RNS-PY-C01-3 (P19 Flued Head to Guard Pipe, Pressure Boundary)  
 Weld Number SV3-RNS-PY-C02-1 (P20 Sleeve Extension to Penetration Sleeve, Non-Pressure Boundary)  
 Weld Number SV3-RNS-PY-C02-2 (P20 Flued Head to Penetration Sleeve, Pressure Boundary)  
 Weld Number SV3-SFS-PY-C01-1 (P22 Sleeve Extension to Penetration Sleeve, Non-Pressure Boundary)  
 Weld Number SV3-SFS-PY-C01-2 (P22 Flued Head to Penetration Sleeve, Pressure Boundary)

Specifications and Drawings

SV3-ML10-Z0-002, "AP1000 Containment Piping Penetrations with Flued Heads Design Specification," Revision 2;  
 SV3-MV50-V8-001, "AP1000 Containment Vessel Penetration Installation Specification," Revision 1;  
 SV3-MV50-V1-019, "AP1000 Containment Vessel Mechanical Penetration Sleeves Bottom Head," Revision 2;  
 SV3-MV50-V2-062, "AP1000 Containment Vessel Penetration Sleeve Extensions," Revision 1;

SV3-RNS-MLK-881065, "Weld Map for Penetration SV3-RNS-PY-C01 (P19)," Revision 0;  
 SV3-RNS-MLK-881066, "Weld Map for Penetration SV3-RNS-PY-C02 (P20)," Revision 0;  
 SV3-SFS-MLK-881067, "Weld Map for Penetration SV3-SFS-PY-C02 (P22)," Revision 0;  
 SV3-1100-P0-906, "Steel Containment Vessel Mechanical Penetration Details," Revision 0;  
 SV3-ML10-V6-003, "AP1000 Flued Head Detail Drawing for Penetration P19," Revision 1;  
 SV3-ML10-V6-010, "AP1000 Flued Head Detail Drawing for Penetration P22," Revision 1;  
 SV3-SFS-PLW-510, "Spent Fuel Pool Cooling System Auxiliary Building Room 12254 Return From Containment Area," Revision 1;  
 SV3-SFS-PLW-789, "Spent Fuel Pool Cooling System Containment Building Room 11206 SFS to Containment Penetration C02," Revision 1;

Certificates of Conformance:

Westinghouse Quality Release and Certificate of Conformance QR-12-1212 (SV3-ML10-VQQ-001);

QC Inspection Reports:

S562-16-10685  
 S562-16-10647

Radiography Examination Reports

V-16-RT-301-0242, SV3-RNS-PY-C01 (P19)  
 V-16-RT-301-0243, SV3-RNS-PY-C02 (P20)  
 V-16-RT-301-0246, SV3-RNS-PY-C01 (P19)  
 V-16-RT-301-0248, Flued Head to Penetration Sleeve / SV3-SFS-PY-C02 (P22)  
 V-16-RT-301-0250, Sleeve Extension to Penetration Sleeve / SV3-SFS-PY-C02 (P22)  
 V-16-RT-301-0252, Sleeve Extension to Penetration Sleeve / SV3-RNS-PY-C02 (P20)  
 V-16-RT-301-0254, Sleeve Extension to Penetration Sleeve / SV3-RNS-PY-C01 (P19)

**Section 1A14**

Base Metal Certified Material Test Reports

5973-2 for Heat No. 5-0533 and Lot No. C5164 A, 05/13/2010  
 5975-3 for Heat No. 4-8088 and Lot No. CH057 A, B, C, D, 08/27/2010

Filler Metal Certified Material Test Reports

RINJQ-225-3-1 for Heat No. 8U7724(1), 06/13/2012  
 RINJQ-225-3-2 for Heat No. 9D7894(1), 06/04/2012  
 RINJQ-225-3-4 for Heat No. 9K7972(1), 06/04/2012

**Section 1A15**

APP-PV10-Z0-001; Design Specification; Ball and Plug Valves, ASME Boiler and Pressure Vessel Code Section III, Class 2 and 3; Revision 9  
 APP-PV10-VBR-008; Equipment Qualification Data Package for Manually Operated Ball Valves for use in the AP1000 Plant; Revision 2  
 APP-PV10-VBR-007; Equipment Qualification Summary Report for Manually Operated Ball Valves for use in the AP1000 Plant; Revision 2  
 APP-PV10-Z0D-102; PV10 Datasheet 102, Revision 4  
 APP-PV10-VDR-102; Compilation of Design Reports for PV10 Datasheet 102; Revision 0  
 APP-PV10-V2-102001; 3" CL 150 Butt Welded Manual Ball Valve; Revision 0  
 APP-PV10-V2-102002; 3" CL 150 Butt Welded Manual Ball Valve; Revision 1

Licensing Impact Determination

Vogtle 3&4, LDCR-2016-074; consistency changes to Appendix 3D with EA Specifications, Revision 1

Corrective Action Entries:

Vogtle CR 10308618; LDCR 2015-141 Incorporation; issued on 12/14/2016

WEC CAPAL DI 100437324; EQDP Sample in DCD/USFSARs Inconsistencies with EQ Program Documentation; Issue Date: Dec 15, 2016

**Section 1A16**

CMTRs/CoCs:

PO 450000091 "The Lincoln Electric Company Cert Number ES-ZBMW and ES-ZBLX, Lot 1217X and 1217Y" dated 11/27/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBBD, Lot 1217V" dated 11/27/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBBE, Lot 1217T" dated 12/11/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBBC, Lot 1217W" dated 12/11/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBKD, Lot 1220T" dated 12/23/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBKE, Lot 1220V" dated 12/20/14

PO 4500002695 ID: P/SLIP# 221640 "SV3-PXS-PLW-01S-1" dated 03/04/15

PO 4500002695 ID: P/SLIP# 221640 "SV3-PXS-PLW-02X-2" dated 03/04/15

NDE Reports:

MT Reports:

S3000AB-1 Rev 0

S3012AB-1 Rev 0

S3006AB-1 Rev 0 (QTY 2)

S3006AB-1 Rev 0 (weld 3059 rejection)

A3102AB-1 Rev 3

S3004AB-1 Rev 0

S3009AB-1 Rev 0

S3007AB-1 Rev 0 (QTY 2)

S3008AB-1 Rev 0

S3010AB-1 Rev 0

SF3001AB-3 Rev 0

SF3001AB-4 Rev 0

SF 3000AB-2/3/4 Rev 0

SW3000AB-1/2/3/4 Rev 0

S3011AB-1 Rev 0

PT Reports:

SV3-Q233-PXS-PLW-01 Rev 1 (QTY 7)

SV3-Q233-PXS-PLW-02 Rev 0 (QTY 5)

SV3-Q233-PXS-PLW-01 Rev 1 (with indications)

SV3-Q233-PXS-PLW-HYD-02 Rev 1 (QTY 4)

SV3-Q233-PXS-PLW-HYD-01 Rev 1 (QTY 8)

RT Reports:

RT-X3301-01  
 RT-X3301-02  
 RT-X3301-03  
 RT-X3301-04  
 RT-X3301-11  
 RT-X3302-01  
 RT-X3302-02

UT Reports:

U-A3101 X33 (LAM)  
 U-X33 A3103  
 U-3103 X33 (LUGS)  
 U-BOX-A3102 W1336  
 U-BOX-A3102-1 W8138  
 U-HEAT-SF3000  
 U-S3002-1  
 U-SF3000  
 U-SF3000-1  
 U-SW3000  
 UT-X3301-04  
 UT-X3302-01

VT Reports

TRV-A00002G33-052 Oper. No. 70 & 80  
 TRV-A00002G33-053 Oper. No. 95  
 TRV-A00002G33-053 Oper. No. 105  
 TRV-A00002G33-020 Oper. No. 50  
 TRV-A00002G33-019 Oper. No. 50  
 TRV-A00002G33-013 Oper. No. 45.7  
 TRV-A00002G33-033 Oper. No. 40  
 TRV-A00002G33-004 Oper. No. 65  
 TRV-A00002G33-060 Oper. No. 70  
 TRV-A00002G33-004 Oper. No 80

Hydrostatic Test Reports:

X33-HYD-001 (Calibration Certificates AIC006-16-08-28031-4 and AIC006-16-08-28031-7)  
 X33-HYD-002 (Calibration Certificates AIC006-16-08-28031-5 and AIC006-16-08-28031-3)

Non-Conformance Reports:

A00002-000-0245 Rev 1 dated 07/21/16  
 A00002-000-0264 Rev 0 dated 07/29/16  
 A00002-000-0294 Rev 1 dated 08/15/16  
 A00002-000-0027 Rev 1 dated 03/25/16

**Section 1A17**

## Design Specifications:

APP-GW-P1-001, "Piping Design Criteria for AP1000," Revision 1  
 APP-PH02-Z0-001, "AP1000 ASME Section III Class 1, 2, and 3 and Seismic Category II Pipe Supports/Tubing Supports/Instrument Rack Supports," Revision 3

APP-PL02-Z0-101, "AP1000 Class 1 Piping and Non-Class 1 Extensions Design Specification," Revision 4

Procedures:

W2-8.4-102, "Design Document Verification," Revision 0.0

Piping Analysis Reports:

APP-PXS-PLR-050, "AP1000 CMT 2A Supply Line: Piping Stress Analysis Report," Revision 0

APP-PXS-PLR-050, "AP1000 CMT 02A Supply Line (APP-PXS-PLA-050) Piping Stress Analysis Report," Revision 1

APP-PXS-PLR-050, "AP1000 CMT 02A Supply Line (APP-PXS-PLR-050) Piping Stress Analysis Report," Revision 2

APP-PXS-PLR-050, "Isometric Acceptance Report for APP-PXS-PLR-050," Revision 3

APP-PXS-PLR-050, "Isometric Acceptance Report for APP-PXS-PLR-050," Revision 4

APP-PXS-PLR-050, "AP1000 CMT 02A Supply Line Piping Stress Analysis Report," Revision 5

APP-PXS-PLR-050, "AP1000 CMT 02A Supply Line Piping Stress Analysis Report," Revision 6

**Section 1A18**

CMTRs/CoCs:

PO 450000091 "The Lincoln Electric Company Cert Number ES-ZBMW and ES-ZBLX, Lot 1217X and 1217Y" dated 11/27/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBBD, Lot 1217V" dated 11/27/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBBE, Lot 1217T" dated 12/11/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBBC, Lot 1217W" dated 12/11/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBKD, Lot 1220T" dated 12/23/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBKE, Lot 1220V" dated 12/20/14

PO 4500002695 ID: P/SLIP# 221640 "SV3-PXS-PLW-01S-1" dated 03/04/15

PO 4500002695 ID: P/SLIP# 221640 "SV3-PXS-PLW-02X-2" dated 03/04/15

Hydrostatic Test Reports:

X33-HYD-001 (Calibration Certificates AIC006-16-08-28031-4 and AIC006-16-08-28031-7)

X33-HYD-002 (Calibration Certificates AIC006-16-08-28031-5 and AIC006-16-08-28031-3)

Non-Conformance Reports:

A00002-000-0245 Rev 1 dated 07/21/16

A00002-000-0264 Rev 0 dated 07/29/16

A00002-000-0294 Rev 1 dated 08/15/16

A00002-000-0027 Rev 1 dated 03/25/16

**Section 1A19**

CMTRs/CoCs:

PO 450000091 "The Lincoln Electric Company Cert Number ES-ZBMW and ES-ZBLX, Lot 1217X and 1217Y" dated 11/27/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBBD, Lot 1217V" dated 11/27/14

PO 450000091 "The Lincoln Electric Company Cert Number ES-RBBE, Lot 1217T" dated 12/11/14  
PO 450000091 "The Lincoln Electric Company Cert Number ES-RBBC, Lot 1217W" dated 12/11/14  
PO 450000091 "The Lincoln Electric Company Cert Number ES-RBKD, Lot 1220T" dated 12/23/14  
PO 450000091 "The Lincoln Electric Company Cert Number ES-RBKE, Lot 1220V" dated 12/20/14

NDE Reports:

MT Reports:

