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

August 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 05200025/2018002, 05200026/2018002

Dear Mr. Yox:

On June 30, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Vogtle Electric Generating Plant, (VEGP) Units 3 and 4. On July 19, 2018, the NRC inspectors discussed the results of this inspection with Mr. J. Miller 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.

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

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

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

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/

Nicole Coovert, Branch Chief (Acting)
Construction Inspection Branch 1
Division of Construction Oversight (DCO)

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

Enclosure: NRC Inspection Report (IR) 05200025/2018002, 05200026/2018002
w/attachment: Supplemental Information

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Letter to Michael Yox from Nicole Coovert dated August 14, 2018.

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 - NRC INTEGRATED INSPECTION REPORTS 05200025/2018002, 05200026/2018002

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200025 5200026
License Numbers:	NPF-91 NPF-92
Report Numbers:	05200025/2018002 05200026/2018002
Licensee:	Southern Nuclear Operating Company (SNC), Inc.
Facility:	Vogtle Electric Generating Plant, Units 3 and 4
Location:	Waynesboro, GA Cranberry Township, PA
Inspection Dates:	April 1, 2018 through June 30, 2018
Inspectors:	A. Artayet, Senior Construction Inspector, DCO T. Brimfield, Resident Inspector, DCO P. Carman, Construction Project Inspector, DCO L. Castelli, Senior Construction Inspector, DCO T. Chandler, Resident Inspector, DCO C. Cheung, Construction Project Inspector, DCO G. Crespo, Senior Construction 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 A. Lerch, Construction Inspector, DCO J. Lizardi-Barreto, Construction Inspector, DCO R. Mathis, Test Inspector, DCO K. McCurry, Construction Inspector, DFFI A. Ponko, Senior 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:	Lauren Nist, Reactor Operations Engineer, NRO Brian Green, Reactor Operations Engineer, NRO
Approved by:	Nicole Coovert, Branch Chief (Acting) Construction Inspection Branch 1

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200025/2018002, 05200026/2018002; 04/01/2018 through 06/30/2018; Vogtle Electric Generating Plant, Units 3 and 4, Inspection of the ITAAC-Related Welding Program.

This report covers a three month period of inspection by regional and resident inspectors, and announced Inspections, Tests, Analysis, and Acceptance Criteria (ITAAC) inspections by regional inspectors. Two green findings, each with an associated NCV in the Procurement/Fabrication cornerstone were identified. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) which is determined using IMC 2519, "Construction Significance Determination Process." Cross-cutting aspects are determined using IMC 0613, Appendix F, "Construction Cross-Cutting Areas and Aspects." All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy and the temporary enforcement guidance outlined in enforcement guidance memorandum (EGM) 11-006. The NRC's program for overseeing the safe construction of commercial nuclear power reactors is described in Inspection Manual Chapter (IMC) 2506, "Construction Reactor Oversight Process General Guidance and Basis Document.

A. NRC-Identified and Self Revealed Findings

(Green) The NRC identified an ITAAC finding of very low safety significance (Green) and associated NCV of Title 10 of the Code of Federal Regulations (10 CFR) Part 50.55a(b), for the licensee's failure to demonstrate compliance with American Society of Mechanical Engineers (ASME) Code Section III, 1998 Edition with Addenda 1999 through 2000, Subarticle NB-5130, Examination of Weld Edge Preparation Surfaces. The inspectors identified that the licensee failed to document a magnetic particle (MT) or liquid penetrant (PT) examination on the full penetration weld edge preparation surface of the Unit 3 pressurizer lower head which was a performance deficiency. The licensee entered this finding into their corrective action program as condition report (CR) 10484251 and took corrective actions to provide reasonable assurance that a PT examination was performed by the vendor to show ASME Code compliance.

The finding was determined to be more than minor because the performance deficiency represented an irretrievable loss or inadequate documentation of a quality assurance record, and a record-keeping issue that could preclude the licensee from demonstrating the adequacy of quality or from properly evaluating safety-significant activities. The inspectors determined this finding was associated with the Procurement/Fabrication Cornerstone and was not associated with a security finding; it was not associated with an IMC 2504 operational/construction program; and it was not associated with a repetitive, NRC-identified omission of a program critical attribute. Using IMC 2519, Appendix A, AP1000 Construction Significance Determination Process, the inspectors determined that the finding was associated with a system or structure; it was associated with the Reactor Coolant System (RCS) which is assigned to the high risk importance column of the AP1000 Construction Significance Determination Matrix, and the licensee was able to demonstrate with reasonable assurance that the design function of the

applicable structure or system would not be impaired by the deficiency (row 1 of the Construction Significance Determination Matrix). Therefore, this finding was of very low safety significance (Green). The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Documentation, H.7, in the area of Human Performance, in accordance with IMC 0613, Appendix F, Construction Cross-Cutting Areas and Aspects. (1A01)

(Green) The NRC identified an ITAAC finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50.55a(b), for the licensee's failure to demonstrate compliance with ASME Code Section III, 1998 Edition with Addenda 1999 through 2000, Subarticle NB-5100, General Requirements for Examination. The inspectors identified that the licensee failed to ensure that radiographic films for the passive residual heat removal (PRHR) heat exchanger (HX) lower channel head to lower support plate weld (CW-006/2) met density limitations and image quality indicator (IQI) placement requirements which was a performance deficiency. The licensee entered this finding into their corrective action program as CR 10491047 and took corrective actions to perform additional radiographs in order to show ASME Code compliance.

The finding was determined to be more than minor because the performance deficiency represented an adverse condition that rendered the quality of a component indeterminate, and required substantive corrective action. The inspectors determined this finding was associated with the Procurement/Fabrication Cornerstone and was not associated with a security finding; it was not associated with an IMC 2504 operational/construction program; and it was not associated with a repetitive, NRC-identified omission of a program critical attribute. Using IMC 2519, Appendix A, AP1000 Construction Significance Determination Process, the inspectors determined that the finding was associated with a system or structure; it was associated with the passive core cooling system (PXS) which is assigned to the intermediate risk importance column of the AP1000 Construction Significance Determination Matrix, and the licensee was able to demonstrate with reasonable assurance that the design function of the applicable structure or system would not be impaired by the deficiency (row 1 of the Construction Significance Determination Matrix). Therefore, this finding was of very low safety significance (Green). The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Evaluation, P.2, in the area of Problem Identification and Resolution, in accordance with IMC 0613, Appendix F, Construction Cross-Cutting Areas and Aspects. (1A15)

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Construction Status

During this report period in unit 3, in containment, SPL modules that make up the columns and floor of the operating deck were installed. In addition, the steel modules that make up the roof of the in-containment refueling water storage tank (IRWST) were installed. Pipe and components that make up the PXS and reactor coolant system (RCS) continued to be installed, including the PRHR HX, pressurizer surge line and the PXS lines that connect the core makeup tank (CMT), accumulator, and the IRWST to the reactor vessel. In the shield building, work completed on the reinforced concrete portion of the shield building below elevation 149'6" and the remaining steel composite (SC) transition modules were installed and welded at elevation 146'10". In the auxiliary building, additional floors at elevation 100' and walls from elevation 100'-117'6" were constructed.

In unit 4, in containment piping work for the PXS system began. Modules Q223 and Q233, which make up the direct vessel injection (DVI) lines were placed in containment. Rebar that makes up the IRWST floor at elevation 103' was installed in preparation for placing the concrete floor. In the shield building, course 06 of the SC modules was placed and filled with concrete along with work continuing on the RC portion of the shield building (east side). In addition, concrete pours underneath the containment vessel (up to elevation 100') were completed. In the auxiliary building, work continued on floors at elevations 82'6" and 100' and work began on walls from elevation 100'-117'6" and continued on walls up to elevation 100'.

1. CONSTRUCTION REACTOR SAFETY

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

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

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

a. Inspection Scope

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

- 65001.06-02.02 - Component Welding
- 65001.06-02.04 - Testing and Verification
- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification

- 65001.B-02.04-Production Controls
- 65001.B-02.06-Records
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors conducted an inspection of the pressurizer to determine if it was fabricated in accordance with ASME BPVC, Section III, 1998 Edition 2000 Addenda, Westinghouse (WEC) design and fabrication specifications, and the Updated Final Safety Analysis Report (UFSAR) chapter 5. The inspectors reviewed fabrication and procurement records of the following welds and the adjoining materials:

- CW-002 (upper shell to middle shell);
- CW-004 (lower shell to lower head);
- CW-005 (manway pad forging to upper shell);
- CW-031 (safety relief nozzle to safety relief nozzle safe end);
- CW-048 (surge nozzle to surge nozzle safe end);
- BT-047 (surge nozzle buttering);
- CL-046 (surge nozzle cladding);
- CW-60/9 (heater sleeve to heater); and
- NZ-52/19 (heater sleeve to lower head buttering).

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

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

The inspectors reviewed purchase orders (PO) for the pressurizer to verify if the PO specified the proper quality and technical requirements; specifically 10 CFR 21, NQA-1, ASME Section III, and the WEC PRHR HX design specification.

The inspectors reviewed fabrication records to determine if the base and weld materials were fabricated in accordance with the requirements of ASME Section III, Section II, and the WEC material specifications. For the weld filler metals, the inspectors reviewed certified material test reports (CMTRs) to determine if the filler metal met the following requirements: chemical composition, tensile strength, yield strength, and impact testing.

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

- Chemical composition
- Tensile strength
- Yield strength
- Impact testing
- Drop weight testing
- Nil-ductility transition curve

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

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

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

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

The inspectors reviewed quality control welding monitoring records for the welds sampled to verify if the weld process was applicable for the situation, and in accordance with ASME Code and the WEC fabrication specification. The inspectors reviewed the welding monitoring records to determine if the base material and weld filler metals type and size used was in accordance with the approved welding procedure specifications (WPSs), ASME Code, the UFSAR, and WEC fabrication specification. The inspectors reviewed CMTRs for the weld filler metals to verify that heat treatment, chemical, mechanical, and impact requirements met ASME Code requirements and WEC material specifications. The inspectors reviewed the welding monitoring records to ensure weld attributes such as weld process, weld joint, preheat temperature, interpass temperature, weld speed, weld machine amps, and weld machine volts were in accordance with the approved WPS.

The inspectors reviewed a sample of WPSs to verify that they were in conformance with ASME Code requirements. The inspectors reviewed the supporting procedure qualification records (PQRs) to verify that the specific ranges of welding variables listed in the WPSs were appropriately qualified and the type and number of qualification tests required received acceptable results in accordance with ASME Code requirements. The inspectors reviewed a sample of welder or welding operator performance qualification records to determine if the welders or welding operators were assigned a unique identification number and demonstrated their skill by performing specific performance qualification tests, the qualification testing conditions and qualification limits were fully documented, and the appropriate number of acceptable test results was achieved in accordance with ASME Code requirements. The inspectors reviewed a sample of nonconformance reports, engineering and design coordination reports (E&DCRs), and corrective action documents related to the fabrication of the pressurizer. The inspectors reviewed these documents to determine if the conditions were properly evaluated; received the appropriate amount of review; and that weld repairs, when performed, were conducted in accordance with ASME Code requirements.

b. Findings

Introduction

The NRC identified an ITAAC finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50.55a(b), for SNC’s failure to demonstrate compliance with ASME Code Section III, 1998 Edition with Addenda 1999 through 2000, Subarticle NB-5130, Examination of Weld Edge Preparation Surfaces. The inspectors identified that the licensee failed to document a magnetic particle (MT) or liquid penetrant (PT) examination on the full penetration weld edge preparation surface of the Unit 3 pressurizer lower head.

