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

May 14, 2018

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 05200025/2018001, 05200026/2018001

Dear Mr. Yox:

On March 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the Vogtle Electric Generating Plant, Units 3 and 4. The enclosed inspection report documents the inspection results, which the inspectors discussed on April 13, 2018 with Mr. J. Klecha, Vice President, Site Operations and other members of your staff. The results of this inspection are documented in the enclosed report.

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

The NRC inspectors did not identify any finding or violation of more than minor significance.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

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

Sincerely,

/RA/

Jamie Heisserer, Branch Chief
Construction Inspection Branch 1
Division of Construction Oversight

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

Enclosure: NRC Inspection Report (IR) 05200025/2018001, 05200026/2018001
w/attachment: Supplemental Information

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Letter to Michael Yox from Jamie Heisserer dated May 14, 2018

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 - NRC INTEGRATED INSPECTION REPORTS 05200025/2018001, 05200026/2018001

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OFFICE	DCO	DCO	DCO	DCO	DCO	DCO	DCO
SIGNATURE	T. Steadham	J. Lizardi	P. Donnelly	G. Khouri	A. Artayet	C. Smith	D. Harmon
DATE	05/08/2018	05/08/2018	05/08/2018	05/08/2018	05/08/2018	05/04/2018	05/04/2018
OFFICE	DCO	DCO	DCO	DCO	DCO	DCO	DCO
SIGNATURE	S. Smith	A. Ponko	P. Braxton	T. Chandler	B. Kemker	N. Karlovich	B. Griman
DATE	05/08/2018	05/08/2018	05/14/2018	05/14/2018	05/11/2018	05/10/2018	05/04/2018
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DATE	05/14/2018	05/14/2018	05/14/2018	05/14/2018			

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200025 5200026
License Numbers:	NPF-91 NPF-92
Report Numbers:	05200025/2018001 05200026/2018001
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:	January 1, 2018 through March 31, 2018
Inspectors:	A. Artayet, Senior Construction Inspector, DCO P. Braxton, Resident Inspector, DCO T. Brimfield, Resident Inspector, DCO T. Chandler, Resident Inspector, DCO P. Donnelly, Resident Inspector, DCO B. Griman, Construction Inspector, DCO D. Harmon, Construction Inspector, DCO N. Karlovich, Resident Inspector, DCO B. Kemker, Senior Resident Inspector, DCO G. Khouri, Senior Construction Inspector, DCO J. Lizardi-Barreto, Construction Inspector, DCO A. Ponko, Senior Construction Inspector, DCO C. Smith, Construction Inspector, DCO S. Smith, Senior Construction Inspector, DCO T. Steadham, Senior Construction Inspector, DCO S. Temple, Resident Inspector, DCO J. Vasquez, Construction Inspector, DCO
Accompanying Personnel:	Alexander Tsirigotis, Mechanical Engineer, NRO Yueh-Li Li, Senior Mechanical Engineer, NRO Chang Li, Senior Reactor Systems Engineer, NRO Raul Hernandez, Reactor Systems Engineer, NRO
Approved by:	Jamie Heisserer, Branch Chief Construction Inspection Branch 1 Division of Construction Oversight

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200025/2018001, 05200026/2018001; 01/01/2018 through 03/31/2018; Vogtle Electric Generating Plant Units 3 & 4 integrated inspection report.

This report covers a three month period of inspection by resident and regional inspectors, and announced Inspections, Tests, Analysis, and Inspection Criteria (ITAAC) inspections by resident and regional inspectors. The NRC's program for overseeing the construction of commercial nuclear power reactors is described in Inspection Manual Chapter (IMC) 2506, “Construction Reactor Oversight Process General Guidance and Basis Document,” February 20, 2017.

A. NRC-Identified and Self Revealed Findings

None

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Construction Status

On March 6, 2018, the NRC approved license amendments 113 and 112 for Vogtle Unit 3 and 4, respectively. These amendments consolidated 247 ITAAC by regrouping the 247 pre-consolidation (old) ITAAC together into 57 post-consolidation (new) ITAAC. Specifics on these changes are available in ML18019A854.

As the old ITAAC were wholly incorporated into the new ITAAC, any inspections and findings will be incorporated into the new ITAAC. Attachment 1 to this report contains the list of ITAAC numbers before and after the license amendment. Attachment 2 contains a list of inspection reports where the NRC conducted inspections on pre-consolidation license amendment ITAAC, which are now credited to the post-consolidation license amendment ITAAC numbers.

The license amendments were issued in the middle of an inspection report period, therefore this report contains ITAAC from before and after the license amendments. Any old ITAAC will be indicated with an asterisk and also listed in Attachment 2.

During this report period in Unit 3, the pressurizer, core makeup tank B and CA37 module were set in containment. Also in containment, installation of pipes, valves, and their associated supports continued in the passive safety systems. In the auxiliary building, rebar installation and concrete pours continued for floors and walls from 100’ to 117’-6”. In the shield building, rebar installation and concrete placement continued on additional reinforced concrete sections below 159’ 6”.

In Unit 4, the reactor vessel was set in containment. Concrete was placed up to 96’ 6” on the west side and up to 105’ 2” on the east side of containment. In the auxiliary building, CA20 walls were placed from 85’ to 128’. In the shield building, rebar installation and concrete placement continued below 117’ 6”.

1. CONSTRUCTION REACTOR SAFETY

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

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

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

a. Inspection Scope

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

- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls

The inspectors observed in-process gas tungsten arc welding (GTAW) machine welding of the final cover pass for three welds on the reactor coolant system (RCS) loop piping to the steam generator (SG) A and reactor cooling pumps (RCPs) 1A and 1B. Specifically, the inspectors observed welding parameters to determine whether the voltage, amperage, travel speed, and wire feed speed were in accordance with the ranges described in welding procedure specification (WPS) 8 MC-GTAW for the following field weld numbers:

- SV3-RCS-PL01-FW-AHL02 (hot leg L001A to SG-A inlet nozzle);
- SV3-RCS-PL01-FW-ACL05 (cold leg L002A to RCP-1A outlet nozzle); and
- SV3-RCS-PL01-FW-ACL03 (cold leg L002B to RCP-1B outlet nozzle).

In addition, the inspectors reviewed PCI Energy Services, LLC welder performance qualification records and associated welder maintenance logs to determine whether the skills of machine operators M1338 and M2337 were tested, certified, and maintained in accordance with the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME) Code, Section IX.

b. Findings

No findings were identified.

1A02 (Unit 3) ITAAC Number 2.1.02.02a (13) / Family 06F

a. Inspection Scope

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

- 65001.B-02.04 - Production Controls

The inspectors observed fit-up and tack welding of the lower section of the stainless steel support structure for the automatic depressurization system (ADS) sparger B. The inspectors observed welding of field weld numbers 1, 2, and 3 as shown on the sparger drawing. The inspectors observed tacking of the gusset plates to the base plate and vertical cylindrical column of the ADS sparger B support located at the bottom of the in-containment refueling water storage tank (IRWST). The inspectors measured the thickness of the gusset and base plates joined by using double-bevel groove T-joints to determine whether the dimension and joint geometry of the weldments were in accordance with the welding symbols, weld map, engineering detail drawing, and requirements of the ASME Code, Section III, Subsection NF, for supports.

b. Findings

No findings were identified.

1A03 (Unit 3) ITAAC Number 2.1.02.02a (13) / Family 06F

a. Inspection Scope

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

- 65001.03-02.06 - Nondestructive Examination (NDE)
- 65001.03-02.07 - Review of Records

The inspectors reviewed documentation, observed in-process field activities, and performed independent assessments of the liquid penetrant (PT) examinations on the completed field welds from the cold legs (L002A and L002B) to the steam generator A reactor coolant pump casings (RCP-1A and -1B, respectively). The inspectors reviewed PT NDE procedure GQP 9.7, to determine if the procedure met the requirements of the ASME Code, Section V, Article 6, and the acceptance criteria met the requirements in the ASME Code, Section III, Subsection NB-5350. The inspectors observed the examination performed in the field by PCI inspectors to determine if the requirements of procedure GQP 9.7 were strictly adhered to, including surface temperature of the weld, type of penetrant, use of solvent and developer, and penetrant dwell time. Finally, the inspectors performed independent assessments of the test results to determine if the requirements of the ASME Code, Section III, Subsection NB-5350 were met, and reviewed NDE reports to determine if the observed results were accurately recorded.

The inspectors also reviewed radiographic results of the above mentioned field welds. The licensee utilized computed radiography testing (RT) and the results were

independently reviewed by the inspectors to determine if the requirements of NDE-RT procedure 521-RT-302 were met. Specifically, the inspectors determined if the source type and size, source to film distance, exposure times, and image quality indicators used were in accordance with the procedure. In addition, the inspectors reviewed the film results to determine if the acceptance criteria in the ASME Code, Section III, Subsection NB-5320 were met. Finally, the inspectors reviewed RT report numbers P-18-RT-302-0012 and -0013 to determine if the observed results were accurately recorded.

b. Findings

No findings were identified.

1A04 (Unit 3) ITAAC Number 2.1.02.02a (13) / Family 06F

a. Inspection Scope

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

- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls

The inspectors observed in-process machine welding on pressurizer surge line pipe field weld SV3-RCS-PLW-043-1, and in-process manual welding on a repair to field weld SV3-RCS-PLW-041-3. Specifically, the inspectors reviewed the work package to verify if work steps were being completed and signed off in the proper order and hold points were properly established and adhered to in accordance with the QA program. The inspectors observed welding parameters including amperage, voltage and filler material size to determine if the requirements of the weld procedures were being met. The inspectors observed the welders checking preheat temperatures prior to welding to determine if the WPS and the ASME Code, Section III requirements were being met. The inspectors observed the welding conditions to determine if the joint was protected from inclement environmental conditions, such as wind and rain in accordance with the QA program. The inspectors observed the weld joint to determine if the weld area was clean and free of deleterious materials, and interpass cleaning and grinding was performed, as required by procedures. The inspectors checked the welding filler metal and reviewed the issue slip to determine if the correct size and classification of filler metal was being used, if the filler metal was traceable to a heat number, and if it had been issued in accordance with the weld filler metal control procedure.

In addition, the inspectors reviewed the qualification records of the four assigned welders for weld -041-3 to verify they had been qualified in accordance with the ASME Code, Sections III and IX to make the weld. Also, the inspectors reviewed the welders' continuity logs to verify they had used the welding process at least once every six months to maintain their qualifications.

b. Findings

No findings were identified.

1A05 (Unit 3) ITAAC Number 2.1.02.02a (13) / Family 06F

a. Inspection Scope

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

- 65001.06-02.01 - General Installation

The inspectors performed inspection activities associated with the installation of the pressurizer in the Unit 3 containment. The inspectors reviewed the lift calculations for the pressurizer to verify if the licensee satisfied the stress criteria requirements from Table 3.9-9 of the UFSAR and American National Standards Institute (ANSI) Standard N14.6-1986 for a Level A component during the lift. The inspectors reviewed the approved rigging plan to determine if the weight of the pressurizer in the lift calculations was consistent with the weight documented in vendor drawings. The inspectors also reviewed the rigging plan to verify if the plan incorporated information from the lift calculations in accordance with the quality assurance program. The inspectors observed the planning meeting for the lift, the pre-job briefing of the lift, and the component lift to determine if the licensee adhered to the precautions detailed in the rigging plan in accordance with the quality assurance program. The inspectors also observed those activities to determine whether the lifting and rigging was performed in accordance with the rigging plan. The inspectors observed the installation of the pressurizer to verify it was placed on the support columns in the pressurizer cavity in accordance with approved drawings, the specification, and Section 3.8.3.1.1.4 of the UFSAR. Once the pressurizer was set in the containment, the inspectors also observed the installation of the column support studs and nuts to verify if the nuts were centered and were tightened as specified by the installation drawings and the quality assurance traveler instructions.

b. Findings

No findings were identified.

1A06 (Unit 3) ITAAC Number 2.2.01.02a (91) / Family 06F

a. Inspection Scope

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

- 65001.B-02.06 - Records

The inspectors reviewed RT film taken on weld U3-S1-E13-PAL/E13, which joins personnel airlock Y03 to the containment vessel, to verify it had been inspected, and met the requirements of the ASME Code. Specifically, the inspectors checked to determine if the film met the quality requirements of the ASME Code, Section V regarding density and image quality indicators. The inspectors also reviewed the film to verify if the welds were free from rejectable defects in accordance with the acceptance criteria of the ASME Code, Section III.

b. Findings

No findings were identified.

1A07 (Unit 3) ITAAC Number 2.2.01.02a (91) / Family 06F
(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:

- 65001.16-02.02 - 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

The inspectors interviewed personnel and reviewed quality records associated with the piping design acceptance criteria (DAC) ITAAC at the Westinghouse Electric Company (WEC) facility at Cranberry Township, PA, to verify if the piping design was completed in accordance with the requirements contained in the UFSAR, ASME Code, Section

III, and Title 10 of the Code of Federal Regulations (CFR) Part 50, Section 55a (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 Sections 3.2.4, 3.9.1, 3.9.3, 3.9.8, 14.3.3 and Table 3.2-3 and the ASME Code, Section III, Subsections NCA, NC, ND, and NF; and
- design drawings were consistent with the analyzed configurations.

The inspectors performed these reviews for the APP-CVS-PLR-090, "CVS Makeup from Penetration C03 IRC", Revision 0.

The inspectors reviewed the applicable piping design specifications for each piping segment to verify if 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 quality assurance requirements; design inputs; and load conditions and combinations. The inspectors reviewed the design reports/stress reports to determine if the design specification applicable to the ASME Code class for the piping (APP-PL02-Z0-102 for Class 2 and 3 piping) 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 if they were adequately validated and verified in accordance with the UFSAR Section 3.9.

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 an 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 applicable design specifications and 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 in accordance with the UFSAR and ASME code:

- 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 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;
- the ASME Code, Section III stress qualification; and
- overall functional capability of the piping system.

The inspectors reviewed the pipe hanger calculations to determine if the licensee adequately evaluated the following in accordance with the ASME Code, Subsection NF and Appendix F, and Structural Welding Code, ANSI/ American Welding Society (AWS) D 1.1:

- 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.

1A08 (Unit 3) ITAAC Number 2.2.01.02a (91) / Family 06F

a. Inspection Scope

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

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

The inspectors reviewed Mirion Technologies (Conax Nuclear) fabrication records for three electrical penetration assemblies (EPA) SV3-IDSD-EY-P14Z, -P15Y, and -P16Y

to determine whether welding, examination, testing, and nameplate stamping were performed in accordance with the WEC EPA design specification, UFSAR, and ASME Code, Section III, Subsections NCA and NE.