S3000AB-1 Rev 0  
S3012AB-1 Rev 0  
S3006AB-1 Rev 0 (QTY 2)  
S3006AB-1 Rev 0 (weld 3059 rejection)  
A3102AB-1 Rev 3  
S3004AB-1 Rev 0  
S3009AB-1 Rev 0  
S3007AB-1 Rev 0 (QTY 2)  
S3008AB-1 Rev 0  
S3010AB-1 Rev 0  
SF3001AB-3 Rev 0  
SF3001AB-4 Rev 0  
SF 3000AB-2/3/4 Rev 0  
SW3000AB-1/2/3/4 Rev 0  
S3011AB-1 Rev 0

PT Reports:

SV3-Q233-PXS-PLW-01 Rev 1 (QTY 7)  
SV3-Q233-PXS-PLW-02 Rev 0 (QTY 5)  
SV3-Q233-PXS-PLW-01 Rev 1 (with indications)  
SV3-Q233-PXS-PLW-HYD-02 Rev 1 (QTY 4)  
SV3-Q233-PXS-PLW-HYD-01 Rev 1 (QTY 8)

RT Reports:

RT-X3301-01  
RT-X3301-02  
RT-X3301-03  
RT-X3301-04  
RT-X3301-11  
RT-X3302-01  
RT-X3302-02

UT Reports:

U-A3101 X33 (LAM)  
U-X33 A3103  
U-3103 X33 (LUGS)  
U-BOX-A3102 W1336  
U-BOX-A3102-1 W8138  
U-HEAT-SF3000



U-S3002-1  
 U-SF3000  
 U-SF3000-1  
 U-SW3000  
 UT-X3301-04  
 UT-X3302-01

#### VT Reports

TRV-A00002G33-052 Oper. No. 70 & 80  
 TRV-A00002G33-053 Oper. No. 95  
 TRV-A00002G33-053 Oper. No. 105  
 TRV-A00002G33-020 Oper. No. 50  
 TRV-A00002G33-019 Oper. No. 50  
 TRV-A00002G33-013 Oper. No. 45.7  
 TRV-A00002G33-033 Oper. No. 40  
 TRV-A00002G33-004 Oper. No. 65  
 TRV-A00002G33-060 Oper. No. 70  
 TRV-A00002G33-004 Oper. No 80

#### Section 1A20

APP-1000-S2C-056, "Nuclear Island Seismic Floor Response Spectra", Rev. 1  
 APP-1000-S2C-056, "Nuclear Island Seismic Floor Response Spectra", Rev. 2  
 APP-1000-S2C-181, "AP1000 Nuclear Island Seismic Floor Response Spectra Envelopes", Rev. 0.  
 APP-1000-S2C-160, "Design Input of Nuclear Island Floor Response Spectra", Rev. 1.  
 APP-1100-S2C-106, "Seismic Inputs for Dynamic Analysis of AP1000 Core Makeup Tanks", Rev. 0  
 APP-GW-S2R-012, "Reconciliation of Design Floor Response Spectra for AP1000 Nuclear Island", Rev. 1.  
 APP-GW-G1-002, "AP1000 Equipment Qualification Methodology", Rev. 5.  
 APP-GW-G1-003, "AP1000 Seismic Design Criteria", Rev. 6.  
 APP-MT01-Z0-100, "Design Specification for AP1000 Core Makeup Tank for System PXS", Rev. 9.  
 APP-MT01-Z0R-001, "AP1000 Core Makeup Tank ASME Generic Design Report", Rev. 5.  
 APP-MT01-Z0R-010, "AP1000 Core Makeup Tank Vessel Shell Analysis", Rev. 5.  
 APP-MT01-S2C-010, "AP1000 Core Make-Up Tank Support System Structural Analysis", Rev. 3.  
 APP-MT02-Z0-101, "Design Specification for AP1000 Accumulator Tank for PXS", Rev. 8.  
 APP-MT02-Z0R-001, "Detailed Analysis of AP1000 Accumulator Tank", Rev. 7.  
 APP-MT02-Z0R-101, "AP1000 Accumulator Tank Generic Design Report", Rev. 6.  
 APP-ME02-Z0-01, "Design Specification for AP1000 Passive Residual Heat Removal Heat Exchanger for System PXS", Rev. 11.  
 APP-PXS-M8-003, "AP1000 Passive Residual Heat Removal Heat Exchanger Interface Control Document", Rev. 4.  
 APP-ME02-Z0R-100, "AP1000 Passive Residual Heat Removal Heat Exchanger Generic Design Report", Rev. 2.  
 CAPAL 100437321

#### Section 1A21

APP-MN20-V8P-001, "Installation of MRI for Reactor Vessel Cavity", Rev. 1

APP-MN20-V1-104, "RV Insulation Installation Details", Rev. 0  
 APP-MN20-V1-105, "RV Insulation Installation Details", Rev. 0  
 APP-MN20-V2-105, "RV Shell Insulation Layout Upper RS1", Rev. 0  
 APP-MN20-V2-106, "RV Shell Insulation Layout Lower RS1", Rev. 0  
 APP-MN20-V2-107, "RV Shell Insulation Layout RS2", Rev. 0  
 APP-GW-V8P-001, "Installation Guidelines for AP1000 Components", Rev. 0  
 APP-GW-V8P-002, "AP1000 Installation Support Plant and Administration Procedure", Rev. 0

## **Section 1A22**

### **Procedures**

QS 15.03, "Risk Release of Unsat/Nonconforming Item," Revision 05.00

### **E&DCRs**

APP-AX01-GEF-850015, "Revise Inorganic Zinc DFTs," Revision 0  
 APP-AX01-GEF-010, "Remove Extraneous Coating Test," Revision 0

### **Specifications**

APP-G1-PX-003, "Protective Coatings for Piping," Revision 6  
 APP-G1-SX-001, "AP1000 Painting of Shop Fabricated Steel - Nuclear Safety," Revision 7  
 APP-G1-MX-001, "AP1000 Painting of OEM Mechanical Components," Revision 7

### **Design Changes**

APP-FSAR-GLN-764, "AP1000 Applicability Determination for APP-GW-GEE-5221," Revision 0  
 LDCR 2016-032, "Changes to UFSAR Descriptions of Service Level II Coatings," Revision 1.0  
 APP-GW-GEE-5221, "FSAR 6.1.2.1.6 Clarifications," Revision 0  
 APP-GW-GEE-5354, "UFSAR Modifications for Service Level II Coatings," Revision 0

### **N&Ds**

SV0-AX01-GNR-000004, "DBA Test Does Not Meet UFSAR Requirement," Revision 0  
 SV0-AX01-GNR-000006, "Macropoxy 646N Does not Meet UFSAR Requirement," Revision 0  
 SV0-AX01-GNR-000009, "X0 Spec Test Requirements - CR 10257046," Revision 0  
 SV0-AX01-GNR-000010, "X0 Spec Test Requirements - CR 10215978," Revision 0  
 SV3-AX01-GNR-000011, "Macropoxy 646N over SP11 on CA03," Revision 0

### **Calculations**

WCAP-17249-P, "Epoxy Coating Failure and Transport to Pressurized Water Reactor Containment Sump Screens," Revision 1

### **Miscellaneous**

Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 14BX, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 26BX and 26BY, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 27BX and 27BY, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 52BX and 52BY, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 26AX and 26AY, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 20AX, dated 6/10/2013

Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 28BX and 28BY, dated 6/10/2013  
 430000-CMTR-15-000041, "Sherwin Williams Product Identity Certificate for MAC 646N Epoxy (Part A), Lot No. XM2664XE," dated 3/25/2015  
 430000-CMTR-15-000042, "Sherwin Williams Product Identity Certificate for MAC 646N Epoxy (Part B), Lot No. XM2614TY," dated 3/25/2015  
 Report No. 15-0818, "PPG Protective & Marine Coatings Nuclear Coatings Service Level 1 Qualification Testing of PPG Amercoat Coating Systems Dimecote D9N, Amercoat 90HSN, and Amerlock 400NT," dated 8/18/2015  
 Carboline Document Access No. 09749, "Summary of Nuclear Product Densities," dated 7/3/2012  
 Carboline Testing Project 05398, "DBA Testing for AP1000 Plants: Minimum and Maximum DFTs of Carboguard 89-N and Carbozinc 11 HSN," dated 12/11/2012

### **Risk Releases**

V-RL-16-0018, "Incorrect Coatings on CA01-19 and CA01-04," Revision 0  
 V-RL-16-0070, "SV3 CA03 Coatings," Revision 0  
 V-RL-16-0142, "Coating Materials," Revision 0 through 5

### **Section 1A23**

SV3-MT01-GNR-010, "AP1000 CMT Deviation Notice for Diffuser Welding Deformation – Vogtle 3, 1st and 2nd Components (Mangiarotti # W3-DN-00-00-017 Rev.2)," Revision 0  
 SV3-MT01-Z0R-201, "AP1000 Core Makeup Tank – Vogtle Unit 3 (SV3) As-Built Analysis," Revision 0  
 SVP\_SV0\_004040, "Submittal of Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) Completion Package for Unit 3 ITAAC 2.2.03.08c.xi [COL Index Number 196] (Core Makeup Tank Inlet Diffuser)," 07/28/2016

### **Section 1A24**

SV0-PV03-V2-183001, "AP1000 Swing Check Valve, 8" Class 1530, Assembly Drawing APP-PV03-Z0D-183," Revision 1  
 SV0-PV03-V2-186001, "AP1000 Nozzle Check Valve, 8" Class 1707, Assembly Drawing APP-PV03-Z0D-186," Revision 0  
 SV3-PV03-PVR-002, "Inspection Report Confirming Discharge Check Valve Type for the Passive Core Cooling System Accumulator Discharge Check Valves and Core Makeup Tank Discharge Valves," Revision 0  
 SV3-PXS-PLW-014, "Passive Core Cooling System Containment Building Room 11206 Accumulator Discharge to DVIA," Revision 1  
 SV3-PXS-PLW-01K, "Passive Core Cooling System Containment Building Room 11206 CMT-A Discharge Piping," Revision 1  
 SV3-PXS-PLW-020, "Passive Core Cooling System Containment Building Room 11207 ISOL Valves to Common Injection HDR," Revision 2  
 SV3-PXS-PLW-024, "Passive Core Cooling System Containment Building Room 11207 Accumulator Discharge to DVIB," Revision 1  
 SV3-PXS-PLW-02P, "Passive Core Cooling System Containment Building Room 11207 ISOL Valves to RNS Injection HDR," Revision 0

### **Section 1A25**

Design Specifications:  
 APP-GW-P1-001, "Piping Design Criteria for AP1000," Revision 1

APP-PH02-Z0-001, "AP1000 ASME Section III Class 1, 2, and 3 and Seismic Category II Pipe Supports/Tubing Supports/Instrument Rack Supports," Revision 3  
 APP-PL02-Z0-102, "AP1000 Class 2, 3 Piping and B31.1 Extensions Design Specification," Revision 4

**Procedures:**

W2-8.4-102, "Design Document Verification," Revision 0.0

**Piping Analysis Reports:**

APP-CVS-PLR-100, "Piping Analysis Report for Chemical and Volume Control System (CVS) from SCV Penetration CVS-PY-C02/P06 to in-line anchors CVS-PH-11A2051 and Sleeve 11209-ML-P11/SL43, Containment Building Rooms 11300 and 11209, Piping in Module 1132-Q3-05," Revision 0

APP-CVS-PLR-530, "AP1000 Piping Analysis Report for the Chemical and Volume Control System from Anchor CVS-PH-12A0122 to Steel Containment Vessel Penetration CVS-PY-C03/P07," Revision 1

**Section 1A26**

Procedures

WPS1-8.8T01;

SV0-GW-VQ-800002 (100-PT-301), "Liquid Penetrant Examination in Accordance with ASME Section V, Article 6," Revision 12;

QC Inspection Plan Number F-M335-005, "Piping: ASME Section III Piping – Installation Class 1, 2, and 3 (Vogtle Units 3/4)," Revision 1, Change 0;

QC Inspection Plan Number F-S562-005, "Pipe Welding / Braze; ASME Section III Visual Pipe Weld Inspection F-S562-005," Revision 3, Change 0;

Work Packages / Welding Records / Welding Material Requisitions

Work Package Number SV3-RNS-PLW-ME0565;