Description

During the ASME mechanical component fabrication inspection conducted in April 30 - May 10, 2018, the inspectors identified that the licensee did not document a weld edge preparation surface examination on the pressurizer lower head full penetration weld joint (CW-004) which connects the pressurizer lower head to the pressurizer lower shell. The inspectors determined this weld to be a Category B full penetration weld per ASME Code paragraph NB-3351, Welded Joint Category and subparagraph NB-3351.2, Category B. Section 8.5.2 of the WEC design specification APP-MV20-Z0-100, AP1000 Pressurizer Design Specification for RCS System, Rev. 11, and ASME Code Subarticle NB-5130 requires full penetration, pressure boundary weld edge preparations to be evaluated for indications via MT or PT examination.

The inspectors reviewed the vendor's fabrication control plan W2-PCF-10-09-001, Lower Head Machining - Item 5-05, Rev. 1. The inspectors noted that the fabrication control plan contained a step requiring a MT or PT examination of the lower head machined areas. The step was signed as completed and a PT report was referenced; however, the report was lined out and a nonconformance report (RNC-1158) was referenced instead. The inspectors reviewed RNC-1158, which documented nonconforming indications found on the lower head surface after weld buttering was performed around the lower head heater nozzles. The nonconformance report stated that the surface would be machined, and the entire surface would be examined by PT and ultrasonic (UT) examinations. The inspectors were unable to locate the PT report. The inspectors reviewed the UT report and noted that the examination was of the lower head, but did not include the weld edge (CW-004). The inspectors were unable to find objective quality evidence that a PT or MT was performed for the weld edge preparation of CW-004.

The licensee entered this issue into their corrective action program as CR 10484251. During the inspection the licensee contacted the vendor of the pressurizer and generated nonconformance and disposition report SV3-MV20-GNR-000004, SV3 Pressurizer missing Surface Examination of Weld Edge Preparation, Rev. 0. The inspectors reviewed SV3-MV20-GNR-000004 and noted that it contained the PT report that was conducted with the UT examination discussed above. The inspectors also noted that, like the UT report, the PT examination was performed on the lower head, but CW-004 was not within the scope of the examination. SV3-MV20-GNR-000004 also contained a justification stating that the internal procedure used for the PT examination covered CW-004 in the scope of the examination. The inspectors reviewed sections of the internal PT procedure included in SV3-MV20-GNR-000004. During the evaluation and disposition of SV3-MV20-GNR-000004, the vendor re-created documentation that documented completion of an examination of weld edge CW-004.

Analysis

The licensee's failure to document a MT or PT examination on the full penetration weld edge preparation surface of the Unit 3 pressurizer lower head was a performance deficiency. The inspectors identified that the pressurizer quality assurance data package did not contain the objective quality evidence to show the examination was performed. The finding was determined to be more than minor because the performance deficiency represented an irretrievable loss or inadequate documentation of a quality assurance record, and a record-keeping issue that could preclude the licensee from demonstrating the adequacy of quality or from properly evaluating safety-significant activities. The licensee's quality assurance data package did not contain the ASME Code required examination, and required substantial additional documentation. This is an ITAAC finding because the design commitment for ITAAC 2.1.02.02a (13) states "Pressure boundary welds in components identified in Table 2.1.2-1 as ASME Code Section III meet ASME Code Section III requirements", and the acceptance criteria states, "A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds". This finding is material to the ITAAC acceptance criteria because the quality assurance data package failed to demonstrate that pressurizer weld CW-004 met ASME Code Section III requirements for NDE. With the documents provided during the inspection, the licensee was able to demonstrate that the ASME Code Section III requirements are currently met, and that the performance deficiency was corrected.

The inspectors determined this finding was associated with the Procurement/Fabrication Cornerstone. The finding was not associated with a security finding; it was not associated with an IMC 2504 operational/construction program; and it was not associated with a repetitive, NRC-identified omission of a program critical attribute. Using IMC 2519, Appendix A, AP1000 Construction Significance Determination Process, the inspectors determined that the finding was associated with a system or structure; it was associated with the RCS system which is assigned to the high risk importance column of the AP1000 Construction Significance Determination Matrix, and the licensee was able to demonstrate with reasonable assurance that the design function of the applicable structure or system would not be impaired by the deficiency (row 1 of the Construction Significance Determination Matrix). Therefore, this finding was of very low safety significance (Green). The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Documentation, H.7, in the area of Human Performance, in accordance with IMC 0613, Appendix F, Construction Cross-Cutting Areas and Aspects. Specifically, the licensee failed to create and maintain complete, accurate, and up-to-date documentation.

Enforcement

10 CFR Part 50.55a(b), Use and conditions on the use of standards, requires, in part, Systems and components of boiling and pressurized water-cooled nuclear power reactors must meet the requirements of the ASME BPV Code and the ASME OM Code . ASME Code Section III, 1998 Edition with Addenda 1999 through 2000, Subarticle NB-5130, Examination of Weld Edge Preparation Surfaces, requires, in part, that all full penetration weld edge preparation surfaces for joint Categories A, B, C, D, and similar joints in material 2 in. (51mm) or more in thickness shall be examined by the magnetic particle or liquid penetrant method.

Contrary to the above, since January 4, 2018, the licensee failed to document a weld edge preparation surface examination on the pressurizer lower head full penetration weld joint (CW-004) which connects the pressurizer lower head to the pressurizer lower shell. Specifically, the failure to comply with ASME Code examination requirements has the potential to result in not identifying and correcting unacceptable indications in pressure boundary welds. The licensee performed immediate corrective actions to demonstrate with reasonable assurance that the component would have been able to meet its design function. The licensee generated a nonconformance and disposition report providing reasonable assurance that a PT examination was performed by the vendor. The licensee entered this finding into their corrective action program as CR 10484251. This violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the Enforcement Policy. This issue is identified as NCV 05200025/2018002-01, Missing Weld Edge Preparation Surface Examination on Pressurizer Lower Head.

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

a. Inspection Scope

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

- 65001.06-02.01 - General Installation

The inspectors performed a final as-built inspection of the lower and intermediate supports for Unit 3 steam generator 1 to verify if the supports were installed in accordance with the ASME Code. The inspectors compared the as-built supports to the drawing requirements to determine if the supports were in the proper location and orientation. The inspectors performed visual inspections of the shim plate welds to determine if the as-built configuration was in accordance with the drawing. In addition, the inspectors performed a visual inspection of the as-built complete joint penetration

welds of the support brackets to the overlay welds on the CA01 walls to determine if the acceptance criteria of the ASME Code, Section III, Subsection NF-5360 was met.

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)

The inspectors reviewed final computed radiography results associated with four stainless steel pipe field welds for the Unit 3 pressurizer surge line RCS-L003 to verify if the welds were in accordance with the ASME Code. Specifically, the inspectors reviewed the MISTRAS radiographic examination reports and computer screen views to determine whether the technique and image brightness at the body of the required wire image quality indicator locations in the area of interest were in accordance with the requirements of MISTRAS radiography procedure 521-RT-302 and the ASME Code, Section V, Article 2, for 18" diameter welds of 1.781" thickness. In addition, the inspectors reviewed the computer screen displays to determine if the acceptance criteria of the ASME Code, Section III, Subsection NB-5320, were met for the Class 1 welds. Finally, the inspectors reviewed four MISTRAS radiography reports to determine if the acceptance results were accurately recorded in accordance with the quality assurance program.

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.F-02.02-Fabrication Records Review

- 65001.F-02.04-General QA Review

The inspectors reviewed procurement and fabrication records associated with material of the Unit 3 squib valves to determine if the valves met requirements of the ASME BPVC, Section III, 1998 Edition 2000 Addenda, WEC design and fabrication specifications, and the UFSAR chapter 5.4.6. The inspectors reviewed records related to the following parts of the Unit 3 14-inch squib valve S/N 0920-164451-3-1:

- valve body,
- valve bonnet,
- shear cap,
- tension bolt,
- bonnet stud, and
- cartridge cover plate.

The inspectors reviewed design documents to determine if critical dimensions of the parts identified were captured in the final as-built condition of the components in accordance with the ASME Code, WEC design specification, design drawings, and the UFSAR requirements. The inspectors reviewed the PO for the squib valves to verify if the PO specified the proper quality and technical requirements; specifically 10 CFR 21, NQA-1, ASME Section III, and the WEC PRHR HX design specification.

The inspectors reviewed a sample of fabrication records to determine if the base materials were fabricated in accordance with the requirements of ASME Section II, ASME Section III, and the WEC material specifications. For the base metal, the inspectors reviewed the fabrication plan to determine if the plan outlined the requirements of ASME Section III for material fabrication and testing. The inspectors reviewed CMTRs to determine if the base metal met the following requirements:

- Chemical composition
- Tensile strength
- Yield strength
- Impact testing
- Drop weight testing
- Nil-ductility transition curve

The inspectors also reviewed ASME Code Form NPV-1 reports to determine if the ANI authorized the application of the Code symbol stamp in accordance with ASME Section III, NCA-8000. The inspectors also reviewed hydrostatic test reports to determine if ASME Section III Code minimum pressure and time requirements were met.

The inspectors reviewed fabrication records for the components above to verify if required heat treatment, NDE, and additional tests were performed, and the sequence of these activities were conducted in accordance with ASME Code and the WEC design specification. The inspectors reviewed the heat treatment reports to determine

if heat treatment was performed in accordance with the material specifications and ASME, Section II. For NDE, the inspectors reviewed UT and PT reports to determine if the records were complete and if the exams were performed in accordance with ASME Section V, Articles 5 and 6 respectively.
The inspectors reviewed an E&DCR to determine if the Design Specification was revised to reflect allowable hydrostatic test sequencing of valve components as specified in ASME Section III, NB-6000.

The inspectors observed storage conditions for the Unit 3 14-inch squib valves to determine if the storage areas met the requirements of WECTEC QS 13.11. Specifically, the inspectors observed the storage area to determine if the storage requirements met those described in the squib valve technical manual to determine if the valves were sealed to protect against corrosion, contamination, and deterioration. The inspectors also observed the storage area to determine if it was clearly marked and roped off to preclude misuse and physical damage in accordance with WECTEC equipment storage procedures. The inspectors reviewed component identification tags at the storage location to determine if the component identification numbers matched the identification numbers on the purchasers receiving inspection records.

b. Findings

No findings were identified.

1A05 (Unit 3) ITAAC Number 2.1.02.05a.i (19) / Family 14A
(Unit 4) ITAAC Number 2.1.02.05a.i (19) / Family 14A

a. Inspection Scope

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

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

The inspectors reviewed documents for RCS-JE-TE211A, the reactor coolant pump 1A bearing water temperature sensor, (commodity MP01) to verify if the following activities were completed in accordance with the requirements contained in UFSAR Chapter 3:

- the licensee used the appropriate limiting design basis parameters as input for the seismic and environmental qualification of the Structure, System, or Component (SSC);

- the necessary design basis documents and calculations, as appropriate, were incorporated into the qualification program for the SSC;
- seismic qualification was completed and controlled in accordance with Regulatory Guide 1.100, Institute of Electrical and Electronics Engineers (IEEE) Std. 344-1987, and applicable design specifications;
- environmental qualification of SSCs was completed and controlled in accordance with the requirements in 10 CFR 50.49, applicable methodology in the UFSAR Ch. 3, IEEE Std. 323-1974, and IEEE Std. 382-1996 and the results met the acceptance criteria stated in the applicable design specification and the ITAAC;
- the documented qualified life was consistent with the results of the qualification activities;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSCs can withstand the conditions that would exist before, during, and following a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic and environmental qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

The inspectors reviewed a sample of test deficiencies identified during the seismic and environmental qualification processes, as documented in the Equipment Qualification Data Package (EQDP) applicable to each component, to determine if the identified deficiencies were resolved in accordance with the requirements of IEEE Std. 323-1974.