The inspectors reviewed certified material test reports (CMTRs) for the following traceable pressure retaining materials to verify if applicable mechanical testing, chemical analysis, delta ferrite determination, susceptibility to intergranular attack, and fracture toughness impact testing were performed with acceptable results in accordance with the EPA design specification and the ASME Code, Section II-Parts A & C:

- inside and outside stainless steel header plates;
- carbon steel canisters; and
- stainless steel welding electrodes.

The inspectors reviewed Mirion welding procedure IPS-1900 with supporting procedure qualification records to determine whether process variables of qualification and testing for use of shielded metal arc welding on dissimilar metals were performed in accordance with the provisions of the ASME Code, Section IX, Article II. In addition, the inspectors reviewed qualifications for three welders to verify if they were tested and certified for welding with stainless steel electrodes in accordance with the ASME Code, Section IX, Article III.

The inspectors reviewed the following Mirion documents to verify if NDE-PT was performed on each weld joining the header plate to canister on both ends of the EPAs with acceptable results in accordance with the ASME Code, Section V, Article 6:

- Mirion NDE PT procedure QCI 9-23;
- two NDE personnel annual visual acuity and color contrast records; and
- final NDE-PT reports.

The inspectors reviewed Sections 5, 6, and 7, and Appendix A of Mirion production test procedure IPS-2412 to verify if pneumatic pressure testing for each of the three EPAs was performed with acceptable results in accordance with the ASME Code, Section III, Subsection NE, Article NE-6000.

The inspectors reviewed Mirion ASME Form N-2 Data Reports for the three EPAs to verify if signatures for design by professional engineers were completed in accordance with the ASME Code, Section III, Subsection NCA, Article NCA-8000. In addition, the inspectors reviewed the component nameplate physically attached on the outside header plate for EPA SV3-IDSD-EY-P15Y to determine whether the ASME NPT stamp and markings were made in accordance with the ASME Code, Section III, Subarticle NCA-8200.

b. Findings

No findings were identified.

1A09 (Unit 3) ITAAC Number 2.2.01.02a (91) / Family 06F

a. Inspection Scope

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

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

The inspectors performed a direct inspection of welding activities associated with the installation of containment vessel EPAs. The welding activities observed were associated with pressure boundary welds of EPAs SV3-ISDS-EY-P14Z, SV3-IDSD-EY-P15Y, and SV3-IDSD-EY-P30Z. The inspectors performed an independent inspection of the weld fit-up to determine if the weld joint geometry, including root opening and fit-up tolerances, met the requirements of the ASME Code, Section III, Subsection NE. For welds SV3-IDSD-EY-P14Z-3 and SV3-IDSD-EY-P15Y-3, the inspectors observed the weld joint through the root opening during the fit-up and tack welding stage to determine whether the internal edge alignment and tack welds met the requirements of the ASME Code, Section III, Subsection NE, Article NE-4000. For weld SV3-IDSD-EY-P30Z-2, the inspectors visually observed the final cover pass and independently measured the reinforcement to determine if the maximum reinforcement requirements of the ASME Code, Section III, Subsection NE, NE-4426 were met.

The inspectors reviewed RT reports associated with the above mentioned welds to determine whether the techniques and geometric unsharpness were in accordance with the requirements of the ASME Code, Section III Subsection NE. The inspectors also independently reviewed the RT film to determine if the welds met the acceptance criteria of the ASME Code, Section III, Subsection NE, NE-5320.

The inspectors reviewed WPS1-1.1GT(M)SM-NE-2 and the supporting procedure qualification records PQ607A and PQ607B to determine if the type and number of qualification tests required to qualify the WPS were specified and conformed to the requirements of the ASME Code, Section IX, Article II.

Additionally, the inspectors reviewed CMTRs to determine if the welding rods and electrodes met the specified mechanical testing and chemistry requirements of the ASME Code, Section II, Part C.

Finally, the inspectors reviewed welder performance qualification test records to determine if the welder was qualified and certified for the piping material, electrode/process, and position in the field in accordance with the requirements of the ASME Code, Section IX, Article III.

b. Findings

No findings were identified.

1A10 (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 a CMTR for EPA SV3-IDSD-EY-P14Z, -P15Y, and -P16Y to determine if the material used to fabricate them met the fracture toughness requirements of the ASME Code, Section III, Subsection NE, for metal containment vessels and WEC design specification. In addition, the inspectors reviewed the CMTR to verify if it addressed applicability to 10 CFR 50, Appendix B and 10 CFR 21. Finally, the inspectors reviewed the WEC design specification to determine if it was certified by a registered professional engineer in accordance with the ASME Code, Section III, Subsection NCA-3250.

b. Findings

No findings were identified.

1A11 (Unit 3) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

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

The inspectors performed field observations for in-process welding on four welds associated with division A of the IRWST injection line of the passive core cooling system. The inspectors observed the following welds to verify piping was installed in accordance with the requirements of the UFSAR and applicable subsections of the ASME Code, Section III:

- SV3-PXS-PLW-01Q-03 joining line L127A to L021A for ASME Class 1
- SV3-PXS-PLW-01Q-17 in line L127A for ASME Class 1
- SV3-PXS-PLW-015-16-C in line L116A for ASME Class 3
- SV3-PXS-PLW-015-18 in line L116A for ASME Class 3

For weld SV3-PXS-PLW-01Q-03, the inspectors observed in-process manual GTAW to verify if the requirements for welding parameters described in WPS1-8.8T01 were met. The inspectors observed the welder's ability to deposit sound weld metal stringer beads on the final weld cover pass using ER316L welding rods to verify the weld was in accordance with the specification. Additionally, the inspectors reviewed the performance qualification record of welder RCW4262 to verify if the testing and certification was performed in accordance with the requirements of the ASME Code, Section IX. The inspectors also performed an independent review of the physical layout, characteristics, and markings on the pipe and fitting to determine if the field conditions met the isometric drawing. Specifically, the inspectors reviewed the pipe and tee fitting diameter, wall thickness, and material specification and type/grade to verify they were consistent with the isometric drawing.

For weld SV3-PXS-PLW-01Q-17, the inspectors observed in-process manual GTAW to verify if the requirements of WPS1-8.8T01 were satisfied. The inspectors observed the weld joint through the root opening during the fit-up and tack welding stage to determine if the internal edge alignment, root spacing, feathered tack welds, and partially completed root pass met the requirements of WPS1-8.8T01 and the WECTEC General Welding Specification GWS-1. The inspectors also performed an independent review of the physical layout, characteristics, and markings on the pipe and fitting to determine if the field conditions met the isometric drawing. Specifically,

the inspectors reviewed the pipe and elbow fitting diameter, wall thickness, and material specification and type/grade to verify they were consistent with the isometric drawing.

For weld SV3-PXS-PLW-015-16-C, the inspectors observed in-process manual GTAW for the rewelding of a weld cut-out to verify if the requirements of WPS1-8.8T01 were met for using argon purging/backing gas and ER308L welding rods. The inspectors observed the weld joint through the root opening during the fit-up and tack welding stage to determine if the internal edge alignment, root spacing, feathered tack welds, and partially completed root pass met the requirements of WPS1-8.8T01 and GWS-1. The inspectors also performed an independent review of the physical layout, characteristics, and markings on the pipe and fitting to verify if the field conditions met the isometric drawing. Specifically, the inspectors reviewed the pipe and elbow fitting diameter, wall thickness, and material specification and type/grade to verify they were consistent with the isometric drawing.

Finally, for weld SV3-PXS-PLW-015-18, the inspectors observed in-process manual GTAW to verify if the requirements of WPS1-8.8T01 were met using ER308L welding rods. The inspectors observed the weld joint through the root opening during the fit-up and tack welding stage to determine if the internal edge alignment, root spacing, feathered tack welds, and partially completed root pass met the requirements of WPS1-8.8T01 and GWS-1. The inspectors also performed an independent review of the physical layout, characteristics, and markings on the pipe and fitting to determine if the field conditions met the isometric drawing. Specifically, the inspectors reviewed the pipe and concentric reducer diameter, wall thickness, and material specification and type/grade to verify they were consistent with the isometric drawing.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- 65001.03-02.06 - Nondestructive Examination (NDE)
- 65001.03-02.07 - Review of Records

The inspectors reviewed RT results associated with field welds performed on IRWST injection line PXS-L127A, core makeup tank outlet line PXS-L021A and accumulator

discharge lines PXS-L025A and PXS-L027A. Specifically, the inspectors reviewed the results and examination reports:

- V-18-RT-302-0024 for field weld SV3-PXS-PLW-014-10, a pipe to check valve class 2 weld where line L027A meets L025A.
- V-18-RT-302-0025 for field weld SV3-PXS-PLW-014-19, a pipe to tee class 1 weld in line L025A.
- V-18-RT-302-0028 for field weld SV3-PXS-PLW-01Q-3, a pipe to tee class 1 weld where line L021A meets L127A.
- V-18-RT-302-0029 for field weld SV3-PXS-PLW-01Q-17, a pipe to 90 degree elbow class 1 weld in line L127A.
- V-18-RT-302-0030 for field weld SV3-PXS-PLW-012-6, a pipe to tee class 1 weld in line L021A.

The licensee utilized computed radiography, and the results were independently reviewed by the inspectors to determine if the requirements of NDE-RT procedure 521-RT-302 were met. The inspectors determined if the source type and size, source to film distance, exposure times, and image quality indicators were in accordance with the procedure. In addition, the inspectors reviewed the film results to determine if the acceptance criteria in the ASME Code, Section III, Subsection NB-5320 were met for the Class 1 welds and NC-5320 for Class 2 welds. Finally, the inspectors reviewed the RT reports listed above to determine if the observed results were accurately recorded.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- 65001.03-02.03 - Installation and Welding
- 65001.07-02.01 - General Installation
- 65001.B-02.03 - Welder Qualification

The inspectors observed the installation of check valves SV3-PXS-PL-V016A and -017A in the core makeup tank A outlet line L018A. The inspectors observed through direct visual inspection the valve location, orientation, type, and flow direction met the requirements of the applicable drawing and maintenance manual. The inspectors also observed the fit-up of valve -V017A, field weld SV3-PXS-PLW-01K-1, and performed

an independent inspection of the final fit-up to determine if the weld joint geometry and surface cleanliness met the requirements of ASME General Welding Specification GWS-1 and the acceptance criteria of Quality Inspection Plan F-S562-005. The inspectors inspected the work package to determine if proper welding procedures, detailed drawings and instructions, and weld data sheets were at the work station and were readily available. The inspectors reviewed design drawings and performed a direct field inspection to verify if the accumulator discharge piping check valves were swing type check valves and the core makeup tank discharge piping check valves were nozzle type check valves in accordance with the UFSAR, Section 2.2.3.9.b. Finally, the inspectors reviewed the welder qualification record for welder RCW4262 to determine if the welder was qualified for the piping material, welding process and position of the field weld in accordance with the ASME Code, Section IX.

b. Findings

No findings were identified.

1A14 (Unit 3) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

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

The inspectors observed in-process welding and reviewed documents associated with the installation of pipe section L018A, which makes up part of the core makeup tank discharge piping to the direct vessel injection line. The inspectors observed in-process welding on field welds SV3-PXS-PLW-01K-3 and -4, and observed tack welding and fit-up of field weld -1. The inspectors reviewed the work package to determine if the welding procedure, detailed drawings, and weld data sheets were at the work station and readily available. The inspectors reviewed the welding procedure to determine if it met the requirements of the ASME Code, Section IX. The inspectors observed in-process welding to determine if the condition of the material surface for the weld joint and the welding environment met the requirements of the ASME General Welding Specification GWS-1. In addition, the inspectors observed in-process welding variables including shielding gas type and flow, amperage, voltage, and filler material type and size to determine if they met the requirements of the weld procedure specification. The inspectors reviewed issue slips from the rod room and the etchings on the filler metal rods to determine if the filler material was being properly controlled. The inspectors reviewed welder qualification records to determine if the welders were

qualified for the material, weld process, and position utilized in the field as required by the ASME Code, Section IX. Finally, the inspectors observed the tack welding of field weld SV3-PXS-PLW-01K-1 and performed an independent inspection of the final fit-up to determine if the weld joint geometry and surface cleanliness met the requirements of the ASME General Welding Specification GWS-1 and the acceptance criteria of Quality Inspection Plan F-S562-005.

b. Findings

No findings were identified.

1A15 (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:

- 65001.06-02.01 - General Installation

The inspectors performed a walk down of an installed pipe support for the passive core cooling system to determine if it was properly installed in accordance with design requirements. Specifically, the inspectors performed an independent inspection of pipe support PXS-PH-11R0357 to determine if the support met the location, orientation, and dimensional requirements given in support drawing APP-PXS-PH-11R03571, Rev. 3. The inspectors also reviewed the axial tolerances, type, and anchorage to determine if the support was installed in accordance with the installation specification. For the portions of the pipe support that were welded, the inspectors performed a visual inspection of the welds to verify if they were of appropriate size, length, location, and free of rejectable surface defects such as cracks, lack of fusion, and excessive porosity in accordance with the ASME Code, Section III, Subsection NF.

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.B-02.06 - Records

The inspectors performed a record review of the pressure boundary weld in valve PXS-PL-V017B, serial number 11904, to determine if it had been made and inspected in accordance with the ASME Code, Section III. The inspectors reviewed the CMTR for the weld filler metal, heat number E140778 and lot number XF0140, to determine if it had been manufactured and tested for chemical composition and ferrite number in accordance with the ASME Code, Section II. The inspectors also reviewed the PT and RT reports to determine if the weld had received the required surface and volumetric examinations, and was accepted in accordance with the ASME Code, Sections III and V.

b. Findings

No findings were identified.

1A17 (Unit 3) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

- 65001.03-02.06 - Nondestructive Examination (NDE)
- 65001.03-02.07 - Review of Records
- 65001.B-02.05 - Inspection

The inspectors reviewed MISTRAS computed RT film for the following four welds of the passive core cooling system piping to determine whether the image brightness compared at the body of the wire image quality indicators and area of interest were in accordance with the requirements of the ASME Code, Section III, Subsection NB-5000 and Section V, Article 2:

- SV3-PXS-PLW-014-6, which connects 8-inch PXS piping to check valve PXS-PL-V029A;
- SV3-PXS-PLW-014-14-C1, which connects 8-inch PXS piping to a S-160 90 degree elbow;
- SV3-PXS-PLW-014-10, which connects 8-inch PXS piping to check valve PXS-PL-V028A; and
- SV3-PXS-PLW-014-19, which connects 8-inch PXS piping to an S-160 8x8 tee.