ASME III Weld Data Sheet for Weld Number SV3-RNS-PLW-09A-1 (10" CJP weld between Line Number RNS-L009A and RNS Pump Number RNS-MP-01A);

WMR Numbers 213153, 213148, 213149

ASME III Weld Data Sheet for Weld Number SV3-RNS-PLW-09A-5 (1" socket weld between Line Number L036A and L009A);

ASME III Weld Data Sheet for Weld Number SV3-RNS-PLW-141-10 (6" CJP weld between Line Number RNS-L011A and RNS Pump Number RNS-MP-01A);

Work Package Number SV3-RNS-PLW-ME2705;

ASME III Weld Data Sheet for Weld Number SV3-RNS-PLW-161-1 (6" Schedule 80 CJP weld between Line Number L011B (Spool Piece SV3-RNS-PLW-161-1) and RNS Pump MP 01B)

Work Package Number SV3-RNS-PLW-ME0569;

ASME III Weld Data Sheet for Weld Number SV3-RNS-PLW-09B-15 (10" Schedule 80 CJP weld between Line Number L009B and RNS Pump MP 01B);

WMR Numbers 214373, 214371,

Drawings

SV3-RNS-M6-001, "Piping and Instrumentation Diagram Normal Residual Heat Removal System," Revision 2;  
 SV3-GW-VFY-001, "AP1000 Weld End Configuration for Stainless Steel, Carbon Steel and Alloy Steel Auxiliary Piping Components," Revision 1;  
 SV3-RNS-PLW-09A, "Normal Residual Heat Removal System Auxiliary Building Room 12162 RNS Pump Suction Lines (Pump MP 01A)," Revision 1;  
 SV3-RNS-PLW-141, "Normal Residual Heat Removal System Auxiliary Building Room 12162 / 12262 MP 01A Discharge from Pump to ME-01A," Revision 1;  
 SV3-RNS-PLW-161, "Normal Residual Heat Removal System Auxiliary Building Room 12163 / 12262 MP-01B Discharge From Pump to ME-01B," Revision 1;  
 SV3-RNS-PLW-09B, "Normal Residual Heat Removal System Auxiliary Building Room 12163 RNS Pump Suction Lines (Pump MP 01B )," Revision 1;  
 SV3-GW-PLW-100, "Piping Isometric General Notes Sheet 1," Revision 7;  
 SV3-GW-PLW-101, "Piping Isometric General Notes Sheet 2," Revision 1;

#### Specifications

SV3-GW-P0-008, "AP1000 Specification for Field Fabricated Piping and Installation, ASME III, Code Classes 1, 2, and 3 and ASME B31.1," Revision 4;  
 SV3-RNS-M6X-004, "RNS Pipe Line Designation Table," Revision 1;  
 SV3-PL02-Z0-001, "Piping Class Sheets and Standard Details," Revision 5;

#### Engineering and Design Coordination Reports

APP-RNS-GEF-850028, "Revise RNS Isos for Shop Welds," Revision 0;

#### Inspection Reports

Inspection Report Number M335-16-10112 (Identification and Marking of RNS-MP-01A) dated 11/7/2016;  
 V-16-PT-301-2201, PT Examination Report for Weld Number SV3-RNS-PLW-09A-1;  
 V-16-PT-301-2199, PT Examination Report for Weld Number SV3-RNS-PLW-141-10;  
 V-16-PT-301-2220, PT Examination Report for Weld Number SV3-RNS-PLW-09A-5;  
 V-16-PT-301-2228, PT Examination Report for Weld Number SV3-RNS-PLW-09B-15;

#### **Section 1A27**

APP-JW03-VBR-001, "Equipment Qualification Summary Report for the Main Control Room (MCR)/Remote Shutdown Room (RSR) Transfer Panel for Use in the AP1000 Plant," Rev 4, dated: Jan. 08, 2016.  
 APP-JW03-VBR-002, "Equipment Qualification Data Package for the Main Control Room (MCR) / Remote Shutdown Room (RSR) Transfer Panel," Rev. 3, Aug. 17, 2016.  
 APP-JW03-VPC-004, "Seismic Qualification of the Main Control Room/Remote Shutdown Room Transfer Panel for the AP1000," Rev. 0, Jul. 24, 2013.  
 APP-JW03-VPC-005, "Seismic Evaluation of Mounting Bolts and UNISTRUT Channel used for the Main Control Room/Remote Shutdown Room Transfer Panel for the AP1000 Plant," Rev. 0, Jan. 14, 2015.  
 APP-JW03-VPP-003, "Seismic Test Procedure for the AP1000 Main Control Room (MCR) / Remote Shutdown Room (RSR) Transfer Panel," Rev. 0, Apr. 23, 2012.  
 APP-OCS-J4-003, "AP1000 Main Control Room/Remote Shutdown Room Transfer Panel Design Specification," Rev. 2, Feb. 10, 2014.  
 APP-GW-G1-002, "AP1000 Equipment Qualification Methodology," Rev. 5, Oct. 21, 2016.

#### **Section 1A28**

APP-JW03-VBR-001, "Equipment Qualification Summary Report for the Main Control Room (MCR)/Remote Shutdown Room (RSR) Transfer Panel for Use in the AP1000 Plant," Rev. 4, Jan. 08, 2016.

APP-JW03-VBR-002, "Equipment Qualification Data Package for the Main Control Room (MCR) / Remote Shutdown Room (RSR) Transfer Panel," Rev. 3, Aug. 17, 2016.

APP-JW03-VPR-002, "Environmental and Seismic Test Report for the AP1000 Main Control Room (MCR) / Remote Shutdown Room (RSR) Transfer Panel," Rev. 0, June 2012.

100395794, "AP1000 Diverse Actuation System – EMC ITAAC – CGD of Calibration of Test Equipment," Jul 5, 2016.

100395796, "EMC Testing Services - CGD of Calibration of Test Equipment – Washington Labs Ltd.," Jul 5, 2016.

CEI / IEC 61000-4-5, Edition 1.1 "Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test," Apr. 2001

APP-PMS-ITH-020, "Standard Plant ITAAC 2.5.02.03 Performance Documentation Plan," Rev. 0, Jan. 30, 2013

APP-GW-G1-002, "AP1000 Equipment Qualification Methodology," Rev. 5, Oct. 21, 2016.

### **Section 1A29**

APP-JW03-VBR-001, "Equipment Qualification Summary Report for the Main Control Room (MCR)/Remote Shutdown Room (RSR) Transfer Panel for Use in the AP1000 Plant," Rev. 4, Jan. 08, 2016.

APP-JW03-VBR-002, "Equipment Qualification Data Package for the Main Control Room (MCR) / Remote Shutdown Room (RSR) Transfer Panel" Rev. 3, Aug. 17, 2016.

APP-JW03-VPR-002, "Environmental and Seismic Test Report for the AP1000 Main Control Room (MCR) / Remote Shutdown Room (RSR) Transfer Panel," Rev. 0, June 2012.

APP-PMS-J0M-003, "AP1000 Protection and Safety Monitoring System - Technical Manual," Rev. 0, Oct. 13, 2015.

### **Section 1A30**

See non-public security report 05200025/2016404 and 05200026/2016404 for details

### **Section 1A31**

APP-OCS-GEH-220, "AP100 Human Factors Engineering Task Support Verification Plan", Revision 4

APP-OCS-GER-220, "AP100 Verification Summary Report, Human Factors Engineering Task Support", Revision 0 and Revision 1

ND-RA-001-008, "Southern Nuclear ITAAC Principal Closure Document Review", Version 3.1

ND-RA-001-008-F01, "Southern Nuclear Principal Closure Document Review Form ITAAC 739", dated 9/21/16

NRC Vendor Report 99900404/2015-201

### **Section 1A32**

#### Procedures:

100-PT-304, "Liquid Penetration Examination in Accordance with the AWS Structural Welding Code," Revision 7;

F-S561-004, "Structural Weld Inspection - Modules, and Fabrication and Submodule Assembly Tolerances, Revision 20;

QS 09.04, "Visual Examination - Structural Welding AP1000 Modules - Safety Related," Revision 03.02;

Drawings / Specifications:

SV3-CA01-S4K-CV8246, "Module CA01 Subassembly\_02 Basemat Connections Accessible B-Plate Installation," Revision 1;  
 GWS-5, "AWS D1.6 - Stainless Structural Steel Welding Specification," Revision 4;  
 WPS5-1.10HT03;  
 E&DCR APP-CA01-GEF-708, "CA01 Baseplate Corrections," Revision 0;

Corrective Action Records:

CR 10308213;  
 CR 10308295;  
 CAPAL 100436977;  
 SV3-CA01-GNR-000958 (Unit 3 CA01);  
 SV3-CA02-GNR-000069 (Unit 3 CA02);  
 SV4-CA05-GNR-000028 (Unit 4 CA05);

Miscellaneous Records:

Weld Records for Weld CV8246-3, Weld CV8246-6; and Weld CV8246-7;  
 NDE Report Number V-16-PT-304-1927;

**Section 1A33**In-Process Work Packages and Welding Records:

Weld Data sheets for: 880301-09 (CA03 to CA02), 880301-10 (CA03 to CA02), 880268-71 (CA03 to CA01), 880268-01A (CA03 to CA01);

CMTRs:

Certificate of Conformance and Certified Material Test Report for weld filler material Heat 1203C;

Drawings:

SV3-CA03-S8K-880268, "CA03 to CA01 Installation Map," Revision 3;  
 SV3-CA03-S5-01003, "Containment Building Module CA03 - Submodule CA01\_01 Structural Outline Vertical Sections / Views," Revision 1;  
 SV3-CA02-S4K-880301, "CA03 to CA02 Installation Weld Map," Revision 2;

E&DCR:

SV0-CA03-GEF-000015, "CA03 to CA01 Connection Option," Revision 0;

Nonconformance & Disposition Reports:

SV3-CA03-GNR-000083, "CA01 - CA03 Connection Plate MK#07," Revision 0;  
 SV3-CA02-GNR-000065, "CA02-03 MK#26 not on design location," Revision 0;

Procedures:

Quality Inspection Plan F-S561-004, "Structural Weld Inspection - Modules, and Fabrication and Submodule Assembly Tolerances," Revision 7.0 Change 2;  
 Welding Procedure Specification: WPS5-10H.10HT70, Revision 8  
 WPS5-10H.10HM70, Revision 15

**Section 1A34**Nonconformance and Disposition (N&D) Reports

APP-CE01-GNR-850090, "Cives NCR's 1323; 1315; 1331; 1368; 1328 New"  
 SV3-CR01-GNR-000542, "RC01/RC02 Vertical Dowels El. 100'-0"," Rev. 0  
 SV3-CR01-GNR-000583, "Pipe Penetration 12306-ML-P34," Rev. 0  
 SV3-CR01-GNR-000693, "First bay welded rebar splice," Rev. 0

#### Calculations

APP-1200-CCC-119, "Shield Building Cylindrical Wall Reinforcement Design," Revision 10  
 APP-1208-CCC-007, "Shield Building Wall RC Region: Electrical Penetration Weldments (EPWs) Design and Stress Evaluation," Revision 0  
 APP-1208-CCC-011, "Shield Building Wall RC Region: Checking on Basis Inputs for Reinforced Concrete Design," Revision 0  
 APP-1208-CCC-012, "Shield Building Wall RC Region: Reinforced Concrete Design around Opening Areas," Revision 0  
 APP-1208-CCC-031, "Structural Acceptance of Shield Building Wall Construction Joints," Revision 1

#### Drawings

APP-0000-C9-001, "AP1000 Concrete General Notes," Revision 10  
 APP-0000-C9-002, "AP1000 Concrete General Notes," Revision 7  
 APP-1208-CR-975, "Auxiliary Building Cylindrical Wall Shear Reinforcement Rollout View," Revision 1  
 SV3-1208-CR-001-R2, "Auxiliary Building Cylindrical Wall Reinforcement Drawing Key Plan Elevation 100'-0"  
 SV3-1208-CR-301-R2, "Auxiliary Building Cylindrical Wall Reinforcement Sections El. 100'-0" to El. 135'-3" Sheet 1"  
 SV3-1208-CR-904-R2, "Auxiliary Building Cylindrical Wall Concrete Reinforcement Additional Reinforcement Area 1 El. 117'-6" (Sheet 1)"  
 SV3-1208-CR-907-R2, "Auxiliary Building Cylindrical Wall Concrete Reinforcement Connection to Electrical Penetrations Section and Details (Sheet 1)"  
 SV3-1208-CR-909-R2, "Auxiliary Building Cylindrical Wall Concrete Reinforcement Details (Sheet 1)"  
 SV3-1208-CR-918-R1, "Auxiliary Building Cylindrical Wall Concrete Reinforcement Connection to Electrical Penetrations Groups"  
 SV3-1208-CR-919-R1, "Auxiliary Building Cylindrical Wall Concrete Reinforcement Connection to Electrical Penetrations Section and Details (Sheet 2)"  
 SV3-1208-CR-953-R2, "Auxiliary Building Cylindrical Wall General Reinforcement North Half"  
 SV3-1208-CR-977-R1, "Auxiliary Building Cylindrical Wall Concrete Reinforcement Connection to Electrical Penetrations Section and Details (Sheet 3)"  
 SV3-1208-CR-978-R0, "Auxiliary Building Cylindrical Wall Concrete Reinforcement Connection to Electrical Penetrations Section and Details (Sheet 4)"

#### Engineering and Design Coordination Reports (E&DCRs)

APP-1208-GEF-150, "Shield Building – Update Concrete Reinforcement Drawing from EL 100'-0" to 146'-0"," Rev. 0.