The inspectors reviewed the qualification program documents (such as the EQDP, Equipment Qualification Summary Report (EQSR), applicable test procedures, test specifications, and test reports) to verify if the following qualification requirements were incorporated as required by UFSAR Chapter 3:

<u>Seismic:</u>

- design codes;
- analysis and testing methodologies;
- load combinations; and
- required seismic forces and effects.

<u>Environmental:</u>

- qualification methodology per IEEE Std. 323-1974; and
- parameters that impact environmental qualification (i.e. environmental temperature, pressure, total radiation dose, radiation dose rate, cycling, electrical parameters, and humidity) under normal operating and abnormal conditions.

The inspectors reviewed the margins applied to test parameters used during environmental qualification of the SSCs to determine if the margins used met IEEE Std. 323-1974, Section 6.3.1.5, specifically: temperature, pressure, and radiation.

In addition, the inspectors reviewed the test procedure, test plan, and test reports to verify if the tested profiles enveloped the limiting design basis parameters. Specifically, the inspectors reviewed the simulated conditions including temperature, pressure, and radiation as recorded in the test reports.

b. Findings

No findings were identified.

1A06 (Unit 3) ITAAC Number 2.1.02.05a.i (19) / Family 14A
(Unit 4) ITAAC Number 2.1.02.05a.i (19) / Family 14A

a. Inspection Scope

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

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

The inspectors interviewed responsible staff and reviewed documents associated with the equipment qualification for Class 1E low voltage cables for instrumentation and thermocouple extension cables (commodity EW21), power cables (commodity EW50), and control cables (commodity EW60) to verify if the following activities were performed in accordance with the requirements in 10 CFR 50.49, applicable methodology in the UFSAR Chapter 3, IEEE Std. 323-1974:

- the licensee used the appropriate limiting design basis parameters (i.e. environmental temperature, pressure, total radiation dose, radiation dose rate, cycling, electrical parameters and humidity) as input for the environmental qualification of the SSC;
- necessary design basis documents and calculations were correctly incorporated into the qualification program, as described in the applicable EQDP, for the SSC;
- qualification results met the acceptance criteria stated in the applicable design specification and the ITAAC;
- the documented qualified life was consistent with the results of the qualification activities;

- design loads applied to the cables were limited to remain within the qualified life results;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSC can withstand the conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function; and
- environmental qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

The inspectors reviewed a sample of test deficiencies identified during the environmental qualification process, as documented in the EQDP applicable to each component, to determine if the identified deficiencies were resolved in accordance with the requirements of IEEE Std. 323-1974.

The inspectors reviewed the qualification program documents (such as the EQDP, applicable test procedures, component specifications, and test reports) to verify if the following qualification requirements were incorporated as required by UFSAR Ch. 3 and applicable Westinghouse design specifications:

- qualification methodology per IEEE Std. 323-1974;
- environmental parameters under normal operating conditions, abnormal conditions, and design basis events;
- simulated accident conditions, including, temperature, pressure, radiation, pH, and chemical additives; and
- post-accident conditions, including time and submergence.

The inspectors reviewed the margins applied to test parameters used during qualification of the equipment. Specifically, the inspectors reviewed parameters for temperature, pressure, and radiation to determine if the margins used met IEEE Std. 323-1974, Section 6.3.1.5:

In addition, the inspectors reviewed the test procedure, test plan, and test reports to verify that the tested profiles enveloped the limiting design basis parameters. Specifically, the inspectors reviewed the simulated accident conditions achieved during the qualification testing including temperature, pressure, radiation, pH, and chemical additives as recorded in the test reports.

b. Findings

No findings were identified.

1A07 (Unit 3) ITAAC Number 2.1.02.08d.v (36) / Family 07A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.08d.v (36). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors observed the in process survey of the ADS sparger while in storage. The inspectors witnessed the licensee performing the measurement of the sparger centerline to a reference point to verify the survey was conducted in accordance with procedure 26139-000-4MP-T81C-N3201, Construction Survey, Rev. 0. The inspectors compared the field measurements taken with those that were recorded on the survey records and as-built drawings. The inspectors also reviewed the calibration records for the survey equipment used to verify it was calibrated per the calibration frequency requirements in procedure 26139-000-4MP-T81C-N3201. The inspectors interviewed the personnel performing the survey to verify that they were knowledgeable of construction survey procedures.

After installation, the inspectors independently reviewed the licensee's final surveys and calculations to verify that they met acceptance criteria in accordance with section 6.3.2.2.6 of the UFSAR. Specifically, the inspectors reviewed the measurements of the sparger reference point, the measurements of the highest level of the IRWST overflow channels, the measurements of the sparger centerline installed in the field, and the associated arithmetic used by the licensee.

b. Findings

No findings were identified.

1A08 (Unit 3) ITAAC Number 2.1.03.06.i (75) / Family 05A
(Unit 4) ITAAC Number 2.1.03.06.i (75) / Family 05A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.06.i (75). The inspectors used the following NRC IPs/sections to perform this inspection:

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

- 65001.E-02.04-Documentation
- 65001.E-02.06-Problem Identification and Resolution

The inspectors reviewed documents for fuel assemblies (commodity FA01), control rod assemblies (commodities FG01 and FR01), control rod drive mechanisms (commodity MV11), and incore instrumentation cable QuickLoc assemblies (commodity MY91) and interviewed personnel to verify if the following activities were performed in accordance with the requirements for qualification contained in UFSAR Chapter 3:

- the licensee used the appropriate limiting design basis parameters as per the applicable seismic input for the seismic qualification of the SSCs;
- the applicable design basis documents and calculations were correctly incorporated into the qualification program for the SSCs;
- for commodities MV11 and MY91, the SSCs were evaluated for stresses due to the loadings specified in the design specification in accordance with the ASME B&PVC Code 1998 Edition through the 2000 Addenda;
- for commodities FA01, FG01, and FR01, seismic qualification was adequately completed and controlled in accordance with Regulatory Guide 1.100 and applicable design specifications;
- licensee records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSCs can withstand the conditions that would exist before, during, and following a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

Specifically, the inspectors performed these reviews for the following components associated with the indicated commodity:

- RXS-FA-A07 through R09, all 157 Fuel Assemblies (FA01)
- RXS-FG-B08 through P08, all 16 Gray Rod Cluster Assemblies (FG01)
- RXS-FR-B06 through P10, all 53 Rod Cluster Control Assemblies (FR01)
- RXS-MV-11B06 through 11P10, all 69 Control Rod Drive Mechanisms (MV11)
- RXS-MY-Y11 through Y18, all 8 Incore Instrument QuickLoc Assemblies (MY91)

The inspectors reviewed a sample of test deficiencies identified during the seismic qualification process, as documented in the qualification documentation package applicable to commodities MV11 and MY91, to determine if the identified deficiencies were adequately resolved such that the commodities' seismic qualification remained in accordance with the requirements of the UFSAR.

The inspectors reviewed the qualification program documents (such as the EQDP, EQSR, applicable test procedures, test specifications, and test reports) to verify if the

following qualification requirements were incorporated as required by UFSAR Chapter 3:

- design codes,
- analysis and testing methodologies,
- load combinations, and
- required seismic forces and effects.

b. Findings

No findings were identified.

1A09 (Unit 3) ITAAC Number 2.1.03.06.i (75) / Family 05A
(Unit 4) ITAAC Number 2.1.03.06.i (75) / Family 05A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.06.i (75). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors interviewed responsible staff and reviewed documents associated with the equipment qualification for the nuclear instrumentation system (NIS) in-containment field cabling consisting of specialty cables and connectors mounted in the NIS junction box (commodity EQ50) and the NIS to Electrical Penetration Assembly (EPA) feedthrough interfacing connection assemblies (commodity EQ55) to verify if the following activities were performed in accordance with the requirements in 10 CFR 50.49, applicable methodology in the UFSAR Chapter 3 and IEEE Std. 323-1974:

- the licensee used the appropriate limiting design basis parameters as input for the environmental qualification of the SSC;
- the necessary design basis documents and calculations were correctly incorporated into the qualification program as described in the applicable EQDP for the SSC;
- qualification results met the acceptance criteria stated in the applicable design specification and the ITAAC;
- the documented qualified life was consistent with the results of the qualification activities;
- design loads applied to the cables were limited to remain within the qualified life results;

- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSC can withstand the conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function; and
- environmental qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

The inspectors reviewed a sample of test deficiencies identified during the environmental qualification process, as documented in the EQDP applicable to each component, to determine if the technical justifications were in accordance with IEEE Std. 323-1974.

Specifically, the inspectors performed these reviews for the following components associated with the indicated commodities:

Commodity EQ50:

- Quartz insulated cable with polyether ether ketone (PEEK) insulated triax plug connector to a quadax cable with PEEK insulated triax jack connector with a quadax mechanical seal assembly for application on Source Range and Intermediate Range detector channels.
- Mineral Insulated (MI) cable with PEEK insulated triax plug connector to a quadax cable with PEEK insulated triax jack connector with a quadax mechanical seal assembly for application on Power Range detector channel.

Commodity EQ55:

- Quadax, PEEK connector insulators feedthrough
- Quadax, Rexolite connector insulators feedthrough
- Quadax, PEEK connector insulator with Raychem shim feedthrough
- Cable, Quadax, PEEK connector insulator assembly
- Cable, Quadax, PVDF connector insulator assembly
- Cable, Triax, PEEK jack with moisture dam assembly
- Connector seal, PEEK jack kit
- Connector seal, PVDF plugs kit
- Heat Shrink, Raychem WCSF tubing
- Mini, Triax, PEEK connector insulator feedthrough
- Mini, Triax, Rexolite connector insulator feedthrough
- Cable, Triax, PVDF plug assembly

The inspectors reviewed the qualification program documents (such as the EQDP, applicable test procedures, component specifications, and test reports) to verify that the following qualification requirements were incorporated as required by UFSAR Chapter 3 and applicable Westinghouse design specifications:

- qualification methodology per IEEE Std. 323-1974;

- environmental parameters under normal operating conditions, abnormal conditions, and design basis events;
- simulated accident conditions, including, temperature, pressure, radiation, pH, and chemical additives; and
- post-accident conditions, including time and submergence.

The inspectors reviewed the margins applied to test parameters used during qualification of the equipment. Specifically, the inspectors reviewed parameters for temperature, pressure, and radiation to determine if the margins used met IEEE Std. 323-1974, Section 6.3.1.5:

In addition, the inspectors reviewed the test procedure, test plan, and test reports to verify that the tested profiles enveloped the limiting design basis parameters. Specifically, the inspectors reviewed the simulated accident conditions achieved during the qualification testing including temperature, pressure, radiation, pH, and chemical additives as recorded in the test reports.

b. Findings

No findings were identified.