In addition, the inspectors reviewed the associated RT reports to determine whether the techniques and geometric unsharpness were in accordance with the requirements of the MISTRAS RT procedure 521-RT-302. Finally, the inspectors reviewed the RT reports for the piping sections listed above to determine if the observed results were accurately recorded in accordance with the quality assurance program.

b. Findings

No findings were identified.

1A18 (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.B-02.06 - Records

The inspectors reviewed RT films associated with welds in the pipe spools that were inspected in Section 1A16 of NRC inspection report 05200025/2017004 to determine if they had been welded in accordance with the applicable ASME Codes. Specifically, the inspectors reviewed the RT films of vendor welds in line and spool numbers:

- PXS-L027A, spool SV3-PLW-014-3
- PXS-L132A, spool SV3-PLW-01H-1
- PXS-L127A, spool SV3-PLW-01Q-2
- PXS-L104B, spool SV3-PLW-041-2

The inspectors also reviewed the RT films to determine if the film density and image quality indicator sensitivity were within allowable limits set by the ASME Code, Section V. Lastly, the inspectors reviewed the RT films to ensure the welds were free of rejectable indications as defined by the ASME Code, Section III.

b. Findings

No findings were identified.

1A19 (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:

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

The inspectors performed an inspection of construction activities associated with the installation of core makeup tank B at the 107'-2" elevation of the Unit 3 containment building. The inspectors observed construction activities to verify the installation of the core makeup tank was performed in accordance with design drawings.

Prior to installation of the core makeup tank in containment, the inspectors observed machining of the embedment plates and reviewed the Quality Assurance Traveler. The inspectors physically verified the approved Quality Assurance Traveler was available to workers at the work site in accordance with quality assurance program procedures. The inspectors reviewed the Quality Assurance Traveler to verify the most recent procedures and drawings were included in the package in accordance with quality assurance program procedures. The inspectors observed the machining of the associated embedment plates to determine if the most recent procedures and drawings were being followed in accordance with the quality assurance program. The inspectors reviewed the Quality Assurance Traveler to verify hold points were being observed and quality control inspections were being conducted in accordance with quality assurance program procedures. The inspectors also reviewed the procedures and drawings to verify the installation requirements, including proper location, placement, dimensions, alignment, and other mounting requirements were specified in accordance with procedures. In addition, the inspectors reviewed the Quality Assurance Traveler to verify field changes were processed and documented in accordance with quality assurance program procedures.

Prior to lifting the core makeup tank from the transport stand, the inspectors reviewed the applicable Equipment Lift Record to verify lifting and rigging of the tank were being performed in accordance with the approved procedure.

During installation of the core makeup tank, the inspectors observed the installation of the core makeup tank to verify the tank was installed in the location specified in the design drawings. The inspectors physically verified the approved Quality Assurance Traveler was available to the workers at the work site in accordance with quality assurance program procedures. The inspectors also reviewed the associated Quality Assurance Traveler to verify the most recent procedures and drawings were being

used to install the core makeup tank in accordance with the quality assurance program. The inspectors reviewed the Quality Assurance Traveler to verify hold points were being observed and quality control inspections were being conducted in accordance with quality assurance program procedures. In addition, the inspectors reviewed the Quality Assurance Traveler to verify field changes were processed and documented in accordance with quality assurance program procedures.

b. Findings

No findings were identified.

1A20 (Unit 3) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

- 65001.03-02.06 - Nondestructive Examination (NDE)
- 65001.07-02.01 - General Installation
- 65001.07-02.02 - Component Welding
- 65001.B-02.04 - Production Controls

The inspectors observed the installation of air-operated valves SV3-PXS-PL-V014A and -V015A in the core makeup tank A outlet line L017A as described in Tier 2 Section 6.3.2.1.2 of the UFSAR. The inspectors performed a direct visual inspection of the valves to verify if the valve location, orientation, type, and flow direction met the requirements of the applicable drawing and vendor manual. The inspectors performed an independent inspection of the final fit-up of valve -V015A, field weld SV3-PXS-PLW-01K-14, to determine if the weld joint geometry and surface cleanliness met the requirements of ASME General Welding Specification GWS-1 and the acceptance criteria of Quality Inspection Plan F-S562-005. The inspectors also performed a visual inspection of the valve actuator to verify if it was removed prior to welding as required by the vendor manual. The inspectors inspected the work package to determine if proper welding procedures, detailed drawings and instructions, and weld data sheets were at the work station and were readily available in accordance with the quality assurance program.

Additionally, the inspectors performed an independent inspection of the computed RT results of field welds SV3-PXS-PLW-01K-12 and -14, associated with valve body-to-pipe welds for valves V014A and V015A, respectively, to determine if the acceptance criteria in the ASME Code, Section III, Subsection NB-5320 were met. The inspectors also reviewed the RT reports for the welds listed above to determine if the observed results were recorded and if the RT parameters including source strength, film type, source to film distance and exposure time were performed in accordance with the procedure.

Finally, the inspectors reviewed certified material test records contained within quality release and certificate of conformance documents for the valves with serial numbers 19089909 and 19089912, which were installed in valve locations V015A and V014A, respectively. Specifically, the inspectors reviewed the documents to determine if the

valve body and bonnet were made of SA351 CF3M material as required by the drawing, and the material met the chemical and physical requirements of the ASME Code, Section II.

b. Findings

No findings were identified.

1A21 (Unit 3) ITAAC Number 2.2.03.08c.v.02 (188) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.v.02 (188). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records

The inspectors performed a review of the principal closure document to verify the elevation differences between the bottom inside tank surface of the IRWST and the centerline of the direct vessel injection nozzles were greater than or equal to 3.4 feet as specified in Table 2.2.3-4 of Appendix C of the Vogtle Unit 3 Combined License. The inspectors reviewed the survey program to verify if key dimensions of safety-related components were verified through a quality controlled process in accordance with the quality assurance program and 10 CFR 50, Appendix B. Specifically, the inspectors reviewed the survey points to verify if the surveys were conducted at the lowest elevation on the IRWST and the highest elevation on the centerline of the direct vessel injection line. The inspectors also reviewed changes to the survey program to verify if the change were conducted in accordance with the quality assurance program. Additionally, the inspectors reviewed the associated survey records to verify if the survey data was correctly translated to the principle closure document and measuring and test equipment used for the surveys were calibrated in accordance with the quality assurance program and 10 CFR 50, Appendix B.

b. Findings

No findings were identified.

1A22 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement

The inspectors reviewed quality records and performed direct inspection of concrete placement activities associated with module wall CA02, which is part of the north east boundary of the IRWST from elevation 103'-0" to 135'-3".

The inspectors reviewed the approved concrete pour card to determine if concrete mix design requirements were properly translated in accordance with design specification SV4-CC01-Z0-026. Also, during placement, the inspectors compared the pour placement card against a batch ticket to verify if concrete delivered to the site had the proper concrete-mix type. In addition, the inspectors verified transport time was completed within the time allowed by American Concrete Institute (ACI) 349-01, and if the delivery was intended for the proper location in accordance with the pour card.

During the concrete placement, the inspectors observed in-process concrete testing to determine if concrete temperature, slump size, and air content were determined at the mix delivery location as required by the pour card, specification SV4-CC01-Z0-026, and ACI 349-01. The inspectors also observed the sampling of 24 concrete strength test cylinders to verify if sample collection and testing techniques were performed in accordance with specification SV4-CC01-Z0-027 and ASTM-C172.

The inspectors observed concrete placed at module wall CA02 to determine if the placement did not result in mix segregation and placement-drop distances met requirements specified in SV4-CC01-Z0-031. The inspectors also observed the use of concrete vibrators to verify if they were handled and operated to ensure adequate consolidation of the mix, including vertical operation and penetration into the previous placed concrete layer in accordance with the quality assurance program. The inspectors verified quality control inspections during placement were performed by the licensee as required by specification SV4-CC01-Z0-031.

The inspectors reviewed the test sample cylinder records to verify if the sample frequency and curing time were in accordance with SV4-CC01-Z0-027 and ASTM-C31. The inspectors also reviewed the test results to verify if the concrete mix met the minimum design density requirement of 140 pounds per cubic foot as specified in the UFSAR Section 12.3.2.3.

b. Findings

No findings were identified.

1A23 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed quality records and observed ongoing work associated with main steam line penetration assembly 12406 in wall 11 of the auxiliary building, between column lines P and L (i.e., the north wall of the east main steam compartment). This main steam penetration assembly is a combination of structural steel components and reinforcing steel, which will be cast in place in the concrete wall. The inspectors independently measured the spacing, quantity, splice location and type, and arrangement of the reinforcing steel to verify the assembly was being constructed in accordance with approved design drawings and applicable construction codes and standards. The inspectors also reviewed a sample of engineering and design coordination reports to verify differences between the design and the as-built condition of the assembly were approved and documented in accordance with the requirements of 10 CFR 50, Appendix B, Criterion III, "Design Control."

The inspectors reviewed design calculations, specifications, and drawings associated with wall 11 and the main steam and feed water penetrations to verify they adequately defined the final design and arrangement of these structural components and were completed in accordance with the applicable technical and quality assurance requirements, including those provided in the required codes and standards identified in the UFSAR Chapter 3, Section 8 and Appendix 3H. Specifically, the inspectors reviewed calculations and specifications to determine whether they were prepared in accordance with the requirements of 10 CFR 50, Appendix B, Criterion III, "Design Control," and conformed to the applicable codes and standards listed in the UFSAR.

The inspectors reviewed design drawings for wall 11 in the vicinity of the main steam and feed water penetrations to determine if it was designed as a reinforced concrete structure in accordance with ACI 349-01. The inspectors also reviewed design drawings for the main steam and feed water penetration sleeves to determine if they were designed as steel structures in accordance with American Institute of Steel Construction (AISC) N690-1994. The inspectors reviewed a sample of design inputs contained in the calculations for wall 11 and the main steam and feed water

penetrations to verify they were consistent with the design specification. The inspectors reviewed the load cases and load combinations in the calculations and compared them to those specified in the UFSAR, ACI 349-01, and AISC N690-1994, as applicable. The inspectors also reviewed the design methods implemented in the wall 11 and main steam and feed water penetration calculations and the corresponding acceptance criteria to determine if they were consistent with the ACI 349-01 and N690-1994 requirements, as applicable.

The inspectors reviewed supplier documentation packages associated with the wall 11 reinforcing steel to verify the supplied material met the requirements of ACI 349-01, ASTM A706, and the concrete general notes. The inspectors also reviewed weld data records and welder performance qualification records to determine if welded reinforcing steel splices met the requirements of ACI 349-01, AWS D1.4-98, and ASME Nuclear Quality Assurance (NQA) 1-94 Subpart 2.5, as applicable.

b. Findings

No findings were identified.

1A24 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A-02.01 – Observation of In-Process Installation Activities

The inspectors performed inspection activities associated with the walls on column line K between the shield building and column line 11 from elevation 100'-0" to 117'-6", and column line I between column line 11 and column line 7.3 from elevation 100'-0" to 117'-6" in the auxiliary building. The inspectors observed ongoing reinforcement installation activities and reviewed licensee records including design drawings, design calculations, engineering and design change requests, corrective action documents, and non-conformance reports.

The inspectors performed independent measurements of steel reinforcement bars in the walls to verify they were constructed in accordance with ACI 349-01. Specifically, the inspectors conducted in-field measurements of installed reinforcing steel to verify it was the right size, met spacing requirements and minimum concrete clear cover, and lapped splices met the minimum length as described in design drawings. The

inspectors reviewed general notes drawing SV4-000-C9-002A, to verify mechanical and electrical penetrations had the proper clearances and additional reinforcement was installed to compensate for large openings in accordance with the licensee's design specifications.

The inspectors independently measured steel reinforcement spacing in congested areas in both walls to determine if reduced spacing between steel reinforcement bars would make concrete-mix flow and vibration difficult to control during concrete placement in accordance with specification SV4-CC01-Z0-031. The inspectors also performed measurements of the embedments to verify they were located properly in the structure, were secured, and were free of concrete or excessive rust, and had the proper clearances in accordance with the licensee's design specifications and drawings.

The inspectors observed reinforcement installation activities in both walls to verify they were performed using the latest-approved design changes, design drawings, and quality control procedures in accordance with ASME NQA-1 1994, Basic Requirement 3. The inspectors also performed a walkdown of the installed reinforcement to determine if it was installed in accordance with design drawings. In addition, the inspectors reviewed corrective action documents associated with non-conformances to verify if non-conforming items were properly dispositioned in accordance with licensee procedure APP-GW-GAP-428.

The inspectors reviewed the applicable design calculations to determine whether critical design attributes including steel reinforcement size, concrete clear cover, and development length were translated to the design drawings and represented the as-built condition.

b. Findings

No findings were identified.

1A25 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.01-02.01 - Procedures
- 65001.02-02.01 - Inspection of Concrete Placement

The inspectors observed concrete placement activities for the wall on column line L between column line 11 and the shield building from elevation 100'0" and 117'6" in the Unit 3 auxiliary building.

During the concrete placement the inspectors observed in-process concrete testing to verify if the sample collection techniques were in accordance with American Society for Testing and Materials (ASTM) standards. Specifically, the inspectors observed testing of the concrete temperature, slump, air content, and unit weight to determine if these variables were tested at the proper location and frequency in accordance with the testing specification. The inspectors also observed the fabrication of the test sample cylinders to verify if they were made at the location and frequency prescribed by the test specification.

Also during the concrete placement, the inspectors reviewed 10 batch tickets to verify if the records were controlled, and indicated location, mix, volume, date, time, and special instructions in accordance with the Z0-026 specification. In addition, the inspectors observed the concrete placement to verify if concrete temperature and time between mixing and placement were within the limits of the concrete placement procedure. After the placement, the inspectors reviewed a sample of 10 batch tickets to verify if the quality records were retrievable, verified by quality control personnel, and were identical to the ones generated during the concrete placement in accordance with Z0-026 specification.

b. Findings

No findings were identified.

1A26 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A-02.01 - Observation of In-Process Installation Activities

The inspectors performed inspection activities associated with the wall on column line 4.8 between column lines I and J-1 from elevation 105'-0" to 117'-6" and the wall on column line 2 between column lines I and J-1 from elevation 100'-0" to 117'-6" in the auxiliary building. The inspectors observed ongoing reinforcement installation activities and reviewed licensee records including design drawings, design calculations,

engineering and design change requests, corrective action documents, and non-conformance reports.