#### Procedures and Specifications

WEC Specification, SV3-CC01-Z0-031, "Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I, Safety Class C "Nuclear Safety," Revision 7  
 WECTEC Specification GWS-8, "AWS D1.4 – Structural Reinforcing Steel General Welding Specification," Rev. 3  
 WECTEC Welding Procedure Specification, WPS8-1.1S03, Revision 6



CB&I Procedure Qualification Record, PQ109, Revision 1  
 CB&I Procedure Qualification Record, PQ109-1, Revision 0  
 CB&I Procedure Qualification Record, PQ110, Revision 1  
 CB&I Procedure Qualification Record, PQ110, Revision 0

### Corrective Action Documents

#### Miscellaneous

WECTEC Purchase Order 132175-CE01.01, to Cives Steel Company for Vogtle Unit 3, Safety-related embed plates, Rev. 66  
 Cives Steel Company Documentation Package associated with Purchase Order #13217 5-CE01.01, Load #5114, Pipe Penetration Boxes, dated 1/7/2106.  
 Work Package SV3-1208-CRW-CV5106, "U3 Shield Building Wall Concrete Reinforcement Fabrication and Installation El. 100ft-0in to El. 117ft-6in"  
 Work Package SV3-1208-COW-85002, "Unit 3 Auxiliary El. 100ft – Cylindrical Wall – Civil – RC02"

### **Section 1A35**

#### Survey Qualifications Records

A10198148  
 A10203136  
 A10204225  
 A10199516  
 A10196099  
 1251406

#### Procedures

Number: NCSP03-24, Field Surveying, Rev. 04.02  
 PI-910641-MT-04, Vogtle U# Reactor Vessel-Measurement Guideline, Rev. 0  
 PI-907021-MT-06, Vogtle Units 3 & 4 Calibration Test Instructions for Laser Coordinate Measurement System, Leica Model AT-401/402, SN 392907  
 PI-907021-MT-06, Vogtle Units 3 & 4 Calibration Test Instructions for Laser Coordinate Measurement System, Leica Model AT-401/402, SN 392536

#### Calibration Records

Certificate No. 392907-08082016, Laser Tracker AT402, SN 392907  
 Certificate No. 392536-2142016, Laser Tracker AT402, SN-392536

### **Section 1A36**

#### Concrete Data Reports

SV3-1120-CCK-887089, Unit 3 Reactor Vessel Cavity Wall Concrete Thickness, Rev. 0  
 Set ID: SCC-FYI-0026, Unit # 3, Nuclear Island inside CVBH Placement 6VA & 7VA (RV Cavity), EL. 87'-6" to 98'-0"-Pour # 2909  
 Set ID: 2016SCC0503T, Unit # 3, Unit # 3, Nuclear Island inside CVBH Placement 6VA & 7VA (RV Cavity), EL. 87'-6" to 98'-0"-Pour # 2909, Date 10/24/2016  
 Set ID: 2016SCC0503P, Unit # 3, Unit # 3, Nuclear Island inside CVBH Placement 6VA & 7VA (RV Cavity), EL. 87'-6" to 98'-0"-Pour # 2909, Date 10/24/2016  
 Set ID: 2016SCC0507, Unit # 3, Unit # 3, Nuclear Island inside CVBH Placement 6VA & 7VA (RV Cavity), EL. 87'-6" to 98'-0"-Pour # 2909, Date 10/24/2016

Survey Qualifications Records

A10198148  
 A10203136  
 A10204225  
 A10199516  
 A10196099  
 1251406

Procedures

Number: NCSP03-24, Field Surveying, Rev. 04.02  
 PI-910641-MT-04, Vogtle U# Reactor Vessel-Measurement Guideline, Rev. 0  
 PI-907021-MT-06, Vogtle Units 3 & 4 Calibration Test Instructions for Laser Coordinate Measurement System, Leica Model AT-401/402, SN 392907  
 PI-907021-MT-06, Vogtle Units 3 & 4 Calibration Test Instructions for Laser Coordinate Measurement System, Leica Model AT-401/402, SN 392536

Calibration Records

Certificate No. 392907-08082016, Laser Tracker AT402, SN 392907  
 Certificate No. 392536-2142016, Laser Tracker AT402, SN-392536

**Section 1A37**Concrete Data Report

Set ID: SCC-FYI-0025, Unit #3 Nuclear Island Auxiliary Building, Interior Wall 7.3, Placement #41, EL. 82'-6" to 100'-0", Pour #2816, Date 10/12/2016

Survey Qualifications Records

A10198148  
 A10203136  
 A10204225  
 A10199516  
 A10196099  
 1251406

Procedures

Number: NCSP03-24, Field Surveying, Rev. 04.02  
 PI-910641-MT-04, Vogtle U# Reactor Vessel-Measurement Guideline, Rev. 0  
 PI-907021-MT-06, Vogtle Units 3 & 4 Calibration Test Instructions for Laser Coordinate Measurement System, Leica Model AT-401/402, SN 392907  
 PI-907021-MT-06, Vogtle Units 3 & 4 Calibration Test Instructions for Laser Coordinate Measurement System, Leica Model AT-401/402, SN 392536

Calibration Records

Certificate No. 392907-08082016, Laser Tracker AT402, SN 392907  
 Certificate No. 392536-2142016, Laser Tracker AT 402, SN-392536

**Section 1A38**

See non-public security report 05200025/2016404 and 05200026/2016404 for details

**Section 1A39****Design Specifications:**

APP-GW-P1-001, "Piping Design Criteria for AP1000," Revision 1  
 APP-PH02-Z0-001, "AP1000 ASME Section III Class 1, 2, and 3 and Seismic Category II Pipe Supports/Tubing Supports/Instrument Rack Supports," Revision 3  
 APP-PL02-Z0-101, "AP1000 Class 1 Piping and Non-Class 1 Extensions Design Specification," Revision 4  
 APP-PL02-Z0-102, "AP1000 Class 2, 3 Piping and B31.1 Extensions Design Specification," Revision 4  
 APP-PL02-GEF-126, "Updated Building Penetration Information in Piping Design Specs (APP-PL02-Z0-101/102)," Revision 0  
 APP-PL02-GEF-132, "Update of Functional Capability Requirements for Piping Design Specifications," Revision 0

**Procedures:**

W2-8.4-102, "Design Document Verification," Revision 0.0  
 W2-8.6-101, "Computer Software Development Process," Revision 0.0  
 W2-8.6-102, "Validation of Computer Software," Revision 0.0  
 W2-8.6-103, "Configuration Control of Computer Programs and Systems," Revision 0.1  
 W2-8.6-106, "Single Application Computer Programs," Revision 0.2  
 APP-GW-P1-009, "AP1000 Pipe Support Desktop Instructions," Revision 0  
 APP-GW-PHC-050, "User Manual for GTStrudl Interface Tool," Revision 4

**Drawings:**

APP-ML05-V2-425, "AP1000 Duplex Penetration 11305-ML-P01 (SP10) Details," Revision 3  
 APP-PXS-M6-001, "Piping and Instrumentation Diagram Passive Core Cooling System," Revision 10  
 APP-PXS-M6-002, "Piping and Instrumentation Diagram Passive Core Cooling System," Revision 12  
 APP-PXS-PLW-018, "Passive Core Cooling System Containment BLDG Room 11305/11206 from IRWST to DVI-A," Revision 4  
 APP-PXS-PLW-029, "Passive Core Cooling System Containment Building Room 11207 from IRWST to DVI-B," Revision 5

**Piping Analysis Reports:**

APP-CVS-PLR-100, "Piping Analysis Report for Chemical and Volume Control System (CVS) from SCV Penetration CVS-PY-C02/P06 to in-line anchors CVS-PH-11A2051 and Sleeve 11209-ML-P11/SL43, Containment Building Rooms 11300 and 11209, Piping in Module 1132-Q3-05," Revision 0  
 APP-CVS-PLR-530, "AP1000 Piping Analysis Report for the Chemical and Volume Control System from Anchor CVS-PH-12A0122 to Steel Containment Vessel Penetration CVS-PY-C03/P07," Revision 1  
 APP-PXS-PLR-010, "AP1000 Direct Vessel Injection Line A (APP-PXS-PLR-010) Piping Stress Analysis Report ," Revision 6  
 APP-PXS-PLR-050, "AP1000 CMT 2A Supply Line: Piping Stress Analysis Report," Revision 0  
 APP-PXS-PLR-050, "AP1000 CMT 02A Supply Line (APP-PXS-PLA-050) Piping Stress Analysis Report," Revision 1  
 APP-PXS-PLR-050, "AP1000 CMT 02A Supply Line (APP-PXS-PLR-050) Piping Stress Analysis Report," Revision 2  
 APP-PXS-PLR-050, "Isometric Acceptance Report for APP-PXS-PLR-050," Revision 3  
 APP-PXS-PLR-050, "Isometric Acceptance Report for APP-PXS-PLR-050," Revision 4  
 APP-PXS-PLR-050, "AP1000 CMT 02A Supply Line Piping Stress Analysis Report," Revision 5  
 APP-PXS-PLR-050, "AP1000 CMT 02A Supply Line Piping Stress Analysis Report," Revision 6

APP-RCS-PLR-020, "AP1000 RCS Pressurizer Spray, Auxiliary Spray, and CVS Supply and Return Piping PIPESTRESS Analysis and PSFATSTR," Revision 2  
 APP-RCS-PLR-050, "AP1000 Reactor Coolant Loop (RCL): Piping Qualification," Revision 4