1A10 (Unit 3) ITAAC Number 2.1.03.06.i (75) / Family 05A
(Unit 4) ITAAC Number 2.1.03.06.i (75) / Family 05A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.06.i (75). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors interviewed responsible staff and reviewed documents associated with the seismic qualification for the NIS in-containment field cabling consisting of specialty cables and connectors mounted in the NIS junction box (commodity EQ50) and the NIS to EPA feedthrough interfacing connection assemblies (commodity EQ55) to verify if the following activities were performed in accordance with the requirements in 10 CFR 50.49, applicable methodology in the UFSAR Chapter 3 and IEEE Std. 323-1974:

- the licensee used the appropriate limiting design basis parameters as input for the seismic qualification of the SSCs;

- the necessary design basis documents and calculations were correctly incorporated into the qualification program as described in the EQDP for the SSCs;
- seismic qualification was adequately completed and controlled in accordance with Regulatory Guide 1.100, IEEE Std. 344-1987, and applicable design specifications;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSCs can withstand the conditions that would exist before, during, and following a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

Specifically, the inspectors performed these reviews for the following components associated with the indicated commodity:

EQ50:

- Quartz insulated cable with PEEK insulated triax plug connector to a quadax cable with PEEK insulated triax jack connector with a quadax mechanical seal assembly for application on Source Range and Intermediate Range detector channels.
- MI cable with PEEK insulated triax plug connector to a quadax cable with PEEK insulated triax jack connector with a quadax mechanical seal assembly for application on Power Range detector channel.

EQ55:

- Quadax, PEEK connector insulators feedthrough
- Quadax, Rexolite connector insulators feedthrough
- Quadax, PEEK connector insulator with Raychem shim feedthrough
- Cable, Quadax, PEEK connector insulator assembly
- Cable, Quadax, PVDF connector insulator assembly
- Cable, Triax, PEEK jack with moisture dam assembly
- Connector seal, PEEK jack kit
- Connector seal, PVDF plugs kit
- Heat Shrink, Raychem WCSF tubing
- Mini, Triax, PEEK connector insulator feedthrough
- Mini, Triax, Rexolite connector insulator feedthrough
- Cable, Triax, PVDF plug assembly

The inspectors reviewed a sample of test deficiencies identified during the seismic qualification process, as documented in the EQDP applicable to each component, to

determine if the identified deficiencies were adequately resolved such that the seismic qualification remained in accordance with the requirements of the UFSAR, Chapter 3.

The inspectors reviewed the qualification program documents (such as the EQDP, applicable test procedures, test specifications, and test reports) to verify that the following qualification requirements were incorporated as required by UFSAR Chapter 3:

- design codes,
- analysis and testing methodologies,
- load combinations, and
- required seismic forces and effects.

b. Findings

No findings were identified.

1A11 (Unit 3) ITAAC Number 2.2.01.02a (91) / Family 06F

a. Inspection Scope

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

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

The inspectors performed field inspections, reviewed records, and inspected radiograph results for field welds SV3-SGS-PY-C03A-2 and SV3-SGS-PY-C03B-2, which make up the guard pipe to penetration sleeve welds on containment penetrations P27 and P28, respectively, as depicted in Appendix C of the COL, Figure 2.2.1-1. Specifically, the inspectors performed a visual examination of the completed welds to determine if the requirements of the ASME Code, Section III, Subsection NE-4424 were met. The inspectors also reviewed radiograph film of the welds to determine if the requirements of the ASME Code, Section III, Subsection NE-5320 were met. The inspectors reviewed Radiography Examination (RT) Reports V-18-RT-301-0193 and -0192 associated with the welds to P27 and P28, respectively, to determine if the radiography results were accurately captured and met the requirements of the ASME Code, Section V, Article 2, Section T-292. Finally, the inspectors reviewed welder qualification records for welder RJB9997 who performed the weld to P27 and welder MAJ2161 who performed the weld to P28 to determine if the welders were qualified in accordance with the requirements of the ASME Code, Section III, Subsection NE-4320.

b. Findings

No findings were identified.

1A12 (Unit 3) ITAAC Number 2.2.01.02a (91) / Family 06F

a. Inspection Scope

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

- 65001.B-02.05-Inspection
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed Mirion Technologies (Conax Nuclear) fabrication records for three electrical penetration assemblies (EPA) SV3-IDSD-EY-P14Z, -P15Y, and -P16Y to determine whether examination personnel qualifications and weld travelers were in accordance with the vendor's design specification, the UFSAR, and the ASME Code, Section III, Subsections NCA and NE. The inspectors reviewed Mirion non-destructive examination personnel certification of two Level II and one Level III liquid penetrant examiners for three final surface liquid penetrant inspection reports at the time of fabrication to verify these individuals were certified in accordance with the ASME Code, Article NE-5000 and SNT-TC-1A for both pressure retaining welds located at each end of the three EPAs (total of six welds joining the canister to the header plates). In addition, the inspectors reviewed weld travelers used during fabrication of these six pressure retaining welds to verify inspection hold points were established and signed-off in accordance with the ASME Code, Article NCA-4134.10.

b. Findings

No findings were identified.

1A13 (Unit 3) ITAAC Number 2.2.01.05.i (98) / Family 11A
(Unit 4) ITAAC Number 2.2.01.05.i (98) / Family 11A

a. Inspection Scope

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

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

- 65001.E-02.04-Documentation
- 65001.E-02.06-Problem Identification and Resolution

The inspectors reviewed documents for ASME BPVC, Section III, Class 2 and 3, Auxiliary Relief Valves (commodity PV16) to verify if the following were performed in accordance with the requirements for qualification contained in USFSAR Chapter 3:

- the licensee used the appropriate limiting design basis parameters as per the applicable seismic input for the seismic qualification of the SSCs;
- the applicable design basis documents and calculations were correctly incorporated into the qualification program for the SSCs;
- seismic qualification was completed and controlled in accordance with Regulatory Guide 1.100, IEEE Std. 344-1987, ASME QME-1-2007, and applicable design specifications;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSCs can withstand the conditions that would exist before, during, and following a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

Specifically, the inspectors performed these reviews for the following components associated with the indicated commodity:

- SFS-PL-V067, SFS Suction Line Containment Isolation Relief Valve IRC (PV16)
- CCS-PL-V220, CCS Containment Isolation Relief Valve Outlet Line IRC (PV16)
- VWS-PL-V080, Fan Coolers Return Containment Isolation Relief Valve IRC (PV16)

The inspectors reviewed a sample of test deficiencies identified during the seismic qualification process, as documented in the EQDP applicable to each component, to determine if the technical justifications were in accordance with UFSAR, Chapter 3.

The inspectors reviewed the qualification program documents (such as the EQDP, EQSR, applicable test procedures, test specifications, and test reports) to verify that the following qualification requirements were incorporated as required by UFSAR Chapter 3:

- design codes,
- analysis and testing methodologies,
- load combinations, and
- required seismic forces and effects.

b. Findings

No findings were identified.

1A14 (Unit 3) ITAAC Number 2.2.01.05.i (98) / Family 11A
(Unit 4) ITAAC Number 2.2.01.05.i (98) / Family 11A

a. Inspection Scope

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

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

The inspectors interviewed responsible staff and reviewed documents associated with the equipment qualification for Class 1E low voltage cables for instrumentation and thermocouple extension cables (commodity EW21), power cables (commodity EW50), and control cables (commodity EW60) to verify if the following activities were performed in accordance with the requirements in 10 CFR 50.49, applicable methodology in the UFSAR Ch. 3, IEEE Std. 323-1974:

- the licensee used the appropriate limiting design basis parameters (i.e. environmental temperature, pressure, total radiation dose, radiation dose rate, cycling, electrical parameters and humidity) as input for the environmental qualification of the SSC;
- necessary design basis documents and calculations were correctly incorporated into the qualification program, as described in the applicable EQDP, for the SSC;
- qualification results met the acceptance criteria stated in the applicable design specification and the ITAAC;
- the documented qualified life was consistent with the results of the qualification activities;
- design loads applied to the cables were limited to remain within the qualified life results;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSC can withstand the conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function; and

- environmental qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

The inspectors reviewed a sample of test deficiencies identified during the environmental qualification process, as documented in the EQDP applicable to each component, to determine if the identified deficiencies were resolved in accordance with the requirements of IEEE Std. 323-1974.

The inspectors reviewed the qualification program documents (such as the EQDP, applicable test procedures, component specifications, and test reports) to verify if the following qualification requirements were incorporated as required by UFSAR Ch. 3 and applicable Westinghouse design specifications:

- qualification methodology per IEEE Std. 323-1974;
- environmental parameters under normal operating conditions, abnormal conditions, and design basis events;
- simulated accident conditions, including, temperature, pressure, radiation, pH, and chemical additives; and
- post-accident conditions, including time and submergence.

The inspectors reviewed the margins applied to test parameters used during qualification of the equipment. Specifically, the inspectors reviewed parameters for temperature, pressure, and radiation to determine if the margins used met IEEE Std. 323-1974, Section 6.3.1.5.

In addition, the inspectors reviewed the test procedure, test plan, and test reports to verify that the tested profiles enveloped the limiting design basis parameters. Specifically, the inspectors reviewed the simulated accident conditions achieved during the qualification testing including temperature, pressure, radiation, pH, and chemical additives as recorded in the test reports.

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:

- 65001.06-02.04 - Testing and Verification

- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.06-Records
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors conducted an inspection of the PRHR HX to determine if it was fabricated in accordance with the requirements of ASME BPVC Section III, 1998 Edition 2000 Addenda, Subsection NB, WEC design and material specifications, and the UFSAR chapter 5. The inspectors reviewed fabrication and procurement records following welds and the adjoining materials:

- CW-029/1 Upper Tubesheet to Upper Channel Head;
- NZ-026/2 Lower Safe End to Hydro Cap;
- CW-032/1 Support Shell to Support Plate;
- CW-006/2 Lower Channel Head to Lower Support Plate;
- CL 018/1 Cladding on Upper Tubesheet;
- CL 018/2 Cladding on Lower Tubesheet;
- HW 21-121, 3/1 scalloped bars B03 to locking plate G13-G14;
- HW 21-020;
- HW 16-267;
- HW 16-246;
- HW 18-001; and
- PRHR HX Tubes.

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

The inspectors reviewed the PO for the PRHR HX to verify if the PO specified the proper quality and technical requirements; specifically 10 CFR 21, NQA-1, ASME Section III, and the WEC PRHR HX design specification.

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

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

The inspectors reviewed CMTRs to determine if the base metal met the following requirements:

- Chemical composition
- Tensile strength
- Yield strength
- Impact testing
- Drop weight testing
- Nil-ductility transition curve

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

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

The inspectors reviewed welding records and NDE records to determine if welding of the sampled components of the PRHR HX was performed in accordance with ASME Section III, subsection NB, ASME Section V, and ASME Section IX. The inspectors reviewed the PQRs used to qualify the welding procedures to determine if the PQRs defined the required variables specified in ASME Section IX. In addition, the inspectors reviewed material testing performed on the welding samples to determine if the type and number of qualification tests required received acceptable results in accordance with ASME Code requirements. Additionally, the inspectors reviewed the WPSs used to verify if they were written in accordance with the ASME Section IX requirements and were bounded by the PQR.

The inspectors reviewed welder performance qualifications to determine if welding personnel were qualified in accordance with ASME Section IX. Specifically, the inspectors reviewed qualification records to determine whether the welders were assigned a unique identification number and demonstrated their skill by performing specific performance qualification tests, the qualification testing conditions and qualification limits were fully documented, and the appropriate number of acceptable test results was achieved in accordance with ASME Code requirements. In addition, the inspectors reviewed weld monitoring sheets (weld travelers) to determine if the welding was performed in accordance with the applicable WPS. Specifically, the inspectors reviewed the weld monitoring sheets for the welder ID, type of weld process, welding parameters (i.e. amps, voltage, speed, preheat, and interpass temperature) to determine if the parameters recorded were in accordance with the WPS.