The inspectors performed independent measurements of steel reinforcement bars in the wall to verify it was constructed in accordance with ACI 349-01. Specifically, the inspectors conducted in field measurements of installed reinforcing steel to verify they were the right size, met spacing requirements and minimum concrete clear cover, and lapped splices met the minimum length as described in design the drawings. The inspectors also reviewed the mechanical and electrical penetrations in the walls to verify if they had the proper clearance and additional reinforcement was installed to compensate for large openings in accordance with the licensee's design specifications and drawings.

The inspectors independently measured rebar spacing in congested areas to determine if reduced spacing between steel reinforcement bars would make concrete-mix flow and vibration difficult to control during concrete placement. The inspectors also performed measurements of the embedments to verify they were located properly in the structure, were secured, and were free of concrete or excessive rust, and had the proper clearances in accordance with licensee's design specifications and drawings.

The inspectors observed reinforcement installation activities to verify they were performed using the latest-approved design changes, design drawings, and quality control procedures in accordance with ASME NQA-1 1994, Basic Requirement 3. In addition, the inspectors performed a walkdown of the as-installed reinforcements to determine if they were installed in accordance with design drawings.

The inspectors reviewed the applicable design calculations to determine whether critical design attributes were translated to the design drawings and were represented in the as-built condition.

b. Findings

No findings were identified.

1A27 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

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

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

The inspectors performed a direct inspection and independent measurements of the installation activities associated with embedments, and steel reinforcement, including horizontal and vertical reinforcing steel bars, shear reinforcement, and bar splices for the wall on column line 5 between column line I and the shield building from elevation 105'-0" to 117'-6" in the auxiliary building.

The inspectors reviewed installed reinforcing steel and embedments to verify if the location, size, and clearances of the components were in accordance with the design drawings. The inspectors also reviewed these installed components to verify if they were secured and free of contaminants and excessive rust in accordance with the quality assurance program.

In addition, the inspectors observed installation activities to verify if they were conducted in accordance with the work package. The inspectors also reviewed the work package to verify if the most recent construction approved procedures and drawings were contained in the package in accordance with the quality assurance program.

b. Findings

No findings were identified.

1A28 (Unit 3) ITAAC Number C.3.8.01.01 (842) / Family 03F
(Unit 4) ITAAC Number C.3.8.01.01 (842) / Family 03F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number C.3.8.01.01 (842). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.21.02.02 - Design Inspections

During an inspection located at the WEC facility in Cranberry Township, PA, the inspectors reviewed quality records and interviewed personnel to verify if the pipe rupture hazard analysis (PRHA) report was completed in accordance with the methodology described in Section 3.6 of the UFSAR. The inspectors reviewed the licensee's evaluations as described in APP-GW-GLR-075 and APP-GW-GLR-076.

The inspectors reviewed the PRHA records to determine if the following were adequately evaluated:

- scope of PRHA;

- pipe break/crack locations, types, and sizes ;
- protection of essential components against the dynamic and environmental effects of the postulated pipe breaks/cracks; and
- protection of essential components against the effects of flooding.

Scope of PRHA

The inspectors reviewed nuclear island general arrangement drawings to verify if all rooms shown on the drawings were included in the scope of review in either APP-GW-GLR-075 or APP-GW-GLR-076. Specifically, the inspectors reviewed the following drawings:

- APP-1000-AR-901, NI Room Numbering Section A-A, Revision 5
- APP-1000-AR-902, NI Room Numbering Section B-B, Revision 6
- APP-1010-AR-101, NI Room Numbering Plan at El. 66-6, Revision 4
- APP-1020-AR-001, NI Room Numbering Plan at El. 82-6, Revision 4
- APP-1020-AR-002, NI Room Numbering Plan at El. 92-6, Revision 4
- APP-1040-AR-001, NI Room Numbering Plan at El. 117-6, Revision 4
- APP-1050-AR-001, NI Room Numbering Operating Deck El. 135-3, Revision 5
- APP-1050-AR-002, NI Room Numbering Plan at El. 145-9 and 153-0, Revision 5
- APP-1060-AR-001, NI Room Numbering Roof Plan El. 153-0 & 160-6, Revision 4

Pipe Break/Crack Locations, Types, and Sizes

The inspectors reviewed PRHA methodology documents to verify if the licensee appropriately determined the location, type, and size of postulated pipe breaks/cracks in accordance with the methodology described in the UFSAR. The inspectors reviewed APP-GW-GLR-075 and APP-GW-GLR-076 and selected a sample of evaluations of pipe breaks/cracks, based on risk significance and proximity to other risk significant SSCs, to determine if the licensee implemented the criteria for determining the location, type, and size of postulated pipe breaks/cracks including their associated pipe stress, cumulative usage factor, and zone of influence in accordance with the methodology described in the UFSAR Sections 3.6.1, 3.6.2, and 3.6.4. The inspectors sampled the following PRHA Methodology documents and evaluations to make this determination:

PRHA Methodology Documents

- APP-GW-GAP-250, AP1000 Piping and PRHA Interface, Revision 2
- APP-GW-SH-002, AP1000 Pipe Break Criteria Document for Piping Systems, Revision 3
- APP-GW-SH-004, AP1000 Pipe Break Criteria for Miscellaneous Systems, Structures, and Components, Revision 0
- APP-GW-PLC-053, Piping Valves and Supports Subject to PRHA Effects, Revision 4

Evaluations

- APP-GW-P0C-089, Pipe Whip and Jet Spray Analysis for Break SGS-004, Revision 1
- APP-GW-P0C-097, Pipe Break Analysis for Breaks RCS-105 and RCS-107, Revision 2
- APP-GW-P0C-101,Pipe Whip and Jet Spray Analysis for Pipe Break RCS-002, Revision 1
- APP-GW-P0C-119, CVS Tank Room 11209: Pipe Whip Impact; Jet Impingement and Equipment Thrust Loads PRHA Effects, Revision 1
- APP-GW-P0C-040, Identification of High-Energy Lines, Lines to be Evaluated for Leak-Before-Break, and Break Exclusion Zones within the AP1000 Nuclear Island, Revision 4
- APP-GW-P0C-170, Identification of Crack Exclusion Zones and Piping without Stress-Based Cracks within the AP1000 Auxiliary Building, Revision 2
- APP-GW-P0C-174, Identification of Crack Exclusion Zones within the AP1000 Containment Building, Revision 2

Protection of Essential Components Against the Dynamic and Environmental Effects of the Postulated Pipe Breaks/Cracks

The inspectors reviewed APP-GW-GLR-075 and APP-GW-GLR-076 to determine if the evaluation of dynamic effects and environmental effects of postulated pipe breaks/cracks were completed in accordance with the criteria contained in the UFSAR Sections 3.6.1, 3.6.2, and 3.6.4. Specifically, the inspectors reviewed the following aspects:

- criteria used to assess the dynamic effects of postulated high-energy pipe breaks including criteria for determining the jet expansion modeling (e.g. zone of influence) and the jet impingement force and pipe whipping effects;
- design of the mitigation features (i.e. pipe whip restraints and jet impingement barriers);
- design of the SSCs for which mitigation features were not provided;
- computer codes used in analyses were approved for use as per UFSAR Section 3.9.1.2 and Table 3.9-15; and
- criteria for the protection from adverse environmental effects.

The inspectors reviewed a sample of PRHA methodology documents and evaluations to verify if essential SSCs that were required to remain functional after a pipe break/crack would be either adequately protected or properly designed to accommodate the effects resulting from the postulated pipe failures as required by the methodology contained in the UFSAR. The inspectors used the UFSAR criteria to identify potential targets and equipment that were required to remain functional after a pipe break. Specifically, the inspectors reviewed drawings of applicable high and moderate energy piping systems showing the location, size and orientation of postulated pipe breaks and the location of pipe whip restraints, jet impingement

barriers, and the SSCs important to safety that were in proximity to the postulated pipe rupture locations. For the evaluations reviewed, the inspectors compared their list of targets to the list identified by the licensee to determine if the licensee identified and evaluated all potential targets. The inspectors reviewed the following PRHA Methodology documents and evaluations for these reviews:

PRHA Methodology Documents

- APP-GW-GEE-5058, Classification of Environmental Conditions for PRHA and EQ Programs, Revision 0
- APP-GW-VP-010, Equipment Qualification Methodology and Documentation Requirements for AP1000 Safety-Related Valves and Valve Appurtenances, Revision 3
- APP-GW-VP-030, AP1000 Environmental Conditions, Revision 6
- APP-GW-N1-001, Pipe Rupture Protection Design Criteria for AP1000, Revision 5
- APP-GW-SH-001, AP1000 Pipe Whip Restraint Design Criteria Document, Revision 1
- APP-GW-P0C-088, PRHA Jet Spray Analysis Methodology, Revision 0
- APP-GW-P0C-114, Level II Methodology for Pipe Whip Restraints Design and Analysis Using ANSYS LS-DYNA, Revision 1

Evaluations

- APP-GW-VPR-100, AP1000 Equipment and Commodity Assessment for Pipe Rupture Hazard Analysis Environmental Conditions, Revision 1
- APP-GW-P0C-121, Environmental Effects of Postulated Pipe Ruptures for Lower Levels of the Auxiliary Building, Revision 3
- APP-GW-P0C-175, Environmental Effects of Postulated Pipe Ruptures for Upper Levels of the Auxiliary Building, Revision 0
- APP-GW-P0C-005, AP1000 Break Locations for Pipe Rupture Hazard Analysis (PRHA), Revision 3
- APP-SSAR-GSC-168, AP1000 Steamline Break Outside Containment Temperature Response, Revision 2
- APP-GW-P0C-010, Operability Review and Confirmation of Safety Related Components for the AP1000 High-Energy Pipe Break Hazard Evaluation, Revision 4
- APP-GW-P0C-029, Pipe Whip Impact from PRHA Postulated Breaks, Revision 7
- APP-GW-P0C-087, PRHA Pipe Whip Analysis, Revision 0
- APP-GW-N0C-006, Load Inputs from PRHA on the Primary Equipment Supports, Revision 0
- APP-GW-N0C-007, PRHA Load Inputs on the Reactor Vessel, Pressurizer, Steam Generators, and Reactor Coolant Pump, Revision 1
- APP-GW-N0C-009, AP1000 PRHA Loads on Pipe Whip Restraints and Jet Shields, Revision 3
- APP-GW-N0C-010, Dynamic Load Inputs from PRHA, Revision 0

- APP-GW-N0C-014, Essential Safety-Related SSCs Protected by Pipe Whip Restraints, Revision 2

Protection of Essential Components Against the Effects of Flooding

The inspectors reviewed APP-GW-GLR-075 and APP-GW-GLR-076 to determine if internal flood protection aspects were fully addressed in accordance with the methodology described in the UFSAR and NUREG-0800, Section 3.4.1, Internal Flood Protection for Onsite Equipment Failures. Specifically, the inspectors reviewed all the potential sources from the pipe failures identified in PRHA, all the target SSCs subject to flood protection, and all rooms in the containment and auxiliary building to determine if the flood evaluations followed the approved methodology.

The inspectors reviewed the limiting flood cases for each area, as determined by the PRHA flooding analysis, in terms of the spectrum of pipe breaks/cracks, water volumes, flood barriers, flow paths, and plant layout. For each limiting pipe break, the inspectors reviewed the calculations to determine if the flow paths and floodable volumes of the affected rooms, and flood levels were properly identified in the calculations and if the calculated flood levels were consistent with the levels being used for the protection of safety-related equipment in all the affected rooms. The inspectors reviewed the equipment identified as requiring flood protection in the PRHA was consistent with the equipment identified in UFSAR Table 3.11-1. The inspectors also reviewed the calculations to determine if parameters such as break flows, crack flows, effective flood area for each compartment, line isolation time, and tank volumes were analyzed in according with Standard Review Plan Section 3.4.1, as required by the UFSAR. The inspectors reviewed the calculations to determine if the licensee analyzed each area of the plant containing safety-related systems or equipment to determine the postulated fluid system failures that would result in the most adverse internal flooding conditions as required by the UFSAR.

b. Findings

No findings were identified.

1A29 (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

The inspectors interviewed personnel and reviewed quality records associated with the piping DAC ITAAC at the WEC facility at Cranberry Township, PA to verify if the piping design was completed in accordance with the requirements contained in the UFSAR, ASME Code, 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 UFSAR Sections 3.2.4, 3.9.1, 3.9.3, 3.9.8, 14.3.3 and Table 3.2-3 and the ASME Code, Section III, Subsections NCA, NB, NC, ND, and NF; and
- design drawings were consistent with the analyzed configurations.

The inspectors performed these reviews for the following piping stress evaluation PLRs (piping DAC lines):

- APP-PXS-PLR-030, "ADS 4th Stage West Compartment and PRHR Supply", Revision 4
- APP-RCS-PLR-010, "Pressurizer Safety and Automatic Depressurization System", Revision 10
- APP-RCS-PLR-040, "Pressurizer Surge Line", Revision 3
- APP-RCS-PLR-230, "Reactor Head Vent", Revision 2
- APP-CVS-PLR-090, "CVS Makeup from Penetration C03 IRC", Revision 0
- APP-SGS-PLR-010, "Feedwater to SG 01", Revision 0
- APP-SGS-PLR-030, "Main Steam to SG 01", Revision 4

In addition, the inspectors reviewed the following fatigue evaluations associated with ASME Class I piping DAC lines:

- APP-PXS-PLC-100, "AP1000 ADS4-West and PRHR HX Inlet Piping Component Fatigue Analysis", Revision 1
- APP-RCS-PLC-006, "AP1000 Automatic Depressurization System Stages 1, 2, and 3 Piping Component Fatigue Analysis", Revision 1;
- APP-RCS-PLC-003, "AP1000 Pressurizer Surge Line Piping Component Fatigue Analysis", Revision 0
- APP-RCS-PLC-070, "AP1000 Reactor Vessel Head Vent Piping Component Fatigue Evaluation", Revision 0
- APP-PXS-PLC-002, "AP1000 DVI Piping Component Fatigue Analysis", Revision 0

- APP-PXS-PLC-005, "AP1000 CMT-A and CMT-B Piping Component Fatigue Evaluation", Revision 0
- APP-RCS-PLC-063, "AP1000 Pressurizer Spray and Purification Piping Component Fatigue Analysis", Revision 0
- APP-RCS-PLC-061, "AP1000 Reactor Coolant Loop Piping Component Fatigue Evaluation", Revision 1

The inspectors reviewed the applicable piping design specifications for each piping segment to verify if 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 quality assurance requirements; design inputs; and load conditions and combinations. The inspectors reviewed the design reports/stress reports to determine if the design the design specification applicable to the ASME Code class for the piping (APP-PL02-Z0-101 for Class 1 piping and APP-PL02-Z0-102 for Class 2 and 3 piping), and if 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 if they were adequately validated and verified in accordance with the UFSAR Section 3.9.