**Pipe Hanger Calculations:**

APP-GW-PHC-004, "Template for Evaluation Pipe Support Welds with Various Weld Configurations, Shapes, and Materials," Revision 0  
 APP-CVS-PHC-12A0122, "Pipe Support Calculation for APP-PXS-PHC-11A0379," Revision 1  
 APP-GW-PHC-005, "Seismic Acceleration Values for Pipe Support and Tubing Support Design," Revision 2  
 APP-PXS-PHC-11A0379, "Pipe Support Calculation for APP-PXS-PHC-11A0379," Revision 0  
 APP-CVS-PHC-12R7079, "Pipe Support Calculation for APP-CVS-PH-12R7079," Revision 0  
 APP-CVS-PHC-12R7080, "Pipe Support Calculation for APP-CVS-PH-12R7080," Revision C  
 APP-CVS-PHR-100, "Pipe Support Hanger Report for Pipe Analysis Report APP-CVS-PLR-100," Revision C  
 APP-CVS-PHR-530, "Pipe Support Hanger Report for Pipe Analysis Report APP-CVS-PLR-530," Revision 0  
 APP-GW-PLC-254, "Procedure for Evaluating Local Pipe Stresses Due to Interactions of Pipe Supports," Revision 0  
 APP-PH02-GEF-013, "Addition of Piping Penetration Jurisdictional Boundaries to APP-PH02-Z0-001," Revision 0  
 APP-PXS-PHC-11R0008, "Pipe Support Hanger Report for Pipe Analysis Report APP-PXS-PH-11R0008," Revision 2  
 APP-PXS-PHC-11R0359, "Pipe Support Hanger Report for Pipe Analysis Report APP-PXS-PHC-11R0359," Revision 1  
 APP-PXS-PHC-11Y0020, "Pipe Support Hanger Report for Pipe Analysis Report APP-PXS-PHC-11Y0020," Revision 2  
 APP-PXS-PHC-11Y2057, "Pipe Support Hanger Report for Pipe Analysis Report APP-PXS-PHC-11Y2057," Revision 2  
 APP-PXS-PHC-11Y2059, "Pipe Support Hanger Report for Pipe Analysis Report APP-PXS-PHC-11Y2059," Revision 1  
 APP-PXS-PLC-002, "AP1000 DVI Piping Component Fatigue Analysis," Revision 1  
 APP-PXS-PLC-005, "AP1000 CMT-A and CMT-B Piping Component Fatigue Evaluation," Revision 0  
 APP-RCS-PHC-11C1135, "Pipe Support Hanger Report for Pipe Analysis Report APP-RCS-PHC-11C1135," Revision 0  
 APP-RCS-PHR-020, "Pipe Support Hanger Report for Pipe Analysis Report APP-RCS-PLR-020," Revision 0  
 APP-RCS-PLC-063, "AP1000 Pressurizer Spray and Purification Piping Component Fatigue Analysis," Revision 1

**Work Packages:**

SV3-PXS-P0W-ME2964, Work Instruction for Design Acceptance Criteria – DAC HOLD, 11/28/2016  
 SV3-PXS-P0W-ME2965, Work Instruction for Design Acceptance Criteria – DAC HOLD, 11/28/2016

**Discrete Issue Reports:**

100071369, "Error in MathCAD Weld Spreadsheet, APP-GW-PHC-004," 10/29/2015  
 100376603, "Incorrect Attachments Included with APP-GW-PHC-057," 07/26/2016

100434455, "Insufficient Justification for Self-Weight-Excitation Accelerations Used in APP-RCS-PHC-11C1135," 12/1/2016

#### **Section 1A40**

APP-MW01-GEF-007, "Revised Dimensions of MW01 Sparger with No Changes in Geometry," Revision 0

CALIBR-036150, "Certificate of Calibration" for Coordinate Measuring Machine (CMM), ZEISS CONTURA G2, E-1300, 08/18/2016

SV4-MW01-Z0R-003, "AP1000 ADS Sparger - Vogtle Unit 4 (SV4) Flow Area As-Built Analysis," Revision 0

#### **Section 1A41**

##### Code Data Reports

Form N-2 Certificate Holders' Data Report for Identical Nuclear Parts and Appurtenances for Serial No. IN-4897, National Board No. 2825, 10/05/2012

Supplemental Information for Form N-2 Certificate Holders' Data Report for Serial No. IN-4897, National Board No. 2825, 10/05/2012

##### Drawings

225B011, "Detail Drawing of Upper and Lower Equipment Hatches Cover Assembly," Revision 1

##### Base Metal Certified Material Test Reports

6151-1 for Heat No. 5-8184 and Lot No. D2395 A 05/27/2011

6151-2 for Heat No. 5-8184 and Lot No. BK361 A 05/27/2011

6153-1 for Heat No. 5-4522 and Lot No. C1356 A, B, C, 05/27/2011

6153-2 for Heat No. 5-4522 and Lot No. BV063 A, B, C, D, 05/27/2011

##### Miscellaneous

APP-MV50-Z0-001, "AP1000 Containment Vessel Design Specification," Revision 9

APP-MV50-Z0-002, "AP1000 Containment Vessel Equipment Hatch," Revision 5

APP-MV50-Z0-037, "AP1000 Containment Vessel: SA-738 Grade B Plates," Revision 4

GS603-5-2, "General Specification for Fabrication of Elliptical Steel Head Plates With and Without Nozzles," Revision 4

IHI Document No. 026F602, "Manufacture's Specification for Plates SA-738 Gr. B," Revision 8

LT-003-U4-LEH-104-4009, Leak Testing Record for F14 (Lower equipment hatch), 06/27/2012

#### **Section 1A42**

##### Magnetic Particle Examination Records

MT-003-ACS-WF14-AA-CL, After Cold Sizing

MT-003-ACS-WF14-AA-L1, L2, After Cold Sizing

MT-003-AP-WF14-AA-C, After PWHT

MT-003-BG-WF14-AA-C, Back Groove

MT-003-BG-WF14-AA-L1, L2, Back Groove

MT-003-BP-WF14-AA-C, Before PWHT

MT-003-BR-WF14-AA-C, Back Groove Root Pass

MT-003-EP-WF14-AA-C, Weld Edge Preparation

MT-003-EP-WF14-AA-L1, L2, Weld Edge Preparation

MT-003-RP-WF14-AA-C, Root Pass

Radiographic Examination Records

RT-003-WF14-AA-CL, After Completion of Weld  
 RT-003-WF14-AA-L1, 2, After Completion of Weld

Filler Metal Certified Material Test Reports

RINJQ-225-5-4 for Heat No. 0Q7530(1), 05/31/2012

Miscellaneous

003-SRB-051, Postweld Heat Treatment Record for F14-A, 04/12/2012  
 Manufacturer's Record of Welder Performance Qualification Test (WPQ) for W-0397, W-2006,  
 and W-2273  
 WPS I-11R2G, Welding Procedure Specification, Revision 3

**Section 1A43**Base Metal Certified Material Test Reports

6151-1 for Heat No. 5-8184 and Lot No. D2395 A 05/27/2011  
 6151-2 for Heat No. 5-8184 and Lot No. BK361 A 05/27/2011  
 6153-1 for Heat No. 5-4522 and Lot No. C1356 A, B, C, 05/27/2011  
 6153-2 for Heat No. 5-4522 and Lot No. BV063 A, B, C, D, 05/27/2011

Filler Metal Certified Material Test Reports

RINJQ-225-5-4 for Heat No. 0Q7530(1), 05/31/2012

**Section 1A44**Procedures

QS 15.03, "Risk Release of Unsat/Nonconforming Item," Revision 05.00

E&DCRs

APP-AX01-GEF-850015, "Revise Inorganic Zinc DFTs," Revision 0  
 APP-AX01-GEF-010, "Remove Extraneous Coating Test," Revision 0

Specifications

APP-G1-PX-003, "Protective Coatings for Piping," Revision 6  
 APP-G1-SX-001, "AP1000 Painting of Shop Fabricated Steel - Nuclear Safety," Revision 7  
 APP-G1-MX-001, "AP1000 Painting of OEM Mechanical Components," Revision 7

Design Changes

APP-FSAR-GLN-764, "AP1000 Applicability Determination for APP-GW-GEE-5221," Revision 0  
 LDCR 2016-032, "Changes to UFSAR Descriptions of Service Level II Coatings," Revision 1.0  
 APP-GW-GEE-5221, "FSAR 6.1.2.1.6 Clarifications," Revision 0  
 APP-GW-GEE-5354, "UFSAR Modifications for Service Level II Coatings," Revision 0

N&Ds

SV0-AX01-GNR-000004, "DBA Test Does Not Meet UFSAR Requirement," Revision 0  
 SV0-AX01-GNR-000006, "Macropoxy 646N Does not Meet UFSAR Requirement," Revision 0  
 SV0-AX01-GNR-000009, "X0 Spec Test Requirements - CR 10257046," Revision 0  
 SV0-AX01-GNR-000010, "X0 Spec Test Requirements - CR 10215978," Revision 0  
 SV3-AX01-GNR-000011, "Macropoxy 646N over SP11 on CA03," Revision 0

Calculations

WCAP-17249-P, "Epoxy Coating Failure and Transport to Pressurized Water Reactor Containment Sump Screens," Revision 1

### **Miscellaneous**

Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 14BX, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 26BX and 26BY, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 27BX and 27BY, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 52BX and 52BY, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 26AX and 26AY, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 20AX, dated 6/10/2013  
 Sherwin Williams Nuclear Coating Panel Preparation Data Sheet for Coating System IM54.1492.12 N System 28BX and 28BY, dated 6/10/2013  
 430000-CMTR-15-000041, "Sherwin Willimas Product Identity Certificate for MAC 646N Epoxy (Part A), Lot No. XM2664XE," dated 3/25/2015  
 430000-CMTR-15-000042, "Sherwin Willimas Product Identity Certificate for MAC 646N Epoxy (Part B), Lot No. XM2614TY," dated 3/25/2015  
 Report No. 15-0818, "PPG Protective & Marine Coatings Nuclear Coatings Service Level 1 Qualification Testing of PPG Amercoat Coating Systems Dimecote D9N, Amercoat 90HSN, and Amerlock 400NT," dated 8/18/2015  
 Carboline Document Access No. 09749, "Summary of Nuclear Product Densities," dated 7/3/2012  
 Carboline Testing Project 05398, "DBA Testing for AP1000 Plants: Minimum and Maximum DFTs of Carboguard 89-N and Carbozinc 11 HSN," dated 12/11/2012

### **Risk Releases**

V-RL-16-0018, "Incorrect Coatings on CA01-19 and CA01-04," Revision 0  
 V-RL-16-0070, "SV3 CA03 Coatings," Revision 0  
 V-RL-16-0142, "Coating Materials," Revision 0 through 5

### **Section 1A45**

SV4-MT01-Z0R-201, "AP1000 Core Makeup Tank – Vogtle Unit 4 (SV4) As-Built Analysis," Revision 0  
 SVP\_SV0\_004041, "Submittal of Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) Completion Package for Unit 4 ITAAC 2.2.03.08c.xi [COL Index Number 196] (Core Makeup Tank Inlet Diffuser)," 07/28/2016

### **Section 1A46**

SV0-PV03-V2-183001, "AP1000 Swing Check Valve, 8" Class 1530, Assembly Drawing APP-PV03-Z0D-183," Revision 1SV0-PV03-V2-186001, "AP1000 Nozzle Check Valve, 8" Class 1707, Assembly Drawing APP-PV03-Z0D-186," Revision 0  
 SV4-PV03-PVR-002, "Inspection Report Confirming Discharge Check Valve Type for the Passive Core Cooling System Accumulator Discharge Check Valves and Core Makeup Tank Discharge Valves," Revision 0

SV4-PXS-PLW-014, "Passive Core Cooling System Containment Building Room 11206 Accumulator Discharge to DVIA," Revision 1  
 SV4-PXS-PLW-01K, "Passive Core Cooling System Containment Building Room 11206 CMT-A Discharge Piping," Revision 1  
 SV4-PXS-PLW-020, "Passive Core Cooling System Containment Building Room 11207 ISOL Valves to Common Injection HDR," Revision 2  
 SV4-PXS-PLW-024, "Passive Core Cooling System Containment Building Room 11207 Accumulator Discharge to DVIB," Revision 1  
 SV4-PXS-PLW-02P, "Passive Core Cooling System Containment Building Room 11207 ISOL Valves to RNS Injection HDR," Revision 0

### **Section 1A47**

See non-public security report 05200025/2016404 and 05200026/2016404 for details

### **Section 1A48**

#### Corrective Action and Nonconformance Reports

CAPAL 100425201, "SV4-CA03-01 Undersize Stud Weld";  
 SV4-CA03-GNR-00003, "SV4-CA03-01 Dimensional OOT Conditions";  
 APP-CA03-GNR-850208, "SV4-CA03-01 (NCR 16-553) Components Exceeds Flatness Criteria";  
 SV3-CA03-GNR-000013, CA03 Rust and Tape Contamination  
 APP-CA03-GEF-50, Weld End Terminations for CA03 Submodules, Rev. 0  
 APP-0000-GEF-118, Fillet Welding of Studs, Rev. 0  
 APP-CA03-GEF-034, CA03 Debt Reconciliation Modifications and CA03\_17 Rebar Modifications, Rev. 0