The inspectors reviewed NDE records of the welds to determine if the NDE followed the methods and met the acceptance criteria described in ASME Section III and ASME

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

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

In addition, the inspectors reviewed storage and shipping records of the Unit 3 PRHR HX after fabrication. The inspectors reviewed accelerometer readings to verify if the accelerations applied to the PRHR HX during shipping, from the manufacturer to the port of Charleston and from Charleston to the site, and were in accordance with the design specification and the technical manual. The inspectors also reviewed nitrogen concentration records to verify if the PRHR HX tubes were kept under a nitrogen blanket in accordance with the technical manual.

b. Findings

Introduction

The NRC identified an ITAAC finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50.55a(b), for SNC's failure to demonstrate compliance with ASME Code Section III, 1998 Edition with Addenda 1999 through 2000, Subarticle NB-5100, General Requirements for Examination. The inspectors identified that the licensee failed to ensure that radiographic films for the PRHR HX lower channel head to lower support plate weld (CW-006/2) met density limitations and IQI placement requirements.

Description

During the ASME mechanical component fabrication inspection conducted in April 30-May 10, 2018, the inspectors identified that the licensee failed to ensure that radiographic films met density limitations and IQI placement requirements for the PRHR HX full penetration weld joint CW-006/2, which connects the PRHR HX lower channel head to the lower support plate. The inspectors verified this weld to be a

Category A full penetration weld per ASME Code paragraph NB-3351, Welded Joint Category, and subparagraph NB-3351.1, Category A. Section 7.2 of the WEC fabrication specification APP-ME02-Z0-200, AP1000 PRHR HX Fabrication Specification, Rev. 2, and ASME Code Subarticle NB-5200, Required Examination of Welds for Fabrication and Preservice Baseline, which requires a radiographic examination of this welded joint. Additionally, ASME Code Subarticle NB-5100, General Requirements for Examination, requires RT be in accordance with ASME Code Section V, Article 2, Radiographic Examination.

The inspectors reviewed the radiographic examination report for weld CW-006/2 and noted the report documented that the radiograph of the weld conformed to applicable Code requirements. However, the inspectors' review of the radiographs identified five film sections that did not meet ASME Code Section V, Article 2 requirements. Sections 0-1, 11-12, and 15-16 exceeded the density requirements of ASME Code Section V, Article 2, subparagraph T-282.1, Density Limitations. The inspectors determined that these film sections were outside the density limitations of 2.0 to 4.0. Sections 1-2 and 16-17 did not meet the requirements of ASME Code Section V, Article 2, subparagraph T-277.1, Placement of IQI. The inspectors determined that the IQI for these film sections was not placed on the weld so that the length of the wires were perpendicular to the length of the weld.

The licensee entered this issue into their corrective action program as CR 10491047 and generated nonconformance and disposition (N&D) report SV3-ME02-GNR-000002, SV3 PRHR HX RT Film Deficiency, Rev. 0. During the inspection period, the licensee performed additional radiographs on the five sections listed above and provided reasonable assurance that ASME Code Section III requirements were met for non-destructive examination of PRHR HX pressure boundary weld CW-006/2. Additionally, the inspectors reviewed the radiographs and associated RT report for the five new sections to ensure the film and report met ASME Code Section V, Article 2 requirements.

The inspectors noted that SNC developed CR 10392176 based on an NRC identified violation at the V.C. Summer plant where RT film did not meet the density requirements of ASME Section V, Article 2. However SNC's evaluation of this issue did not lead to proper corrective actions that would have identified and corrected the inadequate RT film at Vogtle 3 & 4.

Analysis

The licensee's failure to ensure that radiographic films met density limitations and IQI placement requirements for the Unit 3 PRHR HX full penetration weld joint CW-006/2 was a performance deficiency. The inspectors determined that three film sections were outside the density limitations of 2.0 to 4.0, and that two film sections did not have proper placement of the IQI. The finding was determined to be more than minor

because the performance deficiency represented an adverse condition that rendered the quality of a component indeterminate, and required substantive corrective action. The licensee performed additional radiographs in order to show ASME Code compliance. This is an ITAAC finding because the design commitment for ITAAC 2.2.03.02a (159) states Pressure boundary welds in components identified in Table 2.2.3-1 as ASME Code Section III meet ASME Code Section III requirements, and the acceptance criteria states A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. This finding is material to the ITAAC acceptance criteria because radiographic films 0-1, 1-2, 11-12, 15-16, and 16-17 failed to meet ASME Code Section III requirements. The acceptance of the RT report for weld CW-006/2 is based on all radiographic films meeting ASME Code Section III requirements. Through additional radiographs and an RT report, the licensee was able to demonstrate that the ASME Code Section III requirements were met, and that the performance deficiency was corrected.

The inspectors determined this finding was associated with the Procurement/Fabrication Cornerstone. The finding was not associated with a security finding; it was not associated with an IMC 2504 operational/construction program; and it was not associated with a repetitive, NRC-identified omission of a program critical attribute. Using IMC 2519, Appendix A, AP1000 Construction Significance Determination Process, the inspectors determined that the finding was associated with a system or structure; it was associated with the PXS system (PRHR) which is assigned to the intermediate risk importance column of the AP1000 Construction Significance Determination Matrix, and the licensee was able to demonstrate with reasonable assurance that the design function of the applicable structure or system would not be impaired by the deficiency (row 1 of the Construction Significance Determination Matrix). Therefore, this finding was of very low safety significance (Green).

The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Evaluation, P.2, in the area of Problem Identification and Resolution, in accordance with IMC 0613, Appendix F, Construction Cross-Cutting Areas and Aspects. Specifically, the licensee failed to thoroughly evaluate performance issues identified from construction experience and Condition Reports to ensure that resolutions address causes and extent of conditions commensurate with their safety significance [PI.2].

Enforcement

10 CFR Part 50.55a(b), “Use and conditions on the use of standards”, requires, in part, Systems and components of boiling and pressurized water-cooled nuclear power reactors must meet the requirements of the ASME BPVC and the ASME OM Code. ASME Code Section III, 1998 Edition with Addenda 1999 through 2000, paragraph NB-5111, Methods, of Subarticle NB-5100, General Requirements for Examination,

requires, in part, that Radiographic examination shall be by film radiography or real time radioscopy in accordance with Section V, Article 2. ASME Code Section V, Article 2, subparagraph T-282.1, Density Limitations, requires, in part, that the transmitted film density through the radiographic image of the body of the appropriate hole IQI or adjacent to the designated wire of a wire IQI and the area of interest shall be 1.8 minimum for single film viewing for radiographs made with an X-ray source and 2.0 minimum for radiographs made with a gamma ray source. The maximum density shall be 4.0 for either single or composite viewing. ASME Code Section V, Article 2, subparagraph T-277.1, Placement of IQIs, requires, in part, that the IQI(s) shall be placed on the weld so that the length of the wires is perpendicular to the length of the weld.

Contrary to the above, since January 27, 2017, the licensee failed to ensure that radiographic films for the PRHR HX lower channel head to lower support plate weld (CW-006/2) met density limitations and IQI placement requirements. Sections 0-1, 11-12, and 15-16 exceeded the density limitations of 2.0 to 4.0. The IQI for sections 1-2 and 16-17 was not placed on the weld so that the length of the wires were perpendicular to the length of the weld. The failure to comply with ASME Code examination requirements has the potential to result in not identifying and correcting unacceptable indications in pressure boundary welds. The licensee performed immediate corrective actions to demonstrate with reasonable assurance that the component would have been able to meet its design function. The licensee performed additional radiographs and provided reasonable assurance that ASME Code Section III requirements were met for non-destructive examination of PRHR HX pressure boundary weld CW-006/2. The licensee entered this finding into their corrective action program as CR 10491047. This violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the Enforcement Policy. This issue is identified as NCV 05200025/2018002-02, Failure to Meet Radiographic Film Requirements on PRHR HX.

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:

- 65001.03-02.03 - Installation and Welding
- 65001.04-02.02 - Pipe Support and Restraint Welding
- 65001.B-02.04-Production Controls

The inspectors observed in-process Shielded Metal Arc Welding (SMAW) for two carbon steel fillet welds on ASME Class 1 (BTA) square-tube pipe support PH-

11R0269 upstream of gate valve PXS-PL-V109 for the PRHR return line PXS-L104B, as shown on WEC isometric drawing SV3-PXS-PLW-041-R2. Specifically, the inspectors reviewed two weld data sheets to verify if the quality control (QC) hold points, sign-offs for material ID, preheat, and fit-up were controlled in accordance with the requirements of the ASME Code, Section III, NCA-4134.10 . In addition, the inspectors reviewed the welding material requisition (WMR) against both weld data sheet entries to verify if traceability of the welder and electrodes were controlled in accordance with the requirements of the ASME Code, Subsection NF.

In addition, the inspectors reviewed CMTR 6339162 for Lot-No. 1150S carbon steel electrodes to verify if the mechanical properties, chemical analysis, diffusible hydrogen, and fracture toughness were in accordance with the requirements of the ASME Code, Section III, NB-2400, and Section II, Part C, SFA-5.1 specification for 5/32" diameter E7018 MR classification.

The inspectors observed the fit-up and in-process welding of field weld SV3-PXS-PLW-041-4 that joins pipe spool PXS-PLW-041-2 to air operated ball valve PXS-PL-V108B, which makes up part of line PXS-L104B. Specifically, the inspectors performed an independent inspection of the weld joint to determine if the design and cleanliness requirements specified in the AP1000 weld end configuration drawing and the ASME general welding specification GWS-1 were met. In addition, the inspectors observed the in-process welding to determine if:

- the gas backing was the proper gas type and flow as specified in GWS-1 and in the weld procedure specification;
- the oxygen concentration was below the limit specified in GWS-1 prior to welding of the root pass;
- the shielding gas was the proper gas type and flow as specified in the weld procedure specification;
- the temperature of the base metal at the joint prior to welding met the preheat requirement of the weld procedure specification; and
- the welding variables specified in the weld procedure specification were adhered to.

Additionally, the inspectors reviewed welding material requisition ticket number 367865 and compared the issued filler rod size, type, and lot number against the WMR ticket to determine if the material was issued and controlled in accordance with procedure FMC-1, "Filler Material Control". Finally, the inspectors reviewed the rod size and type to determine if they met the requirements of the WPS.

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.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification

The inspectors observed in-process Gas Tungsten Arc Welding (GTAW) for two fillet welds on ASME Class 3 (JBC) stainless steel pipe support PH-11R2107 located at the bottom of the IRWST for screen cross-connect line L180B shown on isometric piping drawing SV3-PXS-PLW-100-R2. The inspectors reviewed two weld data sheets (WDSs) to verify if the QC hold points sign-offs for preheat and fit-up were controlled in accordance with the requirements of the ASME Code, Section III, NCA-4134.10, for FW-1 and -4 located at the base of both vertical I-beam columns shown on WEC weld map SV3-PXS-PHK-876822. The inspectors also reviewed two WMRs in the work area against both weld data sheet entries to verify if traceability of the welders and electrodes were controlled in accordance with the requirements of ASME Code, Subsection NF. The inspectors reviewed the fit-up inspection by QC in the weld data sheet to verify that the welder was using the fillet weld size for FW-4 in accordance with the WDS.

In addition, the inspectors reviewed WECTEC welding procedure WPS1-8.10HGT-NF-6 and supporting PQR- No. SP551 to verify if the weld test coupons and specimens were prepared, welded, and tested in accordance with the requirements of the 20 15 Edition of ASME Code Section IX, Articles 1 and 2, for applicable essential and nonessential welding variables.