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 an 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 applicable design specifications and 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 in accordance with the UFSAR and the ASME Code:

- 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 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;
- the ASME Code, Section III stress qualification; and
- overall functional capability of the piping system.

The inspectors reviewed the pipe hanger calculations to determine if the licensee adequately evaluated the following in accordance with the ASME Code, Subsection NF and Appendix F, and Structural Welding Code, ANSI/AWS D 1.1, Section 10:

- 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.

1A30 (Unit 3) ITAAC Number E.3.9.05.01.07 (855) / Family 18D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number E.3.9.05.01.07 (855). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.18-02.08 - Emergency Facilities and Equipment

This is a security-related input. Refer to non-public inspection report 05200025/2018410 and 05200026/2018410 for details.

b. Findings

No findings were identified.

1A31 (Unit 4) ITAAC Number 2.1.02.02a (13) / Family 06F

a. Inspection Scope

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

- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.B-02.06 - Records

The inspectors observed in-process welding and reviewed quality records associated with the weld overlay for Unit 4 steam generator B intermediate lateral support wall bracket B.

The inspectors reviewed nonconformance and disposition report SV4-CA01-GNR-000194, which the licensee initiated to address fabrication tolerances on the CA01-05 module wall where the bracket was installed, to determine if it met the requirements of AISC-N690-1994.

The inspectors observed in-process welding of the weld overlay to verify if the requirements of weld procedure specification AWS I-II-SA-MC-FCAW-A5.20 were met. Specifically, the inspectors observed the preheat temperature, amperage, voltage, travel speed, and wire feed speed to verify if the variables conformed to the weld procedure requirements. The inspectors also reviewed the welder performance qualification records for welders M2389, M2392, M2393, M2394, M2395 and M1743, who were associated with the weld overlay, to verify conformance with the requirements in Section 4 of the AWS D1.1 Code. The inspectors reviewed the certified material test report for weld filler material lot 1181Z to verify if the requirements of the ASME Code, Section II, Part C, SFA5.20, were met. Finally, the inspectors reviewed magnetic particle examination report NDE-913581-006 to verify if the requirements of the AWS D1.1 Code, Section 6.10, were met.

b. Findings

No findings were identified.

1A32 (Unit 4) ITAAC Number 2.1.03.03 (72) / Family 05F

a. Inspection Scope

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

- 65001.05-02.03 - RPV Installation
- 65001.F-02.04 - General QA Review

The inspectors performed an inspection of construction activities associated with the installation of the Unit 4 reactor pressure vessel. Prior to its placement inside the reactor cavity at elevation 98'-0", the inspectors observed the installation of the interior dowel studs for two of the reactor vessel supports and reviewed quality records including installation procedures, design drawings, design changes, and non-conformance reports.

The inspectors reviewed design drawings, work packages, engineering and design coordination reports (EDCRs), and non-conformance reports associated with the installation of the northwest and southeast reactor vessel supports to determine if they were installed in accordance with approved design drawings. Specifically, the inspectors reviewed work packages associated with the northwest and southeast reactor vessel supports in order to determine if dowel stud material requirements, installation gap tolerances for dowel studs, and installation sequence requirements were properly translated into installation procedures as specified in the design drawings. In addition, the inspectors reviewed deviations associated with dowel studs material requirements to determine if the nonconformance was dispositioned in accordance with procedure APP-GW-GAP-428.

The inspectors observed the installation of the dowel studs for the reactor vessel supports to determine if quality control inspectors were present during installation activities to assess whether hold point requirements were met as specified in work packages. Also, the inspectors observed if dowel studs were properly located in the support structure, properly secured, free of foreign material and rust, and had the proper tolerances as specified in the work packages.

The inspectors also observed the placement of the reactor vessel in order to determine if the vessel and J-Skid support structure were properly rigged and upended, and foreign material, such as tape and sheet plastic, was removed from the exterior of the vessel prior to its installation in accordance with rigging plan SV4-MV01-MHH-005. Also, the inspectors observed the vessel did not make physical contact with the reflector vessel insulation package while being inserted into the reactor cavity and was properly placed on the reactor vessel support leveling screws in accordance with ASME NQA-1-1994, Subpart 2.15.

b. Findings

No findings were identified.

1A33 (Unit 4) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

- 65001.B-02.06 - Records

The inspectors reviewed all RT films associated with welds in the pipe spools that were inspected in Section 1A39 of NRC inspection report 05200026/2017004 to determine if they had been welded in accordance with the applicable sections of the ASME Code. Specifically, the inspectors reviewed the RT films of vendor welds in line and spool numbers:

- PXS-L029A, spool SV4-PLW-013-1,
- PXS-L017A, spool SV4-PLW-01K-2,
- PXS-L027B, spool SV4-PLW-024-1,
- PXS-L025B, spool SV4-PLW-02L-3, and
- PXS-L131B, spool SV4-PLW-090-2.

The inspectors also reviewed the RT films to determine if the film density and image quality indicator sensitivity were within allowable limits set by the ASME Code, Section V. Lastly, the inspectors reviewed the RT films to ensure the welds were free of rejectable indications as defined by the ASME Code, Section III.

b. Findings

No findings were identified.

1A34 (Unit 4) ITAAC Number 2.2.03.08c.ix (194) / Family 06A

a. Inspection Scope

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

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

The inspectors performed an inspection of construction activities associated with the installation of the metal reflective insulation around the inside surface of the Unit 4

reactor cavity walls prior to the installation of the reactor pressure vessel. The inspectors reviewed design specifications, work packages, approved installation procedures, and observed installation of the insulation and flow panels.
The inspectors reviewed work packages, as-built drawings, and installation procedures to determine if design characteristics and key dimension tolerances were properly translated in accordance with the design specification. The inspectors observed on-going installation activities to determine if packing and foreign materials were removed prior to installation in accordance with the installation procedure. Also, the inspectors observed if precautions were taken to prevent damage to the insulation and flow panels during placement and mounting in accordance with installation procedure.

The inspectors observed in-process installation activities to verify if the most recent revision of the installation procedure and drawings were approved and available to the installers. Also, the inspectors observed the installation sequences to verify if quality control inspections were maintained as specified in the work packages. The inspectors also observed the insulation panels were assembled and installed in accordance with the installation procedure.

b. Findings

No findings were identified.

1A35 (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:

- 65001.02-02.01 - Inspection of Concrete Placement

The inspectors reviewed quality records and performed direct inspection of concrete placement activities associated with CA05 structural module walls, at the north end of the Unit 4 containment building, from elevation 83'-0" to 105'-2".

The inspectors reviewed the approved concrete pour card to determine if the requirements of the design specification were translated to the installation procedures in accordance with the quality assurance program.

During the placement, the inspectors compared the pour placement card against a batch ticket to verify if the concrete that was delivered to the site had the proper concrete-mix type in accordance with delivery specification SV4-CC01-Z0-026. The inspectors observed in-process concrete testing to determine if concrete temperature,

slump size, and air content were verified at the mix delivery location as required by SV4-CC01-Z0-026 and ACI 349-01. The inspectors also observed the transport time to determine if the concrete was delivered in accordance ACI 349-01. Also, the inspectors observed the concrete pour to verify if the concrete was delivered to and poured in the proper location in accordance with the concrete pour card.

The inspectors observed a sample of 24 concrete strength test cylinders to verify if the sample collection and testing techniques were performed in accordance with testing specification SV4-CC01-Z0-027, and ASTM C172. The inspectors also observed the testing of the sample cylinders to verify if they were made at the proper frequency and were cured in accordance with the testing specification SV4-CC01-Z0-027 and ASTM C31.

The inspectors observed the concrete placement at module wall CA05 to determine if placement-drop distances met requirements specified in SV4-CC01-Z0-031 and did not result in mix segregation. The inspectors also observed the use of concrete vibrators to determine if they were handled and operated to ensure adequate consolidation of the mix, including vertical operation and penetration into the previously placed concrete layer in accordance with the quality assurance program. The inspectors observed quality control inspections during placement to verify if they were performed in accordance with specification SV4-CC01-Z0-031. In addition, the inspectors reviewed post placement curing conditions to verify if they met the requirements of specification SV4-CC01-Z0-031.

b. Findings

No findings were identified.

1A36 (Unit 4) ITAAC Number 3.3.00.02a.i.b (761) / Family 01F

a. Inspection Scope

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

- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F-02.02 - Fabrication Records Review

The inspectors performed an inspection of fabrication activities associated with two Unit 4 shield building reinforced concrete/steel concrete composite (RC/SC) transition modules for the east-side horizontal connections at elevation 146'-10". The inspectors reviewed the receipt inspection packages to verify the modules were fabricated in accordance with the approved design. Specifically, the inspectors reviewed the

certified material test reports to determine if the materials used during fabrication were as specified in design document APP-GW-GLR-602. The inspectors also reviewed the weld travelers to verify if the welding on the modules conformed to the requirements of AWS D1.1. In addition, the inspectors reviewed the as-built drawings, design change requests, and non-conformance reports to verify if the physical dimensions of the modules were in accordance with the design requirements specified in design document APP-GW-GLR-602.

b. Findings

No findings were identified.

1A37 (Unit 4) ITAAC Number 3.3.00.02a.i.b (761) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A-02.01 - Observation of in-Process Installation Activities

The inspectors performed inspection activities associated with the shield building wall located between azimuths 350 and 53.4 from elevation 100'-0" to 117'-6". The inspectors observed ongoing reinforcement installation activities and reviewed licensee records including design drawings and specifications, corrective action documents, and non-conformance reports.

The inspectors performed independent measurements of the shield building wall to verify it was constructed in accordance with ACI 349-01. Specifically, the inspectors conducted in-field measurements of installed reinforcing steel to verify it was the right size, met spacing requirements and minimum concrete clear cover, lapped splices met the minimum length, and reinforcement on electrical penetrations was installed in accordance with design drawings.

The inspectors independently measured rebar spacing in congested areas to determine if reduced spacing between steel reinforcement bars would make concrete-mix flow and vibration difficult to control during concrete placement. The inspectors also performed measurements of the embedments to verify they were located properly in the structure, secured, and free of concrete or excessive rust and had the proper clearances in accordance with the licensee's design specification and drawings.

The inspectors observed reinforcement installation activities to verify they were performed using the latest-approved design changes, design drawings and design specifications in accordance with ASME NQA-1 1994, Basic Requirement 3. The inspectors also reviewed condition reports to verify if non-conforming items were properly dispositioned in accordance with the licensee's procedure.

b. Findings

No findings were identified.

1A38 (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:

- 65001.01-02.05 - Steel Structures
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.B-02.05 - Inspection
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed quality records, performed independent measurements, and observed fabrication activities for the main steam penetration assemblies that will be located at elevation 127'-3" on column line 11 between column lines L and M (penetration number 12404) and column lines P and Q (penetration number 12406) in the Unit 4 auxiliary building. These main steam penetration assemblies are a combination of structural steel components and reinforcing steel, which will be installed as one piece and cast in place into the reinforced concrete wall.

The inspectors reviewed design calculations, specifications, and drawings associated with wall 11 and the main steam and main feed water penetrations to verify they adequately defined the final design and arrangement of these structural components; and were completed in accordance with the applicable technical and quality assurance requirements, including those provided in the required codes and standards identified in UFSAR Chapter 3, Section 8 & Appendix 3H. Specifically, the inspectors reviewed calculations and specifications to determine whether they were prepared in accordance with the requirements of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and conformed to the applicable codes and standards listed in the

UFSAR. The inspectors reviewed wall 11 in the vicinity of the main steam and main feed water penetrations to verify if the wall was designed as a reinforced concrete structure in accordance with ACI 349-01 and the main steam and main feed water penetration sleeves were designed as steel structures in accordance with AISC N690-1994. The inspectors reviewed a sample of design inputs documented in the wall 11 and the main steam and feed water penetrations calculations to verify they were consistent with the design criteria. Specifically, the inspectors reviewed the load cases and load combinations and compared them to those specified in the UFSAR and ACI 349-01 and AISC N690-1994, as applicable. The inspectors also reviewed the design methods implemented in the wall 11 and main steam and feed water penetration calculations, and the corresponding acceptance criteria, to determine if they were consistent with the ACI 349-01 and N690-1994 requirements, as applicable.

The inspectors observed fabrication activities to verify approved procedures and work packages were available in the work area and were followed in accordance with the quality assurance program and 10 CFR 50, Appendix B. The inspectors performed independent inspection and measurements of completed portions of the reinforcing steel bars and bar splices to verify the penetration assemblies were constructed in accordance with the quality and technical requirements in the design drawings, procedures, specifications, ACI 349-01, and AWS D1.4:1998. The inspectors independently inspected a sample of completed welds joining the reinforcing steel to the fabricated structural steel components to verify the weld joints met the visual inspection acceptance criteria of AWS D1.1:2000 and AWS D1.4:1998. Additionally, the inspectors independently measured these weld joints to verify they met the configurations and sizes specified in the design drawings.

The inspectors independently measured a sample of reinforcing steel fabricated and welded by the vendors to verify the shape, size, dimensions, type, and grade of the material conformed to the design drawings. The inspectors examined material in storage in the field to verify the marking system used to maintain the identity of the material was adequate to ensure the material was inspected prior to assembly and was traceable back to the purchase order in accordance with the quality assurance program. The inspectors also reviewed the structural steel components and reinforcing steel to verify if they were sufficiently stored and protected to prevent corrosion in accordance with the quality assurance program and 10 CFR 50, Appendix B.

The inspectors reviewed a sample of design drawings and design changes to verify if differences between the as-built and as-designed structures were documented and dispositioned in accordance with the quality assurance program and 10 CFR 50, Appendix B. Additionally, the inspectors reviewed the technical justifications for design changes to verify if differences between the as-built and as-designed structures were adequately resolved and the dispositions had adequate technical bases in accordance with the quality assurance program, design codes, and 10 CFR 50, Appendix B.

b. Findings

No findings were identified.

1A39 (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:

- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.07 - Problem Identification and Resolution
- 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-02.02 - Welding Procedure Qualification
- 65001.B-02.04 - Production Controls
- 65001.B-02.05 - Inspection

The inspectors reviewed quality records, performed independent measurements, and observed field installation activities for the floor sections between column lines 9.2, 11, I, and K (rooms 12300, 12301, and 12302) at the 100'-0" elevation of the Unit 4 auxiliary building.