#### Design / Shop Drawings

SV4-CA03-S5-01001, "Containment Building Module CA03 - Submodule CA03.01 Isometric Views," Rev. 0;  
 SV4-CA03-S5-01002, "Containment Building Module CA03 - Submodule CA03.01 Break Down," Rev. 0;  
 SV4-CA03-S5-01003, "Containment Building Module CA03 - Submodule CA03.01 Structural Outline Vertical Sections / Views," Rev. 0;  
 SV4-CA03-S5-01004, "Containment Building Module CA03 - Submodule CA03.01 Structural Outline Horizontal Sections / Views," Rev. 0;  
 SV4-CA03-S5-01005, "Containment Building Module CA03 - Submodule CA03.01 Structural Outline Specific Details", Rev. 4  
 SV4-CA03-S5-01006, "Containment Building Module CA03 - Submodule CA03.01 Structural Outline Specific Details II," Rev. 0;  
 Shop Drawing, "Containment Alignment Building Module CA03", Rev. 0  
 Shop Drawing, "Containment Building Module CA03", Rev. 1  
 SV4-GW-S9-104, AP1000 Structural Modules General Notes – V, Rev. 2  
 SV4-CA03-S5-17003, Containment Building Submodule CA03\_17 Structural Outline Vertical Sections/ Views, Rev. 0  
 SV4-CA03-S5-17005, Containment Building Module CA03 – Submodule CA03\_17 Structural Outline Details, Rev. 0  
 SV4-CA03-S5-02003, Containment Building Submodule CA03\_02 Structural Outline Vertical Sections/ Views, Rev. 0  
 SV4-CA03-S5-02005, Containment Building Module CA03 – Submodule CA03\_02 Structural Outline Details, Rev. 0



Supplier Welding Records

000-30-0001R1;  
 000-20-0008R1;  
 000-20-0024R1;  
 000-20-0024;

Specifications

APP-VW20-Z0-023, Welding Specification for ASTM A240 UNS S32101 Duplex Stainless Plate, Rev. 3  
 APP-VW01-Z0-001, Structural Module Shear Stud Welding Specification, Rev. 3

Calculations

APP-1100-S2C-008, AP1000 CA03 Structural Module (IRWST) Steel Wall Qualification, Rev. 4  
 APP-1100-S2C-014, AP1000 CA03 Structural Module (IRWST) External Connections Qualification, Rev. 1

Miscellaneous Documents

QC Inspection Report (IR) S540-16-10270;  
 Vogtle unit 4 Turnover Package No. SV4-CA03-01-001; and  
 SV4-CA03-01-001 Sub-Module (Vogtle Unit 4) Certificate of Conformance dated Sept 9, 2016.  
 QC Inspection Report (IR) Q445-16-12445  
 QC Inspection Report (IR) Q445-16-12351  
 Vogtle Unit 4 Turnover Package No. SV4-CA03-17-001  
 Vogtle Unit 4 Turnover Package No. SV4-CA03-02-001  
 SV4-CA03-17-001 Sub-Module (Vogtle Unit 4) Certificate of Compliance dated Sept 16, 2016  
 SV4-CA03-02-001 Sub-Module (Vogtle Unit 4) Certificate of Compliance dated Sept 29, 2016

**Section 1A49**Work Package

SV4-CA02-S4W-860149

Welding Procedure Specifications

WPS2-1.1S03  
 WPS5-1.10HT03

Field Sketch Notes

SV4-CA02-S4K-880657, CA02-01 thru 04 Wall Connections, Rev. 2

Weld Data Sheets

880657-1  
 880657-2

E&DCRs

APP-0000-GEF-850024  
 APP-CA00-GEF-221  
 APP-CA02-GEF-039  
 APP-CA02-GEF-045  
 SV0-CA02-GEF-000005  
 SV0-CA02-GEF-000007  
 SV0-CA02-GEF-000008

SV0-CA02-GEF-000009  
 SV0-CA02-GEF-000010  
 SV0-CA02-GEF-000011  
 SV0-CA02-GEF-000012  
 SV4-CA02-GNR-000002

### **Section 1A50**

#### Work Packages

SV4-CA01-S4W-CV6484, "CA01-34 Sub Module Installation"  
 SV4-CA01-S4W-CV6472, "CA01-31 Sub Module Installation"

#### E&DCRs

SV0-CB00-GEF-000011, "Removal of Studs on CB Modules," Rev 0  
 SV0-CA00-GEF-000060, "CA00 Modules NDE Allowances," Rev 0  
 APP-CA01-GEF-850156, "Rebar Material Substitution," Rev 0  
 APP-0000-GEF-850024, "Duplex Post-Weld Cleaning Requirements in APP-VW20-Z0-023 per ASTM A380-06," Rev 0

#### N&Ds

SV0-CA00-GNR-000006, "OLP holes Chamferred per SV0-CA00-GEF-000030," Rev 0  
 APP-CA01-GNR-850560, "TANE-IHI\_VNNR-15-101 Rev. 0 Unacceptable yield strength on CA01 SV4," Rev 0  
 SV4-CA01-GNR-000043, "CA01-04/47 Weld Seam Fit-up Gap," Rev 0

### **Section 1A51**

Design Specification SV4-CC01-Z0-031, Safety Related Placing Concrete and reinforcing Steel, Westinghouse Seismic Category I and II, Safety Class C "Nuclear Safety", Westinghouse Seismic Category III, Safety Class E, Rev. 7  
 Drawing SV4-1200-CR-931, "Auxiliary Building Areas 2 & 3 concrete Reinforcement Wall 7.3 Elevation," Revision 7  
 Drawing SV4-1210-CR-931, "Auxiliary Building Areas 2 & 3 concrete Reinforcement Wall 7.3 Sections & Details EI 66'-6", Revision 3  
 SV4-CR01-GEF-000066, "Add Couplers at Wall 7.3," Revision 0  
 SV4-CR01-GEF-000090, "Shield Wall Interferences," Revision 0  
 SV0-CR01-GEF-000219, Eliminate Connectors at CL 7.3," Revision 0  
 Quality Assurance Inspection Report S511-16-11393, "Mechanical Rebar Splices: Threaded Lenton Couper Splices/Weldable Couplers," Dated 10-14-2016

### **Section 1A52**

SV4-1200-CR-959, "Auxiliary Building Area 6 Concrete Reinforcement Wall N Elevation," Revision 6  
 SV4-1210-CR-959, "Auxiliary Building Area 6 Concrete Reinforcement Wall N Sections & Details EI 66'-6", Revision 3  
 SV4-1210-CRW-CV3156, "Unit 4 Nuclear Island Aux. Bldg Installation of Reinforcing Steel on CA20 Exterior Wall up to Elev. 82'-6" (Wall Placement #0)," Revision 1.1  
 SV4-CC01-GNR-000081, "N-Line CJ 66-6 to 82-6," Revision 0  
 SV4-CC01-GNR-000114, "Concrete Repairs on Wall Placements 46 and 47," Revision 0  
 SV4-CR01-GEF-000128, "Optional CJ at 66'-6" Along N-Line," Revision 0

### **Section 1A53**

Survey Report

SV4-1120-CCK-880321, Unit 4 NI CB65, CB66, & CA04 to CB65 Deviations, Rev. 0

Concrete Data Reports

Set ID: 2016VEGP7061, Unit # 4, Nuclear Island inside CVBH Placement # 9, EL. 80' & 80'-6" to 83' & 84'-6"-Pour # 2997, Date 11/11/2016

**Section 1A54**

See non-public security report 05200025/2016404 and 05200026/2016404 for details

**Section 1P01**Survey Data Reports

SV3-1120-CCK-887089, "Unit 3 Reactor Vessel Cavity Wall Concrete Thickness," Revision 0  
SV4-1120-CCK-880321, "Unit 4 NI CB65, CB66, & CA04 to CB65 Deviations," Revision 0

Survey Qualifications Records

A10198148  
A10203136  
A10204225  
A10199516  
A10196099  
1251406

Procedures

NCSP03-24, "Field Surveying," Revision 04.02  
PI-910641-MT-04, "Vogtle U# Reactor Vessel-Measurement Guideline," Revision 0  
PI-907021-MT-06, Vogtle Units 3 & 4 Calibration Test Instructions for Laser Coordinate Measurement System, Leica Model AT-401/402, SN 392907  
PI-907021-MT-06, Vogtle Units 3 & 4 Calibration Test Instructions for Laser Coordinate Measurement System, Leica Model AT-401/402, SN 392536

Calibration Records

Certificate No. 392907-08082016, Laser Tracker AT402, SN 392907  
Certificate No. 392536-2142016, Laser Tracker AT 402, SN-392536

**Section 1P02**Calculations

APP-1200-GEO-004, "Auxiliary Building Wall Q Reinforcement Concrete Design Supplement to APP-1200-S3C-111 due to the increase clear cover to 4.25" from EI 66'-6" up to 100'-0","  
Revision 0  
APP-1200-S3C-111, "Auxiliary Building Wall Q Reinforcement Detail Elevation," Revision 0  
APP-1220-S3C-003, "Auxiliary Building Detail Evaluation Concrete Slab at EL. 82'-6" Areas 5&6," Revision 1

Engineering and Design Coordination Reports

SV0-CR01-GEF-000744, "n' Bar Installation Configuration," Revision 0  
SV3-CR01-GEF-000310, "n' Bar Installation Configuration Wall 7.3," Revision 0

Miscellaneous

Quality Assurance Inspection Report C112-002-15-0213, "Pre-Placement Concrete," 04/21/15

Risk Release V-RL-15-0118, "Concrete Placement in Unit 3 CA01 East Side up to Elevation 87'-6", Revision 1  
 Risk Release V-RL-16-0173, "Concrete Placement in Unit 3 CA01 East Side up to Elevation 94'-0", Revision 0  
 Surveillance Repor S-132175-2016-131, "Review of Concrete Batch Plant Certifications and M&TE," 10/28/2016  
 Surveillance Report S-132175-2016-081, "Joint Surveillance of APP-GW-GAP-428 and QS 15.01 N&D Program," 08/31/2016  
 Surveillance Report S-132175-2016-155, "Corrective Action Documents Resulting from Surveillance Activities," 11/23/2016  
 SV3-0000-C9-001, "AP1000 Concrete General Notes," Revision 6  
 SV3-1230-GF-000007, "Wall 7.3 Configuration El 100'-0" to 117'-0", 08/02/2016

Nonconformance and Disposition Reports:

APP-ML05-GNR-850009, "Insufficient Evidence Penetration Sleeve Material Qualified to Safety Class C," Revision 0  
 SV3-0000-GNR-000020, "Source Inspection of Five Star Structural Concrete V/O," Revision 0  
 SV3-1208-GNR-000065, "Shield Building Q wall connection out of tolerance," Revision 0  
 SV3-CA01-GNR-000732, "CA01 Post Installation Survey at N13 for 87-6 East," Revision 0  
 SV3-CA01-GNR-000898, "CA01-04 Base Metal Repair without MT/PT," Revision 0  
 SV3-CC01-GNR-000305, "SV3 Annex W131 Rock Pocket Repair Concrete Curing," Revision 0  
 SV3-CC01-GNR-000325, "Wall 9.3 between P & M," Revision 0  
 SV3-CC01-GNR-000335, "Wall P 82-6 to 100-0 ACI Tolerance Exceeded," Revision 0  
 SV3-CC01-GNR-000362, "Voids under horizontal embed plates @ I-Line wall placement, E; 100'0", Revision 0  
 SV3-CE01-GNR-000106, "Embedment Plate in Wall J," Revision 0  
 SV3-CP01GNR-000017, "Precast Panel Obstruction SV3-1225-CP-S01," Revision 0  
 SV3-CR01-GNR-000302, "Bars contacted by Drill Bit," Revision 0  
 SV3-CR01-GNR-000537, "Wall 7.3 Vertical Spacing," Revision 0  
 SV3-CR01-GNR-000605, "RV Compartment NE Bottom Cage and CA04," Revision 0  
 SV3-CR01-GNR-000630, "Bars Left Out at FTC," Revision 0  
 SV3-PH01-GNR-000016, "Preheat Equipment used on SG Lateral and Overlays," Revision 0  
 SV4-CA04-GNR-000013, "Temp. Attachments Covered in Concrete," Revision 0  
 SV4-CC01-GNR-000143, "U4 Aux Bldg Exterior Wall Placement #4 – Out of ACI Tolerances," Revision 0  
 SV4-CC01-GNR-000144, "U4 Aux Bldg Exterior Wall Placement #6 – Out of ACI Tolerances," Revision 0  
 SV4-CE01-GNR-000046, "Nelson Stud Shank Diameter," Revision 0  
 SV4-CR01-GNR-000048, "U4 Q-Line Excess CLR Cover," Revision 0  
 SV4-CR01-GNR-000052, "U4 Q-Line Excess CLR Cover," Revision 0  
 SV4-CR01-GNR-000056, "Q-Line CLR Cover Issues EL. 100'-0", Revision 0  
 SV4-CR01-GNR-000101, "Hydrolase Damage on Q-Line," Revision 0  
 SV4-CR01-GNR-000117, "Wall Q East Face CLR Cover EL. 82'-6" to 100'-0", Revision 1  
 SV4-CR01-GNR-000124, "Q-Line CLR Cover Issues EL. 100'-0", Revision 0  
 SV4-CR01-GNR-000129, "Wall Q East Face CLR Cover EL. 82'-6" to 100'-0", Revision 0  
 SV4-CR01-GNR-000136, "Low Q-Line Form Savers," Revision 0  
 SV4-CR01-GNR-000139, "Q-Line Wall Vertical Dowel interference to Wall Panel," Revision 0  
 SV4-CR01-GNR-000144, "U4 Q-Line Form Saver Interrupted by Pipe Penetration EL. 82'-6", Revision 0  
 SV4-ML05-GNR-000002, "DVI Penetration SV4-11205-ML-P01," Revision 0