The inspectors reviewed the following CMTRs for stainless steel bare solid rods to verity if the mechanical properties, chemical analysis, and delta ferrite were in accordance with the requirements of the ASME Code, Section III, Subarticle NB-2400, and Section II, Part C, SFA-5.9 specification for ER309L classification:

- CMTR 6338965 of Lot-No.1181K for 3/32" diameter;
- CMTR 6338965 of Lot-No.1181J for 1/8" diameter; and
- CMTR 7341113 of Lot-No.1243S for 1/8" diameter.

Finally, the inspector reviewed two GTAW stainless steel welder qualification records for CTB2095 and DVL2226 to verify if they were tested and certified in accordance with the requirements of the ASME Code, Section IX, Article 3, for applicable essential welding variables.

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:

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

The inspectors observed field activities associated with the installation of Unit 3 accumulator B discharge lines PXS-L027B and PXS-L029B. Specifically, the inspectors observed the fit-up and welding of line PXS-L027B (weld number SV3-PXS-PLW-023-1) to the upstream side and line PXS-L029B (weld number SV3-PXS-PLW-024-1) to the downstream side of motor-operated gate valve SV3-PXS-PL-V027B to verify if the welds were made in accordance with the ASME Code, Section III. The inspectors observed the fit-up inspection performed by quality control of field weld number SV3-PXS-PLW-024-1 to determine if the requirements of Inspection Plan F-S562-005, "Pipe Welding/Braze; ASME Section III Visual Pipe Weld Inspection" were met.

The inspectors also performed an independent inspection of the weld fit-up of both welds to determine if the weld joint geometry, including root opening and fit-up tolerances, met the requirements of the ASME general welding specification and E&DCR APP-GW-VFY-001. The inspectors observed the proper purge gas was used and an oxygen analyzer was utilized to determine if the requirements of the WPS were met prior to manual welding the root. The inspectors independently inspected the weld rods to determine if the welding consumables utilized were traceable and were in compliance with the WPS and the ASME Code. Finally, the inspectors observed the amperage, voltage, travel speed, heat input and maximum interpass temperature during machine welding of weld SV3-PXS-PLW-024-1 to determine if the WPS requirements were being met.

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:

- 65001.03-02.06 - Nondestructive Examination (NDE)

The inspectors reviewed computed radiography results for stainless steel field weld SV3-PXS-PLW-024-1 on the outlet side of motor-operated gate valve PXS-PL-V027B for the Unit 3 accumulator B discharge to DVI line PXS-L027B. The inspectors reviewed MISTRAS radiographic examination report V-18-RT-302-0242 and computer screen views to determine if the technique and brightness at the body of the required wire image quality indicator locations in the area of interest were in accordance with the requirements of MISTRAS radiography procedure 521-RT-302 and the ASME Code, Section V, Article 2, for an 8" diameter pipe weld of 0.906" thickness. The inspectors reviewed the computer screen displays to determine if the acceptance criteria of the ASME Code, Section III, Subsection NC-5320, were met for the upgraded Class 2 weld designation. Finally, the inspectors reviewed the above radiography report to determine if the results were accurately recorded in accordance with the quality assurance program.

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:

- 65001.03-02.03 - Installation and Welding
- 65001.07-02.01 - General Installation
- 65001.07-02.02 - Component Welding

The inspectors observed the installation of air-operated ball valve SV3-PXS-PL-V108B in the Unit 3 PRHR HX return line PXS-L104B to verify if the valve was installed in accordance with the ASME Code, Section III. The inspectors performed a direct visual inspection of the valve to verify its location, orientation, type, and flow direction met the

requirements of the applicable drawing and vendor manual. The inspectors performed an independent inspection of the fit-up of the valve, field weld SV3-PXS-PLW-041-4, 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 in accordance with the quality assurance program. Finally, the inspectors reviewed CMTRs contained within quality release and CoC documents for the valve, specifically valve serial number 0019089970, which was installed in valve location V108B. The inspectors reviewed the documents to determine if the valve body (serial number AA006636) and bonnet (serial number 816594-1) 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 2.2.03.02a (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

The inspectors observed the installation of motor-operated gate valve SV3-PXS-PL-V027B in the Unit 3 accumulator discharge line PXS-L027B to verify if the valve was installed in accordance with the ASME Code, Section III. The inspectors performed a direct visual inspection of the valve to verify 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 fit-up of the valve to the discharge line, field welds SV3-PXS-PLW-024-1 and SV3-PXS-PLW-023-1, 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 independently inspected the valve gate to determine if it was closed into the seat prior to welding in accordance with the installation instructions in the Flowserve maintenance manual.

The inspectors reviewed 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. Finally, the inspectors reviewed CMTRs contained within quality release and CoC documents for the valve, specifically valve serial number BN185, which was installed in valve location V027B. The inspectors reviewed the documents to determine if the valve body (serial number K3713-2) was made of SA351 CF3M material and the valve bonnet (serial number L2601-1) was made of SA-182 F316 material as required by the design drawing, and the material met the chemical and physical requirements of the ASME Code, Section II.

b. Findings

No findings were identified.

1A22 (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.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors reviewed procurement and fabrication records associated with material of the Unit 3 squib valves to determine if the valves met requirements of the ASME BPVC, Section III, 1998 Edition 2000 Addenda, WEC design and fabrication specifications, and the UFSAR chapter 5.4.6. The inspectors reviewed the following parts of the Unit 3 8-inch squib valve S/N 0920-16445-4-2:

- valve body;
- valve bonnet;
- shear cap A; and
- cartridge cover nuts.

The inspectors reviewed design documents to determine if critical dimensions of the parts identified were captured in the final as-built condition of the components in accordance with the ASME Code, WEC design specification, design drawings, and the UFSAR requirements. The inspectors reviewed POs for the squib valves to verify if the POs specified the proper quality and technical requirements; specifically 10 CFR 21, NQA-1, ASME Section III, and the WEC PRHR HX design specification.

The inspectors reviewed a sample of fabrication records to determine if the base materials were fabricated in accordance with the requirements of ASME Section II, ASME Section III, and the WEC material specifications. For the base metal, the inspectors reviewed the fabrication plan to determine if the plan outlined the requirements of ASME Section III for material fabrication and testing. The inspectors reviewed CMTRs to determine if the base metal met the following requirements:

- Chemical composition
- Tensile strength
- Yield strength
- Impact testing
- Drop weight testing
- Nil-ductility transition curve

The inspectors also reviewed ASME Code Form NPV-1 reports to determine if the ANI authorized the application of the Code symbol stamp in accordance with ASME Section III, NCA-8000. The inspectors also reviewed hydrostatic test reports to determine if ASME Section III Code minimum pressure and time requirements were met.

The inspectors reviewed fabrication records for the above components to verify if required heat treatment, NDE, and additional tests were performed, and the sequence of these activities were conducted in accordance with ASME Code and the WEC design specification. The inspectors reviewed the heat treatment reports to determine if heat treatment was performed in accordance with the material specifications and ASME, Section II. For NDE, the inspectors reviewed UT and PT reports to determine if the records were complete and if the exams were performed in accordance with ASME Section V, Articles 5 and 6 respectively.

The inspectors reviewed an E&DCR to determine if the design specification was revised to reflect allowable hydrostatic test sequencing of valve components as specified in ASME Section III, NB-6000.

The inspectors observed storage conditions for the Unit 3 8-inch squib valves to determine if the storage areas met the requirements of WECTEC QS 13.11. Specifically, the inspectors observed the storage area to determine if the storage requirements met those described in the squib valve technical manual to determine if the valves were sealed to protect against corrosion, contamination, and deterioration. The inspectors also observed the storage area to determine if it was clearly marked and roped off to preclude misuse and physical damage in accordance with WECTEC equipment storage procedures. The inspectors reviewed component identification tags at the storage location to determine if the component identification numbers matched the identification numbers on the purchasers receiving inspection records.

b. Findings

No findings were identified.

1A23 (Unit 3) ITAAC Number 2.2.03.05a.i (165) / Family 14A
(Unit 4) ITAAC Number 2.2.03.05a.i (165) / Family 14A

a. Inspection Scope

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

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

The inspectors reviewed documents for ASME BPVC, Section III, Class 2 and 3, Auxiliary Relief Valves, (commodity PV16), to verify if the following activities were performed in accordance with the requirements for qualification contained in UFSAR Chapter 3:

- the licensee used the appropriate limiting design basis parameters as per the applicable seismic input for the seismic qualification of the SSCs;
- the applicable design basis documents and calculations were correctly incorporated into the qualification program for the SSCs;
- seismic qualification was completed and controlled in accordance with Regulatory Guide 1.100, IEEE Std. 344-1987, ASME QME-1-2007, and applicable design specifications;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSCs can withstand the conditions that would exist before, during, and following a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

Specifically, the inspectors performed these reviews for PXS-PL-V022A, accumulator A pressure relief valve (PV16).

The inspectors reviewed a sample of test deficiencies identified during the seismic qualification process, as documented in the EQDP applicable to each component, to

determine if the technical justifications were in accordance with the UFSAR, Chapter 3.

The inspectors reviewed the UFSAR Chapter 3, Attachment E to identify the limiting design basis parameters that were to be used as input for the qualification of the SSC. The inspectors reviewed the qualification program documents (such as the EQDP, EQSR, applicable test procedures, test specifications, and test reports) to verify that the following qualification requirements were incorporated properly:

- design codes,
- analysis and testing methodologies,
- load combinations, and
- required seismic forces and effects.

b. Findings

No findings were identified.

1A24 (Unit 3) ITAAC Number 2.2.03.05a.i (165) / Family 14A
(Unit 4) ITAAC Number 2.2.03.05a.i (165) / Family 14A

a. Inspection Scope

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

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

The inspectors interviewed responsible staff and reviewed documents associated with the equipment qualification for Class 1E low voltage cables for instrumentation and thermocouple extension cables (commodity EW21), power cables (commodity EW50), and control cables (commodity EW60) to verify if the following activities were performed in accordance with the requirements in 10 CFR 50.49, applicable methodology in the UFSAR Ch. 3, IEEE Std. 323-1974:

- the licensee used the appropriate limiting design basis parameters (i.e. environmental temperature, pressure, total radiation dose, radiation dose rate, cycling, electrical parameters and humidity) as input for the environmental qualification of the SSC;
- necessary design basis documents and calculations were correctly incorporated into the qualification program, as described in the applicable EQDP, for the SSC;

- qualification results met the acceptance criteria stated in the applicable design specification and the ITAAC;
- the documented qualified life was consistent with the results of the qualification activities;
- design loads applied to the cables were limited to remain within the qualified life results;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSC can withstand the conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function; and
- environmental qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

The inspectors reviewed a sample of test deficiencies identified during the environmental qualification process, as documented in the EQDP applicable to each component, to determine if the identified deficiencies were resolved in accordance with the requirements of IEEE Std. 323-1974.

The inspectors reviewed the qualification program documents (such as the EQDP, applicable test procedures, component specifications, and test reports) to verify if the following qualification requirements were incorporated as required by UFSAR Chapter 3 and applicable Westinghouse design specifications:

- qualification methodology per IEEE Std. 323-1974;
- environmental parameters under normal operating conditions, abnormal conditions, and design basis events;
- simulated accident conditions, including, temperature, pressure, radiation, pH, and chemical additives; and
- post-accident conditions, including time and submergence.

The inspectors reviewed the margins applied to test parameters used during qualification of the equipment. Specifically, the inspectors reviewed the parameters for temperature, pressure, and radiation to determine if the margins used met IEEE Std. 323-1974, Section 6.3.1.5:

In addition, the inspectors reviewed the test procedure, test plan, and test reports to verify that the tested profiles enveloped the limiting design basis parameters. Specifically, the inspectors reviewed the simulated accident conditions achieved during the qualification testing including temperature, pressure, radiation, pH, and chemical additives as recorded in the test reports.

b. Findings

No findings were identified.