The inspectors observed installation activities to verify approved procedures and work packages were available in the work area and were followed in accordance with the quality assurance program and 10 CFR 50, Appendix B. The inspectors also performed independent inspection and measurements of horizontal reinforcing steel bars, bar splices, embedments, and penetrations to verify these components were installed in accordance with the quality and technical requirements in the work packages, design drawings included in the work package, procedures, specifications, ACI 349-01, AWS D1.1:2000, and AWS D1.4:1998.

The inspectors reviewed in-process work packages in the work area for reinforcing steel, embedments, and penetrations to verify the latest approved procedures, drawings, and work instructions were available at the installation area and were followed throughout installation as required by the quality assurance program and 10 CFR 50, Appendix B. The inspectors reviewed in-process work steps with signature

logs included in the work packages to determine if the licensee verified the items installed met specified requirements and the installation, inspection, and testing sequences were maintained in accordance with the quality assurance program, procedures, and specifications. The inspectors reviewed the design changes, field modifications, and nonconformances included in the work packages to verify they were controlled and processed in accordance with the quality assurance program.

The inspectors reviewed the WPS used for welding studs to the structural beams to verify the WPS was qualified in conformance with AWS D1.1:2000, Clause 7, Stud Welding, and it specified welding positions, stud diameter, stud material, base metal material, and stud machine settings. The inspectors reviewed the applicable procedure qualification record associated with the WPS to verify it confirmed successful WPS qualification in accordance with AWS D1.1:2000.

The inspectors independently assessed the weld joint preparation for studs being welded to verify the surfaces to be welded were smooth, uniform, and free from significant surface discontinuities, contaminants, and corrosion in accordance with the quality assurance program. The inspectors observed the welder preparing to perform welding to verify the temperature of the base material at the joint prior to welding met the preheat requirements of the WPS and the weld joint was sufficiently protected from inclement conditions, including temperature, moisture, dust, and wind in accordance with the quality assurance program. The inspectors observed in-process stud welding to verify the mechanized welding gun was set up and welding was conducted in accordance with the WPS and AWS D1.1:2000, Clause 7. Also, the inspectors reviewed quality inspection reports and the associated inspection plan for the stud welds to verify destructive and nondestructive examinations were completed in accordance with the quality inspection plan and AWS D1.1:2000, Clause 7. The inspectors independently observed completed stud bending and assessed the completed weld joints to verify they met the visual inspection and bent stud acceptance criteria of AWS D1.1:2000, Clause 7.

The inspectors reviewed nonconformances and corrective action documents to verify the licensee was identifying deviations at an appropriate threshold and entering them into the corrective action program as required by the quality assurance program and 10 CFR 50, Appendix B. The inspectors reviewed nonconformances and design changes to ensure differences between the as-built and as-designed structures were documented and dispositioned in accordance with the quality assurance program and 10 CFR 50, Appendix B. Additionally, the inspectors reviewed the technical justifications for these nonconformances and design changes to verify the issues were adequately resolved and the dispositions had adequate technical bases in accordance with the quality assurance program, ACI 349-01, AWS D1.1:2000, AWS D1.4:1998, and 10 CFR 50, Appendix B.

b. Findings

No findings were identified.

1A40 (Unit 4) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A-02.01 - Observation of In-Process Installation Activities
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed quality records and performed direct inspection of concrete placement activities associated with structural module CA20 in the Unit 4 auxiliary building, from elevation 85'-0" to 121'-1".

The inspectors reviewed licensee records including design drawings, engineering and design change requests, and non-conformance reports prior to concrete placement to determine if engineering design changes were correctly translated into drawings and non-conformances were properly dispositioned in accordance with licensee procedures. The inspectors also observed the concrete pour to determine if the requirements in design specifications SV4-CC01-Z0-026 and SV4-CC01-Z0-027 were translated into implementing procedures in accordance with the quality assurance program. The inspectors compared the placement card against a batch ticket to verify concrete delivered to the site had the proper concrete-mix type in accordance with SV4-CC01-Z0-026.

During the concrete placement, the inspectors observed in-process concrete testing to determine if concrete temperature, slump size, and air content were determined at the mix delivery location as required by SV4-CC01-Z0-026 and ACI 349-01. In addition, the inspectors verified transport time was completed within the time allowed by ACI 349-01 and the delivery was intended for the proper location in accordance with licensee placement procedures.

The inspectors observed the sampling of 24 concrete strength test cylinders to verify sample collection and testing techniques were performed in accordance with SV4-CC01-Z0-027 and ASTM C172. The inspectors reviewed the test sample cylinders to determine if they were made at the proper frequency and were cured in accordance with SV4-CC01-Z0-027 and ASTM C31. The inspectors also reviewed the concrete

mix to verify if it met the minimum design density requirement of 140 pounds per cubic foot as specified in UFSAR Section 12.3.2.3.

The inspectors observed concrete placed at structural module CA20 to determine if placement-drop distances met requirements specified on SV4-CC01-Z0-031, and did not result in mix segregation. The inspectors also observed the use of concrete vibrators to determine if they were handled and operated to ensure adequate consolidation of the mix, including vertical operation and penetration into the previous placed concrete layer. The inspectors observed quality control inspections during placement to verify if they were performed by the licensee as required by specification SV4-CC01-Z0-031. In addition, the inspectors observed post placement curing conditions to verify if they met the requirements of design specification SV4-CC01-Z0-031.

b. Findings

No findings were identified.

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

1P01 Construction QA Criterion 10

- 35007-A10.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed quality records and observed ongoing work associated with main steam line penetration assembly 12406 in wall 11 of the auxiliary building, between column lines P and L (north wall of the east main steam compartment) to verify if these activities were conducted in accordance with the quality assurance program. Specifically, the inspectors reviewed design drawings and licensee inspection records to verify if licensee inspection activities were in accordance with ASME NQA-1-94, Subpart 2.5.

b. Findings

Introduction

The inspectors identified an Unresolved Item (URI) related to implementation of ASME NQA-1-94, Subpart 2.5, Paragraph 7.13 requirements for welded reinforcing bar splices.

Description

During the week of January 22, 2018, the inspectors determined the licensee was not performing destructive tests or NDE of welded reinforcing joints as required by the ASME Code, Section III, Division II, "Code for Concrete Reactor Vessels and Containments." Specifically, testing or NDE reports were not available for the welded reinforcing steel hoops used in the north wall of the main steam east compartment at column line 11, between elevations 117'-6" and 153'-0". The reinforcing hoops at this location were fabricated with direct butt joints using complete joint penetration groove welds.

SNC committed to comply with ASME NQA-1-94, Subpart 2.5, in its Nuclear Development Quality Assurance Manual. Specifically, the SNC Nuclear Development Quality Assurance Manual, Version 17, Part II, Section 10.4.1 states, in part, SNC commits to compliance with the requirements of [ASME NQA-1-94, Part II] Subparts 2.5 and 2.8 for establishing appropriate inspection requirements.

ASME NQA-1-1994, Subpart 2.5, Paragraph 7.13, "Welded Reinforcing Bar Splices," states, in part, welded reinforcing bar splices shall be subject to the requirements of paragraph 8.5, except provisions of the ASME Code, Section III, Division 2 (ACI Standard 359) shall also apply.

The ASME Code, Section III.2 (2001 Edition with 2003 Addenda), Article XI-1560, "Continuing Joint Performance Tests," requires destructive testing on a sampling basis of welded reinforcement splices to ensure the joints met tensile requirements. Additionally, the ASME Code, Section III.2 (2001 Edition with 2003 Addenda), Article XI-1600, "Examination of Welded Joints of Reinforcing Bar," requires RT examination of joint samples to verify weld quality.

The north wall of the main steam east compartment at column line 11, between elevations 117'-6" and 153'-0", is a reinforced concrete wall in the auxiliary building. The inspectors noted Section 3.8.4.4.1 of the UFSAR states, in part, ACI 349-01 is the applicable code for the design and analysis of Seismic Category I reinforced concrete structures in the auxiliary building. ACI 349-01, Subsection 12.14.3.2, requires, in part, all welding to conform to AWS D1.4-98. Neither ACI 349-01 nor AWS D1.4 require in-process tests or NDE of welded reinforcing splices. As a result, the inspectors questioned whether the ASME NQA-1-94 provisions for the inspection of welded reinforcing steel splices that incorporate by reference the ASME Code, Section III.2 requirements are quality assurance measures that supplement ACI 349-01 requirements and provide confidence that welded joints will perform satisfactorily in service. The licensee provided the inspectors with a position paper (CR 10465176) concerning the applicability of ASME NQA-1-94, Subpart 2.5, Paragraph 7.13 requirements.

This issue is an Unresolved Item pending the inspectors' review and evaluation of the licensee's position paper on the applicability of ASME NQA-1-94, Subpart 2.5, Paragraph 7.13 requirements. (URI 05200025/2018001-01, Welded Reinforcing Bar Splices).

1P02 Construction QA Criterion 13

- 35007-A13.04.01 - Inspection of QA Implementing Documents
- 35007-A13.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed the following quality assurance program implementing documents to verify whether controls for handling, storage, and shipping of safety related and risk significant non-safety related items were described in accordance with the Quality Assurance Program Description and UFSAR commitments.

- Preventive Maintenance Program, 26139-000-4MP-T81C-N9000, Revision 0,
- Nuclear Procurement Procedure NPP 10-01, Material Receipt, Storage, and Control, Revision 08.00,
- Nuclear Construction and Startup Procedure NCSP-04-45, Insulation Resistance Testing, Revision 01.02,
- Nuclear Quality Standard QS 13.01, Rigging, Lifting and Transportation, Revision 02.01,
- Nuclear Quality Standard QS 13.11, Material, Equipment Storage, Revision 04.00,
- Nuclear Quality Standard QS 13.13, Material and Equipment Handling, Revision 01.02 , and
- Nuclear Quality Standard QS 13.14, Packaging and Shipping of Equipment and Materials, Revision 00.02

Specifically, the quality assurance program implementing documents were reviewed for the following handling, storage, and shipping controls:

- designation of graded storage levels and establishment of appropriate environmental controls and cleanliness,
- accessibility, identification of items, coverings and preservations,
- periodic inspection of storage areas to ensure controlled conditions,
- maintenance and care of items in storage, including shelf life,
- assignment of responsibilities for implementation of handling and storage controls, and
- routine rigging and special handling

The inspectors observed the storage and preventive maintenance activities for the following safety-related and risk significant non-safety related items that had been received on site to determine if storage and maintenance activities were in accordance with associated vendor manuals and Nuclear Quality Standard QS 13.11, Material, Equipment Storage:

- Unit 3 Protective and Safety Monitoring System Maintenance and Test Cabinet 01-Div A, SV3-PMS-JD-MTCA01
- Unit 3 Core Makeup Tank B Outlet Air Operated Globe Valves, SV3-PXS-PL-V014B & SV3-PXS-PL-V015B
- Unit 3 Passive Residual Heat Removal Heat Exchanger, SV3-PXS-ME-01
- Unit 4 Passive Residual Heat Removal Heat Exchanger, SV4-PXS-ME-01
- Unit 3 Standby Diesel Generator Air Cooler Radiator Units A/B, SV3-ZOS-MS-04A/B
- Unit 3 Accumulator Relief Valves A/B, SV3-PXS-PL-V022A/B
- Unit 4 10-inch Motor Operated Gate Valve, SV4-PV01-BP497
- Unit 3 Diverse Actuation System Hot Leg Temperature Detector, SV3-RCS-JE-TE300A
- Unit 3 Residual Heat Removal Pumps A/B, SV3-RNS-MP-01A/B
- Unit 4 2-inch Air Operated Ball Valves, SV4-PV40-E4835 & SV4-PV40-E4982
- Unit 3 Main Generator Stator, SV3-ZAS-MG-01-S
- Unit 3 Oil Conditioner/Purifier Unit Supply Pump, SV3-LOS-MP-12
- Unit 3 Service Water Pumps A/B, SV3-SWS-MP-01A/B
- Unit 3 Steam Generator Blowdown Heat Exchangers A/B, SV3-BDS-ME-01A/B
- Unit 3 Exciter Rectifier Air Handling Units A/B, SV3-VTS-MS-01A/B
- Unit 3 Chemical and Volume Control System Makeup Pump Motors A/B, SV3-CVS-EM-01A/B
- Unit 3 Startup Feedwater Pumps A/B, SV3-FWS-MP-03A/B
- Unit 3 Emergency Bearing Oil Pump, SV3-LOS-MP-03
- Unit 4 Emergency Bearing Oil Pump, SV4-LOS-MP-03
- Unit 3 Motor Suction Oil Pump, SV3-LOS-MP-53
- Unit 3 Turning Gear Oil Pump, SV3-LOS-MP-55
- Unit 3 Lube Oil Reservoir, SV3-LOS-MT-01
- Unit 3 Vapor Extractor Fans A/B, SV3-LOS-MA-01A/B
- Unit 3 Low Voltage Load Center/Transformer, SV3-ECS-EK-22
- Unit 3 Low Voltage Switchgear, SV3-ECS-EK-23-A, and
- Building 147 50 Kilowatt Diesel Generator Set, SV0-EFS-G1-01

The inspections were performed at on-site and off-site warehouse locations, as well as in the nuclear island and turbine island of both units currently under construction. The inspectors performed a walk-down of the storage spaces to verify reasonable cleanliness and good housekeeping practices were being maintained, the areas were free of excessive moisture and contaminants, and the associated cribbing, pallets, and skids were not damaged. The inspectors also reviewed access control, temperature,

humidity, and nitrogen blanket requirements to verify requirements were being met and discrepancies documented and dispositioned in accordance with the licensee's corrective action program.

In addition, the inspectors reviewed the equipment preservation check records associated with the items listed above to verify records were completed and maintained in accordance with the preventive maintenance program procedure, 26139-000-4MP-T81C-N9000. The inspectors observed numerous preventive maintenance activities conducted on these items, including performance of moisture checks, insulation resistance testing, reforming of electrolytic capacitors, verification of electric strip heater operation, valve stroking, motor shaft rotation, bearing lubrication, and inspection and repair of foreign material exclusion covers. The inspectors observed the preventive maintenance activities were performed in accordance with the associated equipment preservation check records.

The inspectors reviewed the respective rigging plans to verify proper documentation and special handling requirements were specified in accordance with Nuclear Quality Standard QS 13.01, Rigging, Lifting and Transportation. Specifically, the inspectors reviewed rigging plans for the following safety related components:

- Unit 3 Steam Generator A
- Unit 3 Pressurizer
- Unit 3 Accumulator B
- Unit 3 Core Makeup Tank B

The inspectors reviewed the following shipping and handling records to verify the licensee properly implemented its controlling documents for shipping in accordance with the Nuclear Quality Standard QS 13.14, Packaging and Shipping of Equipment and Materials.