Procedures

APP-GW-GAP-428, "Nonconformance and Disposition Report (N&D)," Revision 9  
ND-AD-002, "Nuclear Development Corrective Action Program," Version 24.0  
ND-AD-VNP-001, "Interface of Corrective Action Processes," Version 6.0  
QS 15.01, "Nonconformance & Disposition Report," Revision 07.00  
W2-5.1-102, "Issue Review Committee," Revision 1.0

SNC Condition Reports

CR 10035194  
CR 10155433  
CR 10156287  
CR 10183391  
CR 10185946  
CR 10198323  
CR 10202882  
CR 10213334  
CR 10226159  
CR 10226167  
CR 10226195  
CR 10228320  
CR 10234028  
CR 10241764  
CR 10242098  
CR 10251477  
CR 10251500  
CR 10253269  
CR 10254024  
CR 10256475  
CR 10257526  
CR 10257526  
CR 10259301  
CR 10260418  
CR 10260488  
CR 10264940  
CR 10271332  
CR 10274260  
CR 10274698  
CR 10275558  
CR 10275570  
CR 10277044  
CR 10277269  
CR 10277283

WEC Corrective Action, Prevention and Learnings

CAPAL 100365598  
CAPAL 100375727  
CAPAL 100383907  
CAPAL 100388072  
CAPAL 100389341  
CAPAL 100391597  
CAPAL 100391611

CAPAL 100392923  
 CAPAL 100402861 (CAPAL in-process)  
 CAPAL 100413904 (CAPAL in-process)  
 CAPAL 100414662 (CAPAL in-process)  
 CAPAL 100415231  
 CAPAL 100416279 (CAPAL in-process)  
 CAPAL 100416730 (CAPAL in-process)  
 CAPAL 100417196 (CAPAL in-process)  
 CAPAL 100418808  
 CAPAL 100419341 (CAPAL in-process)  
 CAPAL 100420753 (CAPAL in-process)  
 CAPAL 100421652  
 CAPAL 100425180

#### WECTEC Corrective Action Reports

CAR 2015-2108  
 CAR 2015-2745  
 CAR 2016-0112  
 CAR 2016-0141  
 CAR 2016-1466  
 CAR 2016-1811  
 CAR 2016-1916

### **3. OPERATIONAL READINESS**

#### **Section 3P01**

APP-GW-G1-002, "AP1000 Qualification Methodology," Revision 5, dated 10/21/2016  
 APP-GW-VP-030, "AP1000 Environmental Conditions," Revision 6, dated 10/19/2016  
 APP-JE92-VBR-001, "Equipment Qualification Summary Report for Nuclear Instrument Detectors for Use in the AP1000 Plant," Revision 3, dated 10/17/2016.  
 APP-JE92-VPH-001, "AP1000 Excore Nuclear Detectors Equipment Qualification Test Plan," Revision 0, dated July 2011.  
 APP-JE92-VBR-002, "Equipment Qualification Data Package for Nuclear Instrumentation System Detectors for Use in the AP1000 Plant," Revision 3, dated 10/17/2016  
 APP-JW03-VBR-001, "Equipment Qualification Summary Report for the Main Control Room (MCR)/Remote Shutdown Room (RSR) Transfer Panel for Use in the AP1000 Plant," Rev. 4, Jan. 08, 2016.  
 APP-JW03-VBR-002, "Equipment Qualification Data Package for the Main Control Room (MCR) / Remote Shutdown Room (RSR) Transfer Panel," Rev. 3, Aug. 17, 2016.

#### **Section 3P02**

SV3-GW-GEI-100, "AP1000 Preservice Inspection Program Plan for Vogtle Unit 3", Rev. 1

#### Procedures:

SNC: NMP-ES-024-100, "Procedure (Written Practice) for Qualification and Certification of Nondestructive Examination Personnel", Rev. 7.1  
 SNC: B-ADM-ENG-003, Preservice Inspection (PSI) Program, Rev. 1.1  
 SNC: NND-LI-VNP-007, Licensing Document Change Requests for VEGP Units 3&4, Rev. 6  
 WEC: WEC 23.6, "Westinghouse/Wesdyne International Interface Agreement", Rev. 7

WEC: APP-GW-GAP-155, "AP1000 Preservice Inspection (PSI) Implementation Work Instruction", Rev. 1  
 WEC: APP-GW-GAP-420, "Engineering and Design Condition Reports", Rev. 11  
 WEC: APP-MB01-V6-723, "AP1000 Steam Generator Secondary Side Shell", Rev. 0  
 Wesdyne: WDI-STD-1138 with FCRs 001 & 002, "Manual Ultrasonic Examination of Vessel Welds >2 Inches in Thickness in Accordance with ASME Section XI, Supplement 1 (Non-Appendix VIII)", Rev. 3  
 Wesdyne: WDP-2.10, "Qualification and Certification of Personnel in Nondestructive Examination", Rev. 5  
 Wesdyne: WDI-STD-1087, "Magnetic Particle Examination of Welds and Bolting in Accordance with ASME Section XI", Rev. 2  
 SSI: SSI-A-005, "Qualification and Certification of Nondestructive Examination and Testing Personnel", Rev. 28,

**Miscellaneous:**

SNC: Approval of Wesdyne written practice, 8/12/14  
 SNC: Approval of Sonic Systems Intl. written practice, 2/2/2016  
 CMTR# AP1000-COC-SG-N07049-01-01, AP1000 Vogtle Unit #3 Steam Generator UT Calibration Blocks  
 UT scope linearity check records: 14A00LTE - 11/5/16  
 UT scope linearity check records: 14A00LTD - 11/5/16  
 UT scope linearity check records: 01C39F - 11/5/16  
 UT scope linearity check records: 01C39D - 11/5/16  
 UT scope linearity check records: 01C39C - 11/5/16  
 NDE Exam Report: 16-000042 dated 11/15/16  
 NDE Exam Report: 16-000025 dated 11/10/16  
 NDE Exam Report: 16-000026 dated 11/10/16  
 SNC TE: 972397  
 SNC Condition Report: 10299592  
 SNC Condition Report: 10299526  
 SNC Condition Report: 10299563  
 SNC Condition Report: 10299923  
 SNC Certificate of Qualification: III/MT, III/PT, III-PDI/UT, III/VT, III/VT-1, III/VT-2, III/VT-3, White, dated 08/26/15  
 SSI Certificate of Qualification: II/MT, II/PT, II/UT, II/VT-1, II/VT-2, II/VT-3, Hubbard, dated 07/18/16  
 SSI Certificate of Qualification: IIL/UT, Seals, dated 07/19/16  
 SSI Certificate of Qualification: III/ET, III/MT, III/PT, III-PDI/UT, III/VT-1, III/VT-2, III/VT-3, Holasek, dated 08/19/16  
 SSI Certificate of Qualification: II/MT, II/PT, II-PDI/UT, II/VT-1, II/VT-2, II/VT-3, Congdon, dated 07/18/16  
 SSI Vision Accuity Record: Hubbard, dated 07/18/16  
 SSI Vision Accuity Record: Seals, dated 07/19/16  
 SSI Vision Accuity Record: Holasek, dated 08/19/16  
 SSI Vision Accuity Record: Congdon, dated 07/18/16

**Section 3P03**

SV4-GW-GEI-100, "AP1000 Preservice Inspection Program Plan for Vogtle Unit 4", Rev. 0

Procedures:

SNC: NMP-ES-024-100, "Procedure (Written Practice) for Qualification and Certification of Nondestructive Examination Personnel", Rev. 7.1  
 SNC: B-ADM-ENG-003, Preservice Inspection (PSI) Program, Rev. 1.1  
 SNC: NND-LI-VNP-007, Licensing Document Change Requests for VEGP Units 3&4, Rev. 6  
 WEC: WEC 23.6, "Westinghouse/Wesdyne International Interface Agreement", Rev. 7  
 WEC: APP-GW-GAP-155, "AP1000 Preservice Inspection (PSI) Implementation Work Instruction", Rev. 1  
 WEC: APP-GW-GAP-420, "Engineering and Design Condition Reports", Rev. 11  
 WEC: APP-MB01-V6-723, "AP1000 Steam Generator Secondary Side Shell", Rev. 0  
 Wesdyne: WDI-STD-1138 with FCRs 001 & 002, "Manual Ultrasonic Examination of Vessel Welds >2 Inches in Thickness in Accordance with ASME Section XI, Supplement 1 (Non-Appendix VIII)", Rev. 3  
 Wesdyne: WDP-2.10, "Qualification and Certification of Personnel in Nondestructive Examination", Rev. 5  
 Wesdyne: WDI-STD-1087, "Magnetic Particle Examination of Welds and Bolting in Accordance with ASME Section XI", Rev. 2  
 SSI: SSI-A-005, "Qualification and Certification of Nondestructive Examination and Testing Personnel", Rev. 28,

Miscellaneous:

SNC: Approval of Wesdyne written practice, 8/12/14  
 SNC: Approval of Sonic Systems Intl. written practice, 2/2/2016  
 NDE Exam Report: 16-000033  
 NDE Exam Report: 16-000034  
 NDE Exam Report: 16-000035  
 NDE Exam Report: 16-000036  
 NDE Exam Report: 16-000037  
 NDE Exam Report: 16-000038  
 NDE Exam Report: 16-000039  
 NDE Exam Report: 16-000040  
 SNC TE: 972397  
 SNC Condition Report: 10299592  
 SNC Condition Report: 10299526  
 SNC Condition Report: 10299563  
 SNC Condition Report: 10299923  
 SNC Certificate of Qualification: III/MT, III/PT, III-PDI/UT, III/VT, III/VT-1, III/VT-2, III/VT-3, White, dated 08/26/15  
 SSI Certificate of Qualification: II/MT, II/PT, II/UT, II/VT-1, II/VT-2, II/VT-3, Hubbard, dated 07/18/16  
 SSI Certificate of Qualification: IIL/UT, Seals, dated 07/19/16  
 SSI Certificate of Qualification: III/ET, III/MT, III/PT, III-PDI/UT, III/VT-1, III/VT-2, III/VT-3, Holasek, dated 08/19/16  
 SSI Certificate of Qualification: II/MT, II/PT, II-PDI/UT, II/VT-1, II/VT-2, II/VT-3, Congdon, dated 07/18/16  
 SSI Vision Acuity Record: Hubbard, dated 07/18/16  
 SSI Vision Acuity Record: Seals, dated 07/19/16  
 SSI Vision Acuity Record: Holasek, dated 08/19/16  
 SSI Vision Acuity Record: Congdon, dated 07/18/16