1A25 (Unit 3) ITAAC Number 2.2.03.08c.v.01 (187) / Family 06A

a. Inspection Scope

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

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

The inspectors performed an inspection to verify the elevation of Unit 3 CMT B with respect to the reactor pressure vessel DVI nozzle satisfied the ITAAC requirement. The inspectors reviewed quality records including the Principal Closure Document (PCD) and as-built drawings to verify the elevation of the bottom inside tank surface is higher than the DVI nozzle centerline by at least 7.5 feet as specified in Table 2.2.3-4 of Appendix C of the COL. The inspectors reviewed survey results and took independent measurements to validate the licensee's calculation of the minimum elevation difference was in accordance with Table 2.2.3-4 of Appendix C of the COL. In addition, after its placement inside the containment building at elevation 107'-2", the inspectors performed independent measurements of the centerline of the CMT manway cover to the bottom of the tank's feet and the tank bottom inside surface to the end of the outlet nozzle to verify the as-built dimensions were consistent with the as-built drawings to validate these key dimensional inputs to the licensee's calculation.

b. Findings

No findings were identified.

1A26 (Unit 3) ITAAC Number 2.2.05.05a.i (259) / Family 12A
(Unit 4) ITAAC Number 2.2.05.05a.i (259) / Family 12A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.05.05a.i (259). The inspectors used the following NRC IPs/sections to perform this inspection:

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

- 65001.E-02.04-Documentation
- 65001.E-02.06-Problem Identification and Resolution

The inspectors reviewed documents for ASME BPVC, Section III, Class 2 and 3, auxiliary relief valves, (commodity PV16), to verify if the following activities were completed in accordance with the requirements contained in UFSAR Chapter 3:

- the licensee used the appropriate limiting design basis parameters as input for the seismic qualification of the SSCs;
- the necessary design basis documents and calculations, as appropriate, were incorporated into the qualification program for the SSCs;
- seismic qualification was completed and controlled in accordance with Regulatory Guide 1.100, IEEE Std. 344-1987, ASME QME-1-2007, and applicable design specifications;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and that the qualification report concluded that the SSCs can withstand the conditions that would exist before, during, and following a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

Specifically, the inspectors performed these reviews for VES-PL-V040A, air tank safety relief valve A (PV16).

The inspectors reviewed a sample of test deficiencies identified during the seismic qualification process, as documented in the EQDP applicable to each component, to determine if the technical justifications were in accordance with the UFSAR, Chapter 3.

The inspectors reviewed the qualification program documents (such as the EQDP, EQSR, applicable test procedures, test specifications, and test reports) to verify that the following qualification requirements were incorporated as required by UFSAR Chapter 3:

- design codes,
- analysis and testing methodologies,
- load combinations, and
- required seismic forces and effects.

b. Findings

No findings were identified.

1A27 (Unit 3) ITAAC Number 2.3.06.05a.i (361) / Family 06A

(Unit 4) ITAAC Number 2.3.06.05a.i (361) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.3.06.05a.i (361). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed documents for ASME BPVC, Section III, Class 2 and 3, auxiliary relief valves, (commodity PV16), to verify if the following activities were completed in accordance with the requirements contained in UFSAR Chapter 3:

- the licensee used the appropriate limiting design basis parameters as input for the seismic qualification of the SSCs;
- the applicable design basis documents and calculations were correctly incorporated into the qualification program for the SSCs;
- seismic qualification was adequately completed and controlled in accordance with Regulatory Guide 1.100, IEEE Std. 344-1987, ASME QME-1-2007, and applicable design specifications;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and that the qualification report concluded that the SSCs can withstand the conditions that would exist before, during, and following a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

Specifically, the inspectors performed these reviews for RNS-PL-V021, normal residual heat removal system (RNS) hot leg suction pressure relief valve (PV16).

The inspectors reviewed a sample of test deficiencies identified during the seismic qualification process, as documented in the EQDP applicable to each component, to determine if the technical justifications were in accordance with the UFSAR, Chapter 3.

The inspectors reviewed the qualification program documents (such as the EQDP, EQSR, applicable test procedures, test specifications, and test reports) to verify that the following qualification requirements were incorporated as required by UFSAR Chapter 3:

- design codes,
- analysis and testing methodologies,
- load combinations, and
- required seismic forces and effects.

b. Findings

No findings were identified.

1A28 (Unit 3) ITAAC Number 2.5.02.02.i (522) / Family 10A
(Unit 4) ITAAC Number 2.5.02.02.i (522) / Family 10A

a. Inspection Scope

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

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

The inspectors reviewed documents for the protection and safety monitoring system (PMS) cabinets (commodity code JD01) and interviewed personnel to verify if the following activities were completed in accordance with the requirements contained in UFSAR Chapter 3:

- the licensee used the appropriate limiting design basis parameters as input for the seismic qualification of the SSCs;
- the applicable design basis documents and calculations were correctly incorporated into the qualification program for the SSCs;
- seismic qualification was completed and controlled in accordance with Regulatory Guide 1.100, IEEE Std. 344-1987, ASME QME-1-2007, and applicable design specifications;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSCs can withstand the conditions that would exist before, during, and following a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

The inspectors reviewed a sample of test deficiencies identified during the seismic qualification process, as documented in the EQDP applicable to each component, to determine if the technical justifications were in accordance with the UFSAR, Chapter 3.

The inspectors reviewed the qualification program documents (such as the EQDP, EQSR, applicable test procedures, test specifications, and test reports) to verify if the following qualification requirements were incorporated as required by UFSAR Chapter 3:

- design codes,
- analysis and testing methodologies,
- load combinations, and
- required seismic forces and effects.

b. Findings

No findings were identified.

1A29 (Unit 3) ITAAC Number 2.5.02.02.i (522) / Family 10A
(Unit 4) ITAAC Number 2.5.02.02.i (522) / Family 10A

a. Inspection Scope

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

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

The inspectors reviewed documents for PMS cabinets (commodity JD01) and interviewed personnel to verify if the following activities were completed in accordance with the requirement contained in UFSAR Chapter 3:

- the licensee used the appropriate limiting design basis parameters as input for the environmental qualification of the SSC;
- the applicable design basis documents and calculations were correctly incorporated into the qualification program for the SSC;
- environmental qualification of SSCs was completed and controlled in accordance with the requirements in 10 CFR 50.49, applicable methodology in the UFSAR Ch. 3, IEEE Std. 323-1974, and the results met the acceptance criteria stated in the applicable design specification and the ITAAC;

- the documented qualified life was consistent with the results of the qualification activities;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and the qualification report concluded that the SSC can withstand the conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function; and
- environmental qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

The inspectors reviewed a sample of test deficiencies identified during the environmental qualification process, as documented in the EQDP applicable to each component, to determine if the technical justifications were in accordance with IEEE Std. 323-1974.

Specifically, the inspectors performed these reviews for the following components associated with commodity JD01:

- PMS Cabinets, Division A
- PMS Cabinets, Division B
- PMS Cabinets, Division C
- PMS Cabinets, Division D

The inspectors reviewed the qualification program documents (such as the EQDP, EQSR, applicable test procedures, test specifications, and test reports) to verify if the following qualification requirements were incorporated as required by UFSAR Chapter 3:

- qualification methodology per IEEE Std. 323-1974;
- environmental parameters under normal operating conditions, abnormal conditions, and design basis events;
- simulated accident conditions, including, temperature, pressure, radiation, and humidity; and
- post-accident conditions, including time and submergence.

The inspectors reviewed the margins applied to test parameters used during qualification of the equipment to determine if the margins used met IEEE Std. 323-1974, Section 6.3.1.5:

- temperature;
- voltage;
- frequency; and
- environmental transients.

In addition, the inspectors reviewed the test procedure, test plan, and test reports to verify that the tested profiles enveloped the limiting design basis parameters.

Specifically, the inspectors reviewed the simulated normal operating conditions and abnormal conditions including temperature, pressure, humidity, and radiation as recorded in the test reports.

b. Findings

No findings were identified.

1A30 (Unit 3) ITAAC Number 2.5.02.02.i (522) / Family 10A
(Unit 4) ITAAC Number 2.5.02.02.i (522) / Family 10A

a. Inspection Scope

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

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

The inspectors reviewed equipment qualification documents and interviewed personnel for the following SSCs associated with commodity JD01 in the area of electromagnetic compatibility (EMC):

- PMS Cabinets, Division A
- PMS Cabinets, Division B
- PMS Cabinets, Division C
- PMS Cabinets, Division D

The inspectors reviewed the qualification summary report and data package to verify if the qualification was conducted in accordance with Section 1.9 of the UFSAR, and the results met the acceptance criteria stated in the design specification and the ITAAC. The inspectors specifically reviewed APP-PMS-VBR-002, EQDP for PMS Cabinets and NIS Auxiliary Panels for Use in the AP1000 Plant and APP-PMS-VBR-003, Equipment Qualification Summary Report for PMS Cabinets and NIS Auxiliary Panels for Use in the AP1000 Plant, to verify if the SSCs were qualified for EMC in accordance with design specifications.

The inspectors reviewed test reports to verify if testing was performed in conformance with Regulatory Guide 1.180, as committed to in the UFSAR, and included applicable MIL-STD-461E and IEC 61000-4 series tests. The test results were reviewed to verify if the SSCs were qualified to demonstrate the capability to withstand electrical surges and electromagnetic interference (EMI), radio frequency interference (RFI), and

electrostatic discharge (ESD) conditions that exist where the SSCs will be located in the plant.

The inspectors also reviewed test results to verify if test anomalies were identified, documented, and resolved in accordance with the equipment qualification program. The inspectors evaluated resolutions to test anomalies that required modifications to the SSCs to verify if quality attributes that demonstrated EMC qualification were maintained. Alternate qualification methods that were used in place of conventional testing were evaluated to determine if those alternate methods were employed while maintaining compliance with regulatory requirements and the licensing bases. The inspectors reviewed EMC equipment qualification records to ensure they were auditable, clear, and complete in order to support the closure of the ITAAC.

b. Findings

No findings were identified.

1A31 (Unit 3) ITAAC Number 2.6.03.02.i (597) / Family 08A
(Unit 4) ITAAC Number 2.6.03.02.i (597) / Family 08A

a. Inspection Scope

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

- 65001.E-02.03-Qualification
- 65001.E-02.04-Documentation
- 65001.E-02.06-Problem Identification and Resolution

The inspectors reviewed documents for 250 VDC switchboards (commodity DS01) and interviewed personnel to verify if the following activities were completed in accordance with the requirements of UFSAR Chapter 3:

- the licensee used the appropriate limiting design basis parameters as per the applicable seismic input for the seismic qualification of the SSCs;
- the applicable design basis documents and calculations were incorporated into the qualification program for the SSCs;
- seismic qualification was completed and controlled in accordance with Regulatory Guide 1.100, IEEE Std. 344-1987, ASME QME-1-2007, and applicable design specifications;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes and that the qualification report concluded that the SSCs can withstand the conditions that would exist before, during, and following

a design basis seismic event without loss of safety function for the time required to perform the safety function; and
- seismic qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

Specifically, the inspectors performed these reviews for the following components associated with the indicated commodity:
- IDSA-DS-1, Division A 250 VDC Switchboard 1 (DS01)
- IDSB-DS-2, Division B 250 VDC Switchboard 2 (DS01)

The inspectors reviewed a sample of test deficiencies identified during the seismic qualification process, as documented in the EQDP applicable to each component, to determine if the technical justifications were in accordance with the UFSAR, Chapter 3.