- returned material report RMR18-00010, associated with the return of eight tubes of safety related welding rods with improper labeling; and
- returned material report RMR18-00025, associated with the return of four safety related spool pieces that failed inspection.

b. Findings

No findings were identified.

1P03 Construction QA Criterion 16

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

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

a. Inspection Scope

Quarterly Resident Inspector Corrective Action Program Routine Review

The inspectors reviewed issues entered into the licensee's and its contractors' corrective action programs daily to assess issues that might warrant additional follow-up inspection, to assess repetitive or long term issues, to assess adverse performance trends, and to ensure the various corrective action programs appropriately included regulatory required non-safety related SSCs. The inspectors completed reviews of corrective action program entry logs, attended corrective action program review meetings, held discussions with licensee and contractor personnel, and performed reviews of corrective action activities during the conduct of other baseline inspection procedures.

The inspectors reviewed corrective actions for adverse conditions entered into the corrective action programs to determine whether:

- appropriate actions to correct the issues were identified and implemented effectively, including immediate or short-term corrective actions;
- actions taken were commensurate with the significance of the associated condition;
- issues from all aspects of the project, including equipment, human performance, and program issues, were being identified by the licensee and its contractors at an appropriate threshold and entered into the corrective action programs; and
- issues were appropriately classified in accordance with the quality assurance program and corrective action program implementing procedures.

Resident Inspector Follow-Up of Selected Issues

Based on items reviewed during routine corrective action program reviews, the inspectors selected a sample of issues identified in the corrective action programs for a more in-depth review and follow-up. The selected issues included conditions adverse to quality, issues associated with NRC identified findings and/or violations of regulatory requirements, and issues identified through licensee's audits or assessments.

Specifically, the inspectors reviewed the following issues:

- Condition Reports 10268617 and 10340379 regarding conditions identified during the Unit 4 concrete placement inside CA20 on March 28, 2017;

- Condition Report 10325186 regarding conditions identified during the Unit 3 concrete placement inside the steel composite Shield Building panels for courses 5 and 6 on January 24, 2017;
- CAPAL 100487488 regarding form leakage during the concrete placement for Unit 4 on the west inside of the containment vessel bottom head from elevation 87-6 to 96-0 on July 22, 2017;
- Condition Report 10385366 regarding the shake space requirements for seismic isolation between the nuclear island and adjoining buildings; and
- CAPAL 100497045 regarding drilling through studs welded onto the Unit 3 CA01 module when installing overlay plates.

The above issues were reviewed to determine whether:

- the licensee's and its contractors' planned and implemented corrective actions were commensurate with the significance of the identified issues;
- classification, prioritization, and evaluation for reportability were conducted in accordance with the Quality Assurance Program Description and corrective action program implementing procedures;
- issues were completely and accurately identified in a timely manner commensurate with the significance and ease of discovery;
- issues were screened as required to determine the proper level of evaluation and actions;
- issues associated with design deficiencies were completely identified and corrected, including determining the cause and instituting fixes to the design process and quality assurance program to prevent recurrence of similar deficiencies when required;
- extents of condition, generic implications, common causes, and previous occurrences were evaluated when required;
- the resolution of problems was prioritized based on safety significance;
- corrective actions were appropriately focused and were sufficient to correct the problem identified;
- corrective actions were completed in a timely manner commensurate with the safety significance of the issues, including the implementation of interim corrective actions and compensatory actions to minimize problems and mitigate their effects until permanent actions could be implemented;
- provisions were in place for escalating to higher management any corrective actions that were not adequate or were not timely;
- the licensee and its contractors periodically conducted trend analyses and assessments of aggregated information from their associated corrective action programs to identify programmatic and common cause problems; and
- trend results were communicated to appropriate personnel and management.

b. Findings

No findings were identified.

2. SAFEGUARDS PROGRAMS

Cornerstones: Security Programs for Construction Inspection and Operations

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

2P01 Security (operational)

a. Inspection Scope

This is a security-related input. Refer to non-public inspection report 05200025/2018410 and 05200026/2018410 for details.

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4OA6 Meetings, Including Exit

Exit Meeting.

On April 13, 2018, the inspectors presented the inspection results to Mr. J. Klecha, Vice President of Site Operations, and other licensee and contractor staff members. Proprietary information was reviewed during the inspection period, but was not included in the inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensees and Contractor Personnel

R. Calia, SNC Performance Improvement/Corrective Action Program Manager
B. Chamberlain, SNC Engineering
N. Costanzo, WEC Piping Principal Engineer
S. DiTommaso, WEC Licensing Manager
J. Halackna, WEC PRHA Manager
J. Hydeman, WEC Plant Engineering and Licensing Director
E. McDaniel, WEC PEL Director
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LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
05200025/2018001-01	URI	Open	Implementation of ASME NQA-1-94 Subpart 2.5 Paragraph 7

LIST OF DOCUMENTS REVIEWED

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Placement Card
3900

Batch ticket
75655

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SV4-CC01-Z0-031, Specification for Supply and Installation of Mechanical Splices for Reinforcing Steel, Revision 7
SV4-CR01-Z0-010, Safety Related Placing Concrete and Reinforcing Steel, Revision 8

Work Package:
SV4-1240-CRW-800028, Wall 11 Critical Section, Rebar Fabrication and Installation, Revision 0

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SV0-1232-GEF-000004, CEX Drawing Discrepancies in Area 2, Revision 0
SV0-CR01-GEF-000803, Alternate Closed Tie Configuration at Pens Areas 1 & 2, Revision 0
SV0-CR01-GEF-000873, Allowance to Field Bend Reinforcing Bars and Hairpin Requirements, Revision 0
SV0-CR01-GEF-000994, Auxiliary Building Area 1 & 2 Floor Slabs @ 100-0, Revision 0

Miscellaneous:
SNC CR 10461586, SP-17 and SP18 Embed Construction Aide Holes are too Numerous, 02/13/2018
Work Package SV4-1232-C0W-800001, Placement of Auxiliary Building Slab SP-18 in Area 2 at El 100-0, Revision 0
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SV4-CR01-GNR-000377, Aux. Bldg. Elv 100 Area 1 & 2 Slabs (SP17/SP18) Drain Interference, Revision 0
SV4-CR01-GNR-000390, Aux. Bldg. Area 2 Elv. 100 SP18 Floor Drain Spacing, Revision 0

Procedures and Specifications:
NCSP 03-42, "Reinforcing Steel Installation," Revision 03.05
SV4-CC01-Z0-031, Specification for Supply and Installation of Mechanical Splices for Reinforcing Steel, Revision 7
SV4-CR01-Z0-010, Safety Related Placing Concrete and Reinforcing Steel, Revision 8

Quality Inspection Records:
Quality Inspection Report S540-18-10072, Studwelding-Structural Shear Stud Welding (AWS D1.1), 02/23/18
Quality Inspection Report S540-18-10041, Studwelding-Structural Shear Stud Welding (AWS D1.1), 02/03/18
Quality Inspection Plan F-S540-002, Studwelding-Structural Shear Stud Welding (AWS D1.1), Revision 03.01

Weld Records:
AWS D1.1: Stud Welding Procedure Specification WPS6-1.1SW03, Revision 6
Stud Welding Procedure Qualification Record SP204, Revision 0
Stud Welding Procedure Qualification Record SP205, Revision 0
Stud Welding Procedure Qualification Record SP206, Revision 0

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SV4-CC01-Z0-026, Safety Related Mixing and Delivering Concrete, Rev. 7
SV4-CC01-Z0-027, Safety Related Concrete Testing Services, Rev. 6
SV4-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Rev. 8

Pour Card
3771

Batch Tickets
75186
75197

N&D
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SV3-0000-C9-002, AP1000 CONCRETE GENERAL NOTES, REV. 6
SV3-0000-C9-002A, AP1000 CONCRETE GENERAL NOTES, REV. 2
SV3-1200-CR-910-R8, AUXILIARY BUILDING AREAS 1 7 2 CONCRETE REINFORCEMENT WALL 11 ELEVATION
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SV3-1240-CR-970-R4, AUXILIARY BUILDING WALL 11 PENETRATION AREA CONCRETE REINFORCEMENT SECTIONS AND DETAILS
SV3-1240-CR-971-R3, AUXILIARY BUILDING WALL 11 PENETRATION AREA CONCRETE REINFORCEMENT SECTIONS AND DETAILS
SV3-1240-CR-972-R2, AUXILIARY BUILDING WALL 11 PENETRATION AREA CONCRETE REINFORCEMENT SECTIONS AND DETAILS
SV3-1240-CR-973-R3, AUXILIARY BUILDING WALL 11 PENETRATION AREA CONCRETE REINFORCEMENT SECTIONS AND DETAILS
SV3-1240-CR-974-R3, AUXILIARY BUILDING WALL 11 PENETRATION AREA CONCRETE REINFORCEMENT SECTIONS AND DETAILS
SV3-1240-CR-975-R4, AUXILIARY BUILDING WALL 11 PENETRATION AREA CONCRETE REINFORCEMENT SECTIONS AND DETAILS
SV3-1240-CR-976-R4, AUXILIARY BUILDING WALL 11 PENETRATION AREA CONCRETE REINFORCEMENT SECTIONS AND DETAILS
SV3-1240-CR-977-R4, AUXILIARY BUILDING WALL 11 PENETRATION AREA CONCRETE REINFORCEMENT SECTIONS AND DETAILS
SV3-1240-CR-978-R4, AUXILIARY BUILDING WALL 11 PENETRATION AREA CONCRETE REINFORCEMENT SECTIONS AND DETAILS
SV3-ML05-V2-231-R1, AP1000 SPECIAL PENETRATIONS (12406/404-ML-PO1) LINE 11 WALL ANCHORS SP21 MODIFIED MAIN STEAM DETAILS
SV3-ML05-V2-232-R1, AP1000 SPECIAL PENETRATIONS (12406/404-ML-PO3) LINE 11 WALL ANCHORS SP22 MODIFIED MAIN FEEDWATER DETAILS

Section 1P02

ASME NQA-1-1994 Edition, Subpart 2.2, Quality Assurance Requirements for Packing, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants
26139-000-4MP-T81C-N9000, Preventive Maintenance Program, Rev. 0
Nuclear Procurement Procedure NPP 10-01, Material Receipt, Storage, and Control, Rev. 08.00
Nuclear Construction and Startup Procedure NCSP-04-45, Insulation Resistance Testing, Rev. 01.02
Nuclear Quality Standard QS 13.01, Rigging, Lifting and Transportation, Rev. 02.01
Nuclear Quality Standard QS 13.11, Material, Equipment Storage, Rev. 04.00
Nuclear Quality Standard QS 13.13, Material and Equipment Handling, Rev. 01.02
Nuclear Quality Standard QS 13.14, Packaging and Shipping of Equipment and Materials, Rev. 00.02
SV3-MV20-MHH-001, Installation of Unit 3 Pressurizer, Rev. 0
SV3-MB01-MHH-001, Upending and Installing Unit 3 Steam Generators MB-01 & MB02, Rev. 0
SV3-MT02-MHH-006, Lifting and Installing Unit 3 Accumulator Tank MT-01B, Rev. 0
SV3-MT01-MHH-005, Lifting and Installing Unit 3 Core Makeup Tank MT-01B, Rev. 0
Returned Material Report RMR18-00010, dated 01/24/2018
Returned Material Report RMR18-00025, dated 02/08/2018

Section 1P03
Procedures and Specifications:
28139-000-4MP-T81C-N7104, " Control of Nonconforming Items," Revision 1
ND-AD-002, "Nuclear Development Corrective Action Program," Version 27.0
W2-5.1-100, Westinghouse Corrective Action Program, Revision 2.0
W2-5.1-101, Westinghouse Corrective Action Program Procedure, Revision 5.1
W2-5.1-102, Issue Review Committee, Revision 5.1
APP-GW-GAP-428, "Nonconformance and Disposition Report," Revision 14
APP-GW-GAP-420, "Engineering and Design Coordination Reports," Revision 14

Focused Review of CRs 10268617 and 10340379:
AMEC Concrete Field and Lab Test Data, Set ID 2017SCC0610, 04/27/2017
CAPAL 100412821
CAPAL 100460684
CAPAL 100460945
CAPAL 100461024
Concrete/Grout Delivery Ticket # 45003, Pour # 3132, 03/28/2017
CR 10337991
SV3-CC01-GNR-000395, SV3 Annex Concrete Density, Revision 0
SV4-CA20-GNR-000188, U4 CA20 up to 85 Vacuum Hose Embedded in Concrete, Revision 0
SV4-CC01-Z0-026, Safety Related Mixing and Delivering Concrete, Revision 6
SV4-CC01-Z0-026, Safety Related Mixing and Delivering Concrete, Revision 7
SV4-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Revision 7

Focused Review of CR 10325186:
CAPAL 100449200
CAPAL 100492229
SV3-CC01-GEF-000373, Shield Building Panels Drop Height, Revision 0
SV3-CC01-GEF-000384, Increased Drop Height, Revision 0
SV3-CC01-GNR-000385, Concrete Placement in Course 5&6, Revision 0
SV3-CC01-GNR-000385, Concrete Placement in Course 5&6, Revision 1
SV3-CC01-GNR-000387, Unit 3 Course 5 & 6 Foreign Material, Revision 0

SV3-CC01-GNR-000418, Concrete Placement in Course 5&6, Revision 0
SV3-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Revision 7

Focused Review of CAPAL 100487488:
132175-108-003-000012 Stay-Form Stay-in-place Concrete Form, 02/17/2014
Quality Inspection Report C113-17-10090, Placing Safety Related Concrete, 07/24/17
SV3-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Revision 7
SV4-CC01-GNR-000215, U4 inside CVBH Placement up to 960 (West) Seepage thru Stayform, Revision 0
SV4-CC01-Z0-026, Safety Related Mixing and Delivering Concrete, Revision 6

Focused Review of CR 10385366:
APP-1200-GEF-1050, 4 Inch Shake Space Requirement, Revision 0
CAPAL 100483925
SV3-CC01-GNR-000417, Turbine First Bay East Wall, Revision 0

Focused Review of CAPAL 100497045:
CAPAL 100473067
CAPAL 100474763
SV3-CA01-GNR-001115, CA01-36 OLP 07-035 Stud Obstruction, Revision 0
SV3-CA37-GNR-000018, Site Cut Holes for CA37.01 Located Out of Tolerance, Revision 0
Quality Inspection Plan F-S561-004, Structural Weld Inspection-Modules, and Fabrication and Submodule Assembly Tolerances, Revision 23.00

Section 2P01

This is a security-related input. See non public report 05200025/2018410 and 05200026/2018410 for details

LIST OF ACRONYMS

ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ADS	automatic depressurization system
ANSI	American National Standards Institute
ASME Code	American Society of Mechanical Engineers Boiler & Pressure Vessel Code
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CFR	Code of Federal Regulations
CMTR	certified material test report
DAC	design acceptance criteria
EPA	electrical penetration assembly
GTAW	gas tungsten arc welding
IMC	inspection manual chapter
IP	inspection procedure
ITAAC	Inspection, Tests, Analysis, and Acceptance Criteria
IRWST	in-containment refueling water storage tank
NDE	nondestructive examination
NQA	nuclear quality assurance
NRC	Nuclear Regulatory Commission
PRHA	pipe rupture hazard analysis
PRHR	pipe rupture hazard analysis
PT	penetrant test
QA	quality assurance
RCS	reactor coolant system
SSC	structures, systems, and components
UFSAR	Updated Final Safety Analysis Report
URI	unresolved item
WEC	Westinghouse Electric Company
WPS	welding procedure specification

ITAAC INSPECTED

13	2.1.02.02a	2.a) The components identified in Table 2.1.2-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The piping identified in Table 2.1.2-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements. 3.a) Pressure boundary welds in components identified in Table 2.1.2□1 as ASME Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in piping identified in Table 2.1.2-2 as ASME Code Section III meet ASME Code Section III requirements. 4.a) The components identified in Table 2.1.2-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested. Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability. Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.	The ASME Code Section III design reports exist for the as-built components and piping identified in Tables 2.1.2□1 and 2.1.2□2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Table 2.1.2□1 and Table 2.1.2□2 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that each of the as-built lines identified in Table 2.1.2-2 for which functional capability is required meets the requirements for functional capability. An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS

		4.b) The piping identified in Table 2.1.2-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure. 5.b) Each of the lines identified in Table 2.1.2-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability. 6. Each of the as-built lines identified in Table 2.1.2-2 as designed for LBB meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.		piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the dynamic effects of a line break is provided.