## LIST OF ACRONYMS

ACI	American Concrete Institute
ADAMS	Agencywide Documents Access and Management System
ADS	Automatic Depressurization System
ANI	Authorized Nuclear Inspector
ANII	Authorized Nuclear Inservice Inspector
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
CAPAL	Corrective Action, Prevention, and Learning
CARB	Corrective Action Review Board
CFR	Code of Federal Regulations
CJP	Complete Joint Penetration
CMT	Core Makeup Tank
CMTR	Certified Material Test Report
COC	Certificate of Conformance
COL	Combined License
CR	Condition Report
CSFC	Construction Safety Focus Component
CV	Containment Vessel
CVS	Chemical and Volume Control System
DAC	Design Acceptance Criteria
DCO	Division of Construction Oversight
DVI	Direct Vessel Injection
E&DCR	Engineering and Design Coordination Reports
EMC	Electromagnetic Compatibility
EQDP	Equipment Qualification Data Packages
EQSR	Equipment Qualification Summary Report
HED	Human Engineering Discrepancies
ICAP	Interface of Corrective Action Processes
IEEE	Institute of Electrical and Electronic Engineers
IHI	Ishikawajima-Harima Heavy Industries Co., Ltd
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
IRWST	In-containment Refueling Water Storage Tank
ITAAC	Inspections, Tests, Analysis, and Inspection Criteria
M&TE	Measuring and Test Equipment
MCR	Main Control Room
MRC	Management Review Committee
MRI	Metal Reflective Insulation
MT	Magnetic Particle Examination
N&D	Nonconformance and Disposition Report
NCV	Non-Cited Violation

NDE	Non-Destructive Examination
NRC	Nuclear Regulatory Commission
NRO	Office of New Reactors
PARS	Publicly Available Records
PCD	Principal Closure Document
PQR	Procedure Qualification Records
PSI	Preservice Inspection
PRHR	Passive Residual Heat Removal
PT	Liquid Penetrant
PWHT	Post-Weld Heat Treatment
PXS	Passive Core Cooling System
QA	Quality Assurance
QAPD	Quality Assurance Program Document
QC	Quality Control
RCDT	Reactor Coolant Drain Tank
RCS	Reactor Coolant System
RG	Regulatory Guide
RHR	Residual Heat Removal System
RNS	Normal Residual Heat Removal System
RSW	Remote Shutdown Workstation
RV	Reactor Vessel
SDP	Significance Determination Process
SNC	Southern Nuclear Operating Company
TSV	Task Support Verification
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing
VEGP	Vogtle Electric Generating Plant
VT	Visual Examination
WEC	Westinghouse Electric Company
WPS	Welding Procedure Specification

## ITAAC INSPECTED

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
7	2.1.01.06.ii	6. The RM and FHM are designed to maintain their load carrying and structural integrity functions during a safe shutdown earthquake.	ii) Type test, analysis, or a combination of type tests and analyses of the RM and FHM will be performed.	ii) A report exists and concludes that the RM and FHM can withstand seismic design basis dynamic loads without loss of load carrying or structural integrity functions.
11	2.1.01.07.iv	7. The new and spent fuel storage racks maintain the effective neutron multiplication factor required by 10 CFR 50.68 limits during normal operation, design basis seismic events, and design basis dropped spent fuel assembly accidents over the spent fuel storage racks.	iv) Analysis of the spent fuel storage racks under design basis dropped spent fuel assembly loads will be performed.	iv) A report exists and concludes that the spent fuel racks can withstand design basis dropped spent fuel assembly loads and maintain the calculated effective neutron multiplication factor required by 10 CFR 50.68(1) limits.
14	2.1.02.02b	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.	Inspection will be conducted of the as-built piping as documented in the ASME design reports.	The ASME code Section III design reports exist for the as-built piping identified in Table 2.1.2-2 as ASME Code Section III.
38	2.1.02.08d.vii	8.d) The RCS provides automatic depressurization during design basis events.	vii) Inspection of each ADS sparger will be conducted to determine the flow area through the sparger holes.	vii) The flow area through the holes in each ADS sparger is > 274 in <sup>2</sup> .
71	2.1.03.02c	2.c) The reactor vessel arrangement is as shown in Figure 2.1.3-3.	Inspection of the as-built system will be performed.	The as-built RXS will accommodate the reactor vessel arrangement shown in Figure 2.1.3-3.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.	Inspection will be conducted of the as-built components as documented in the ASME design reports.	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.
76	2.1.03.06.ii	6. The seismic Category I equipment identified in Table 2.1.3-1 can withstand seismic design basis loads without loss of safety function.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function.
81	2.1.03.09a.i	9.a) The Class 1E equipment identified in Table 2.1.3-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	i) Type tests, analysis, or a combination of type tests and analysis will be performed on Class 1E equipment located in a harsh environment.	i) A report exists and concludes that the Class 1E equipment identified in Table 2.1.3-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.
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.	Inspection will be conducted of the as-built components as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built components identified in Table 2.2.1-1 as ASME Code Section III.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
93	2.2.01.03a	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.	Inspection of the as-built pressure boundary welds will be performed in accordance with the 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.
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.
99	2.2.01.05.ii	5. The seismic Category I equipment identified in Table 2.2.1-1 can withstand seismic design basis loads without loss of structural integrity and safety function.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of structural integrity and safety function.
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.	Inspection will be conducted of the as-built components as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built components identified in Table 2.2.3-1 as ASME Code Section III.
160	2.2.03.02b	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.	Inspection will be conducted of the as-built piping as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built piping identified in Table 2.2.3-2 as ASME Code Section III.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
162	2.2.03.03b	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.	Inspection of the as-built pressure boundary welds will be performed in accordance with the 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.
166	2.2.03.05a.ii	5.a) The seismic Category I equipment identified in Table 2.2.3-1 can withstand seismic design basis loads without loss of safety function.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of safety function. For the PXS containment recirculation and IRWST screens, a report exists and concludes that the screens can withstand seismic dynamic loads and also post-accident operating loads, including head loss and debris weights.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
194	2.2.03.08c.ix	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	ix) Inspections will be conducted of the insulation used inside the containment on the ASME Class 1 lines, reactor vessel, reactor coolant pumps, pressurizer and steam generators. Inspections will be conducted of other insulation used inside the containment within the zone of influence (ZOI). Inspection will be conducted of other insulation below the maximum flood level of a design basis loss-of-coolant accident (LOCA).	ix) The type of insulation used on these lines and equipment is a metal reflective type or a suitable equivalent. If an insulation other than metal reflective insulation is used, a report must exist and conclude that the insulation is a suitable equivalent. The type of insulation used on these lines and equipment is a metal reflective type or a suitable equivalent. If an insulation other than metal reflective insulation is used, a report must exist and conclude that the insulation is a suitable equivalent. The type of insulation used on these lines is metal reflective insulation, jacketed fiberglass, or a suitable equivalent. If an insulation other than metal reflective or jacketed fiberglass insulation is used, a report must exist and conclude that the insulation is a suitable equivalent.

195	2.2.03.08c.x	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	<p>x) Inspections will be conducted of the as-built nonsafety-related coatings or of plant records of the nonsafety-related coatings used inside containment on walls, floors, ceilings, and structural steel except in the CVS room. Inspections will be conducted of the as-built non-safety-related coatings or of plant records of the non-safety-related coatings used on components below the maximum flood level of a design basis LOCA or located above the maximum flood level and not inside cabinets or enclosures. Inspections will be conducted on caulking, tags, and signs used inside containment below the maximum flood level of a design basis LOCA or located above the maximum flood level and not inside cabinets or enclosures. Inspections will be conducted of ventilation filters and fiber-producing fire barriers used inside containment within the ZOI or below the</p>	<p>x) A report exists and concludes that the coatings used on these surfaces have a dry film density of <math>\geq 100</math> lb/ft<sup>3</sup>. If a coating is used that has a lower dry film density, a report must exist and conclude that the coating will not transport. A report exists and concludes that inorganic zinc coatings used on these surfaces are Safety – Service Level I. A report exists and concludes that tags and signs used in these locations are made of steel or another metal with a density <math>\geq 100</math> lb/ft<sup>3</sup>. In addition, a report exists and concludes that caulking used in these locations or coatings used on these signs or tags have a dry film density of <math>\geq 100</math> lb/ft<sup>3</sup>. If a material is used that has a lower density, a report must exist and conclude that there is insufficient water flow to transport lightweight caulking, signs, or tags. A report exists and concludes that the ventilation filters and fire barriers in these locations have a density of <math>\geq 100</math> lb/ft<sup>3</sup>.</p>
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No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
			maximum flood level of a design basis LOCA.	
196	2.2.03.08c.xi	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	xi) Inspection of the as-built CMT inlet diffuser will be conducted.	xi) The CMT inlet diffuser has a flow area $\geq 165$ in <sup>2</sup> .
204	2.2.03.09b	9.b) The accumulator discharge check valves (PXS-PL-V028A/B and V029A/B) are of a different check valve type than the CMT discharge check valves (PXS-PL-V016A/B and V017A/B).	An inspection of the accumulator and CMT discharge check valves is performed.	The accumulator discharge check valves are of a different check valve type than the CMT discharge check valves.
286	2.3.02.02b	2.b) The piping identified in Table 2.3.2-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.	Inspection will be conducted of the as-built piping as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built piping identified in Table 2.3.2-2 as ASME Code Section III.
358	2.3.06.03b	3.b) Pressure boundary welds in piping identified in Table 2.3.6-2 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the 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.
523	2.5.02.02.ii	2. The seismic Category I equipment, identified in Table 2.5.2-1, can withstand seismic design basis loads without loss of safety function.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
525	2.5.02.03	3. The Class 1E equipment, identified in Table 2.5.2-1, has electrical surge withstand capability (SWC), and can withstand the electromagnetic interference (EMI), radio frequency interference (RFI), and electrostatic discharge (ESD) conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	Type tests, analyses, or a combination of type tests and analyses will be performed on the equipment.	A report exists and concludes that the Class 1E equipment identified in Table 2.5.2-1 can withstand the SWC, EMI, RFI, and ESD conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.
526	2.5.02.04	4. The Class 1E equipment, identified in Table 2.5.2-1, can withstand the room ambient temperature, humidity, pressure, and mechanical vibration conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	Type tests, analyses, or a combination of type tests and analyses will be performed on the Class 1E equipment identified in Table 2.5.2-1.	A report exists and concludes that the Class 1E equipment identified in Table 2.5.2-1 can withstand the room ambient temperature, humidity, pressure, and mechanical vibration conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.
641	2.6.09.01	1. The external walls, doors, ceiling, and floors in the main control room, the central alarm station, and the secondary alarm station are bullet resistant to at least Underwriters Laboratory Ballistic Standard 752, level 4.	See ITAAC Table 3.3-6, item 14.	See ITAAC Table 3.3-6, item 14.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
739	3.2.00.01a	1. The HFE verification and validation program is performed in accordance with the HFE verification and validation implementation plan and includes the following activities: a) HSI Task support verification	a) An evaluation of the implementation of the HSI task support verification will be performed.	a) A report exists and concludes that: Task support verification was conducted in conformance with the implementation plan and includes verification that the information and controls provided by the HSI match the display and control requirements generated by the function-based task analyses and the operational sequence analyses.
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.

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

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

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.
820	3.3.00.14	14. The external walls, doors, ceiling, and floors in the main control room, the central alarm station, and the secondary alarm station are bullet-resistant to at least Underwriters Laboratory Ballistic Standard 752, level 4. 15. Deleted	Type test, analysis, or a combination of type test and analysis will be performed for the external walls, doors, ceilings, and floors in the main control room, the central alarm station, and the secondary alarm station.	A report exists and concludes that the external walls, doors, ceilings, and floors in the main control room, the central alarm station, and the secondary alarm station are bullet-resistant to at least Underwriters Laboratory Ballistic Standard 752, level 4.
843	C.3.8.02.01	The American Society of Mechanical Engineers (ASME) Code, Section III piping is designed in accordance with the ASME Code, Section III requirements.	Inspection of the ASME Code Design Reports (NCA-3550) and required documents will be conducted for the set of lines chosen to demonstrate compliance.	The ASME Code Design Report(s) (NCA-3550) (certified, when required by the ASME Code) exist and conclude that the design of the piping for lines chosen to demonstrate all aspects of the piping design complies with the requirements of the ASME Code section.