72	2.1.03.03	3. The components identified in Table 2.1.3-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 4. Pressure boundary welds in components identified in Table 2.1.3-1 as ASME Code Section III meet ASME Code Section III requirements. 5. The pressure boundary components (RV, CRDMs, and incore instrument QuickLoc assemblies) identified in Table 2.1.3-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	Inspection will be conducted of the as-built components as documented in the ASME design reports. Inspection of as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components of the RXS required by the ASME Code Section III to be hydrostatically tested.	The ASME Code Section III design reports exist for the as-built components identified in Table 2.1.3-1 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report exists and concludes that the results of the hydrostatic test of the pressure boundary components (RV, CRDMs, and incore instrument QuickLoc assemblies) conform with the requirements of the ASME Code Section III.

91	2.2.01.02a	2.a) The components identified in Table 2.2.1-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The piping identified in Table 2.2.1-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements. 3.a) Pressure boundary welds in components identified in Table 2.2.1-1 as ASME Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in piping identified in Table 2.2.1-2 as ASME Code Section III meet ASME Code Section III requirements. 4.a) The components identified in Table 2.2.1-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure. 4.b) The piping	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. i) A hydrostatic or pressure test will be performed on the components required by the ASME Code Section III to be tested. A hydrostatic or pressure test will be performed on the piping required by the ASME Code Section III to be pressure tested.	The ASME Code Section III design reports exist for the as-built components and piping identified in Table 2.2.1-1 and 2.2.1-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non□destructive examination of pressure boundary welds. i) A report exists and concludes that the results of the pressure test of the components identified in Table 2.2.1-1 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that the results of the pressure test of the piping identified in Table 2.2.1-2 as ASME Code Section III conform with the requirements of the ASME Code Section III.

		identified in Table 2.2.1-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure.		
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.

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

		identified in Table 2.2.3-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure. 5.b) Each of the lines identified in Table 2.2.3-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability. 6. Each of the as-built lines identified in Table 2.2.3-2 as designed for LBB meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.		piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the dynamic effects of a line break is provided.
188	2.2.03.08c.v.02	Not used per Amendment No. 113 8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	Not used per Amendment No. 113 v) Inspections of the elevation of the following tanks will be conducted: 2. IRWST	Not used per Amendment No. 113 v) The elevation of the bottom inside tank surface is higher than the direct vessel injection nozzle centerline by the following: 2. IRWST ≥ 3.4 ft

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.

760	3.3.00.02a.i.a	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.a) A report exists which reconciles deviations during construction and concludes that the as-built containment internal structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.
761	3.3.00.02a.i.b	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.b) A report exists which reconciles deviations during construction and concludes that the as-built shield building structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

762	3.3.00.02a.i.c	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.c) A report exists which reconciles deviations during construction and concludes that the as-built structures in the non-radiologically controlled area of the auxiliary building, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.
763	3.3.00.02a.i.d	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.d) A report exists which reconciles deviations during construction and concludes that the as-built structures in the radiologically controlled area of the auxiliary building, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

842	C.3.8.01.01	Systems, structures, and components (SSCs) that are required to be functional during and following a design basis event shall be protected against or qualified to withstand the dynamic and environmental effects associated with analyses of postulated failures in high and moderate energy piping.	Inspection of the as□designed pipe rupture hazard analysis report will be conducted. The report documents the analyses to determine where protection features are necessary to mitigate the consequence of a pipe break. Pipe break events involving high□energy fluid systems are analyzed for the effects of pipe whip, jet impingement, flooding, room pressurization, and temperature effects. Pipe break events involving moderate□energy fluid systems are analyzed for wetting from spray, flooding, and other environmental effects, as appropriate.	An as□designed pipe rupture hazard analysis report exists and concludes that the analysis performed for high and moderate energy piping confirms the protection of SSCs required to be functional during and following a design basis event.
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.

855	E.3.9.05.01.07	5.1 The licensee has established a technical support center (TSC) and an onsite operations support center (OSC). [H.1]	5.1 An inspection of the as□built TSC and OSC will be performed, including a test of the capabilities.	5.1.7 A reliable and backup electrical power supply is available for the TSC.

Attachment 1

New ITAAC	Old ITAAC
2.1.01.04	2.1.01.02
	2.1.01.04
	2.1.01.05
	2.1.01.06.i
	2.1.01.07.ii
2.1.02.08d.v	2.1.02.08d.v
	2.1.02.08d.vi
	2.1.02.08d.viii
2.1.02.11a.ii	2.1.02.10
	2.1.02.11a.ii
	2.1.02.11b.ii
	2.1.02.11b.iii
	2.1.02.12b
2.1.03.02a	2.1.03.02a
	2.1.03.02b
2.1.03.07.i	2.1.03.07.i
	2.1.03.07.ii
	2.1.03.10
2.2.01.09	2.2.01.09
	2.2.01.10a
	2.2.01.10b
2.2.02.07a.iii	2.2.02.07a.iii
	2.2.02.07f.ii
	2.2.02.08a
2.2.02.07b.i	2.2.02.07a.i
	2.2.02.07a.ii
	2.2.02.07b.i
	2.2.02.07b.ii
	2.2.02.07b.iii
	2.2.02.07c
	2.2.02.07d
	2.2.02.07e.ii
	2.2.02.09
	2.2.02.10a
	2.2.02.10b
	2.2.02.11a.iii
	2.2.02.11b

New ITAAC	Old ITAAC
2.2.02.07f.i	2.2.02.07f.i
	2.2.02.08b
2.2.03.08c.iv.01	2.2.03.08c.iv.01
	2.2.03.08c.v.02
2.2.03.10	2.2.03.10
	2.2.03.11a.ii
	2.2.03.11b.ii
	2.2.03.11b.iii
	2.2.03.12b
	2.2.03.13
2.2.04.12a.iii	2.2.04.09a.i
	2.2.04.10
	2.2.04.11a
	2.2.04.11b.i
	2.2.04.11b.ii
	2.2.04.12a.iii
	2.2.04.12b
2.2.05.07a.i	2.2.05.07a.i
	2.2.05.07a.iii
	2.2.05.07b.i
	2.2.05.07b.ii
	2.2.05.07d
	2.2.05.08
	2.2.05.09a
	2.2.05.09b
	2.2.05.10
	2.2.05.11
	2.2.05.12
2.3.01.03.ii	2.3.01.03.ii
	2.3.01.04
	2.3.01.05

New ITAAC	Old ITAAC
2.3.02.08a.i	2.3.02.08a.i
	2.3.02.08b
	2.3.02.09
	2.3.02.10a
	2.3.02.10b.i
	2.3.02.10b.ii
	2.3.02.11a.iii
	2.3.02.11a.iv
	2.3.02.11b
	2.3.02.12a
	2.3.02.12b
	2.3.02.13
2.3.03.04	2.3.03.04
	2.3.03.05
2.3.04.04.i	2.3.04.04.i
	2.3.04.06
	2.3.04.07
2.3.05.03a.ii	2.3.05.03a.ii
	2.3.05.03a.iii
2.3.05.03b.iii	2.3.05.03b.ii
	2.3.05.03b.iii
	2.3.05.04
2.3.06.09b.ii	2.3.06.09b.ii
	2.3.06.09b.iii
	2.3.06.09b.iv
	2.3.06.09b.v
	2.3.06.09c
	2.3.06.09d
	2.3.06.12a.iii
	2.3.06.12a.iv
2.3.06.11a	2.3.06.10
	2.3.06.11a
	2.3.06.11b
	2.3.06.12b
	2.3.06.13
	2.3.06.14

New ITAAC	Old ITAAC
2.3.07.07c	2.3.07.07c
	2.3.07.08.ii
	2.3.07.09
	2.3.07.10
	2.3.07.11
2.3.08.02.i	2.3.08.02.i
	2.3.08.03
	2.3.08.04
2.3.09.03.ii	2.3.09.03.i
	2.3.09.03.ii
	2.3.09.04a
	2.3.09.05
2.3.10.07a.ii	2.3.10.07a.i
	2.3.10.07a.ii
	2.3.10.07b
	2.3.10.08
	2.3.10.09
	2.3.10.10
2.3.13.08	2.3.13.08
	2.3.13.09
	2.3.13.10a
	2.3.13.10b
	2.3.13.11b
	2.3.13.12
2.3.19.02a	2.3.19.01a
	2.3.19.01b
	2.3.19.02a
	2.3.19.02b
2.3.29.02	2.3.29.02
	2.3.29.03
2.4.01.02	2.4.01.02
	2.4.01.03
	2.4.01.04
2.4.02.02a	2.4.02.02a
	2.4.02.02c
	2.4.02.03.ii

New ITAAC	Old ITAAC
2.5.01.02a	2.5.01.02a
	2.5.01.02b
	2.5.01.02c.i
	2.5.01.02c.ii
	2.5.01.02d
	2.5.01.03f
	2.5.01.03g
2.5.02.06a.ii	2.5.02.06a.ii
	2.5.02.06b
	2.5.02.06c.ii
	2.5.02.08a.i
	2.5.02.08a.iii
	2.5.02.08c
	2.5.02.09a
	2.5.02.09b
	2.5.02.09c
2.5.04.02.i	2.5.04.02.i
	2.5.04.02.ii
	2.5.04.02.iii
C.2.5.04.04a	C.2.5.04.04a
	C.2.5.04.04b
	C.2.5.04.04c
2.6.01.04e	2.6.01.04a
	2.6.01.04e
	2.6.01.04f
	2.6.01.05
	2.6.01.06
2.6.03.04c	2.6.03.04c
	2.6.03.04d
	2.6.03.04e
	2.6.03.04f
	2.6.03.04g
	2.6.03.04h
	2.6.03.05a
	2.6.03.05b
	2.6.03.05c
	2.6.03.06
	2.6.03.11

New ITAAC	Old ITAAC
2.6.03.05d.i	2.6.03.05d.i
	2.6.03.05d.ii
2.6.03.07	2.6.03.07
	2.6.03.08
	2.6.03.09
	2.6.03.10
2.6.04.02a	2.6.04.02a
	2.6.04.02b
	2.6.04.03
	2.6.04.04
2.6.05.02.ii	2.6.05.02.i
	2.6.05.02.ii
	2.6.05.05.i
	2.6.05.05.ii
	2.6.05.06.i
	2.6.05.06.ii
2.6.06.01.i	2.6.06.01.i
	2.6.06.01.ii
	2.6.06.01.iii
	2.6.06.01.iv
2.6.09.05a	2.6.09.05a
	2.6.09.15b
2.6.09.13a	2.6.09.13a
	2.6.09.13b
2.6.09.15a	2.6.09.15a
	2.6.09.16
C.2.6.09.03b	C.2.6.09.03b
	C.2.6.09.04a
	C.2.6.09.04b
C.2.6.09.05a	C.2.6.09.05a
	C.2.6.09.05b
C.2.6.09.07	C.2.6.09.07
	2.6.09.07a
	2.6.09.07b
C.2.6.09.08a	C.2.6.09.08a
	C.2.6.09.08b
C.2.6.09.09	C.2.6.09.09
	2.6.09.09

New ITAAC	Old ITAAC
2.7.01.14	2.7.01.08d
	2.7.01.09
	2.7.01.10a
	2.7.01.10b
	2.7.01.11
	2.7.01.12
	2.7.01.13
	2.7.01.14
2.7.02.03a	2.7.02.03a
	2.7.02.04
	2.7.02.05
2.7.03.03	2.7.03.03
	2.7.03.04
2.7.04.03	2.7.04.03
	2.7.04.04
2.7.05.02.i	2.7.05.02.i
	2.7.05.02.ii
	2.7.05.02.iii
	2.7.05.03
2.7.06.03.i	2.7.06.03.i
	2.7.06.03.ii
	2.7.06.03.iii
	2.7.06.04
	2.7.06.05
3.3.00.10.ii	3.3.00.10.ii
	3.3.00.10.iii
3.5.00.06	3.5.00.04
	3.5.00.05
	3.5.00.06
	3.5.00.07
	3.5.00.08

Attachment 2

New ITAAC	Old ITAAC	Report Numbers where Old ITAAC was inspected	Findings
2.2.02.07b.i	2.2.02.07b.ii	U3: 2013003 2014003 2014004 U4: 2013003	None
	2.2.02.07b.iii	U3: 2013003 2014003 U4: 2013003 2016003	None
2.2.03.08c.iv.01	2.2.03.08c.v.02	U3: 2018001	None
2.6.06.01.i	2.6.06.01.i	U3: 2013002	None
	2.6.06.01.ii	U3: 2013002	None
	2.6.06.01.iii	U3: 2013002	None
	2.6.06.01.iv	U3: 2013002	None