The inspectors reviewed the qualification program documents (such as the EQDP, EQSR, applicable test procedures, test specifications, and test reports) to verify that the following qualification requirements were incorporated properly:
- design codes,
- analysis and testing methodologies,
- load combinations, and
- required seismic forces and effects.

b. Findings

No findings were identified.

1A32 (Unit 3) ITAAC Number 3.2.00.01c.ii (742) / Family 16E
(Unit 4) ITAAC Number 3.2.00.01c.ii (742) / Family 16E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.2.00.01c.ii (742). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.23-App A.03.07 - Processing of Results and Resolving HEDs
- 65001.D-02.03-Test Results Review

The inspectors performed a Principal Closure Document inspection of the Integrated System Validation (ISV) to verify that the AP1000 operators could demonstrate capability to manage evolutions and events for plant scenarios. The inspectors

performed a review of the following scenarios in accordance with ITAAC Number 3.2.00.01c.ii (742):

- Heat up and start up the plant to 100% power;
- Shutdown and cool down the plant to cold shutdown;
- Bring the plant to safe shutdown following the specified transients; and
- Bring the plant to a safe, stable shutdown following the specified accidents listed in the ITAAC.

The inspectors reviewed the applicable sections of APP-OCS-GEH-320, AP1000 Human Factors Engineering Integrated System Validation Plan, Revision 6, dated January 2015, and Revision 7, dated February 2018, which contained the acceptance criteria associated with ISV re-testing activities. The inspectors reviewed the plan to determine if it contained criteria for the following:

- re-test requirements,
- scenario content,
- ISV team performance, and
- performance measures to verify that they were adequately implemented.

The inspectors reviewed the contents of APP-OCS-GER-420, AP1000 Human Factors Engineering Integrated System Validation Report, Revision 0, dated June 2018, to verify that the report contained the appropriate scenarios selected for ISV re-test in accordance with the results of the initial ISV testing as documented in APP-OCS-GER-320, AP1000 Human Factors Engineering Integrated System Validation Report, Revision 3, dated October 2016.

The inspectors reviewed the performance of the ISV test scenarios to verify that they were executed in accordance with the Human Factors Engineering (HFE) verification and validation plan APP-OCS-GEH-320, AP1000 Human Factors Engineering Integrated System Validation Plan, Rev. 7, and work instruction, WNA-WI-0056-WAPP, Human Factors Engineering Integrated System Validation Work Instruction, Rev 5.

The inspectors reviewed APP-OCS-GER-320, AP1000 Human Factors Engineering Integrated System Validation Report, Rev.3 and APP-OCS-GER-420, AP1000 Human Engineering Discrepancy Resolution Summary Report, Rev. 0 to verify that the operating crews were capable of adequately completing the pass/fail criteria for the scenarios.

Finally, the inspectors reviewed the acceptance of the test results and evaluation, to verify that the licensee had performed an independent review and accepted the tests results in accordance with ND-RA-001-008, ITAAC Principal Closure Document Review and Development version 10.1.

b. Findings

No findings were identified.

1A33 (Unit 3) ITAAC Number 3.2.00.01d (743) / Family 16F
(Unit 4) ITAAC Number 3.2.00.01d (743) / Family 16F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.2.00.01d (743). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.23-App A.03.07 - Processing of Results and Resolving HEDs
- 65001.D-02.03-Test Results Review

The inspector performed a Principal Closure Document inspection of APP-OCS-GER-420, AP1000 Human Engineering Discrepancy Resolution Summary Report, Rev. 0 to verify the report contained the scenarios selected for retest in accordance with the results of the ISV testing documented in APP-OCS-GER-320, AP1000 Human Factors Engineering Integrated System Validation Report, Rev. 3.

The inspectors reviewed APP-OCS-GER-420 and the following implementation plans and work instructions:

- APP-OCS-GEH-320, AP1000 Human Factors Engineering Integrated System Validation Plan, Rev. 7;
- APP-OCS-GEH-420, AP1000 Human Factors Engineering Discrepancy Resolution Process, Rev. 2;
- WNA-WI-00411-WAPP, Human Engineering Discrepancy Resolution Process Work Instruction, Rev. 4; and
- WNA-WI-00560-WAPP, Human Factors Engineering Integrated System Validation Work Instruction, Rev. 5.

The inspectors performed these document reviews to verify the documented Human Engineering Discrepancy (HEDs) were prioritized, categorized, tracked, and adequately addressed in the final AP1000 Human Factors Engineering (HFE) design configuration and the human factor issues identified were resolved in accordance with the resolution process.

The inspectors reviewed Appendix B of APP-OCS-GER-420, which contained a listing of new findings identified during ISV re-testing activities, to verify that the findings would not necessitate further testing either due to being limited in number or of low significance. The inspectors reviewed the new findings to verify they were assessed in accordance with the plans and procedures governing the resolution process.

The inspectors reviewed the HED items deferred to the site design implementation process to verify they were characterized and tracked in accordance with the approved implementation plan. Specifically, the inspectors reviewed the open HEDs in SmartPlant, the credited HED tracking tool. The inspectors reviewed these open items to assess that they were categorized properly as items to be resolved in the as-built plant in accordance with the implementation plan. Specifically the inspectors reviewed these factors to verify that they consisted primarily of environmental factors, tuning, space related issues, and Risk Important Human Actions times that would be observed in physical space outside the main control room (MCR) in the as-built plant configuration. In addition, the inspectors reviewed the Priority 1 HEDs to verify they were closed during the re-test activities.

Finally, the inspectors reviewed the acceptance of the test results and evaluation, to verify that the licensee had performed an independent review and accepted the tests results in accordance with ND-RA-001-008, ITAAC Principal Closure Document Review and Development version 10.1.

b. Findings

No findings were identified.

1A34 (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.F-02.01-Design Document Review

The inspectors performed an in-office review of design and construction documents associated with the SPL 18 module which supports the maintenance floor mezzanine at elevation 118’ 4”. This review was conducted to verify if the design and construction documents adequately defined the final design and arrangement of the SPL 18 structural components and to determine if the design was completed in accordance with the applicable technical and quality requirements. Specifically, the inspectors reviewed the SPL 18 work package and associated documents, two design calculations, two E&DCRs, and four design drawings. For this review, the inspectors compared the significant design assumptions, allowable stress values, stress limit coefficients, and stress ratios documented in the calculations with the applicable sections of AISC N690-94 to determine if the design was compliant with the UFSAR Section 3.8.3 and Appendix 3H.

The inspectors also reviewed a sample of construction details provided on the drawings and E&DCRs documenting design changes to determine if the design control measures associated with completion of design output documents and design changes, respectively, were in accordance with 10 CFR 50 Appendix B, Criterion III, Design Control. For this review, the inspectors compared the construction details with the design documented in the calculations to verify if the design was correctly translated into design output documents. The inspectors also reviewed the design control measures used for approval of the E&DCRs to verify if design changes were subject to design control measures commensurate with those applied to the original design.

b. Findings

No findings were identified.

1A35 (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.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.B-02.06-Records

The inspectors walked down and inspected ongoing welding activities of the structural steel (SPL 18/51) supporting the operating floor (which is at 135' level) inside of the containment to determine if it was being done in accordance with the requirements of the AWS D1.1 Structural Steel Welding Code. The inspectors conducted a walkdown of the structural steel weld fit up and discussed the fitup processes and requirements with the QC and field engineering staff to determine if fit up was being performed in accordance with the requirements of the American Welding Society (AWS) Code. The inspectors also chose a finished weld, number 870404-62, and inspected its records to determine if the weld had been made in a controlled and documented way that gave traceability to all aspects of the welding activity. The inspectors reviewed the weld traveler from the work package (SV3-1140-SPW-800006) to determine if all required work steps had been finished; inspections and hold points had been signed; and required information had been documented.

The inspectors reviewed the CMTR for the heat of filler metal that had been used to verify that the material was traceable to the CMTR. The inspectors traced the heat number for the weld filler metal to CMTR 1188J to determine if identification and

traceability was maintained throughout fabrication as required by 10 CFR Part 50 Appendix B Criterion VIII. The inspectors also reviewed the CMTR to determine if the material had been fabricated and tested in accordance with ASME SFA 5.1. The inspectors reviewed the ultrasonic examination report, MISTRAS report V-18-UT-310-0767, to determine if the weld had been inspected and was free of rejectable indications in accordance with the AWS Code.

The inspectors reviewed the welding procedure, WPS1-1.1C01 Rev. 6, to determine if it had been written in accordance with the AWS D1.1, Structural Steel Welding Code. The inspectors reviewed the associated PQRs (PQ588, PQ607A, and PQ607B) to determine if the procedure had been qualified in accordance with AWS D1.1. Lastly, the inspectors reviewed the welder's qualification records (ID PER6343) to determine if he/she had been qualified to make the weld in accordance with the AWS D1.1 Structural Steel Welding Code.

b. Findings

No findings were identified.

1A36 (Unit 3) ITAAC Number 3.3.00.02a.i.b (761) / Family 01F

a. Inspection Scope

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

- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed records associated with the Vogtle Unit 3 shield building with a focus on the air inlet (AI) modules. For the AI modules, the inspectors sampled aspects of design, procurement, fabrication, receipt inspection, and storage.

The inspectors performed a review of the design calculations and a sample of E&DCRs to verify the air inlet module faceplates, which consists of steel plate and studs, and the air inlet pipe met the requirements of ACI 349, AISC N690, and AWS D1.1.

Inspectors also reviewed construction specifications and design drawings associated with air inlet modules AI-21 and AI-42. These documents were reviewed to verify if the specific material and design requirements for the faceplate, stud and air inlet pipe

identified in the design calculations were correctly translated into documents used for the fabrication and construction of the air inlet modules in accordance with 10 CFR 50, Appendix B, Criterion III.

The inspectors reviewed a sample of fabrication and receipt inspection documentation for AI modules AI-21 and AI-42. Inspectors reviewed the fabrication and receipt inspection documentation to verify if they were fabricated in accordance with American Concrete Institute (ACI)-349 and AISC N-690. The inspectors reviewed CMTRs for the plate material and studs of the AI walls to determine if they were consistent with the requirements of the material specifications specifically, for chemical and mechanical properties. The inspectors also reviewed NDE reports to determine if the components were tested in accordance with the fabrication specification. Additionally, the inspectors reviewed the material requirements for the air inlet piping to verify if the piping material met the requirements of AISC N690-94, where required.

The inspectors conducted a walkdown and performed independent measurements for modules AI-21 and AI-42 to determine if the as-built configuration was in conformance with the design drawings. Specific measurements included faceplate thickness, overall module thickness, stud size and spacing, tie bar size and spacing, and various welds. During this walkdown, the inspectors also reviewed the storage of the components to determine if they were stored in accordance with the requirements of Criterion XIII, Handling, Storage and Shipping, of Appendix B to 10 CFR Part 50.

b. Findings

No findings were identified.

1A37 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.03 - Special Considerations
- 65001.02-02.09 - Concrete Quality Process Problems
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F-02.01-Design Document Review

The inspectors reviewed design drawings and observed ongoing work associated with construction of the reinforced concrete wall along column line 11 between column lines L and Q from elevation 117'-6" to 135'-3" in the Unit 3 auxiliary building.

The inspectors reviewed the design drawings to determine whether the design documents adequately defined the final design and arrangement of this critical section and the design being implemented was consistent with that described in UFSAR Section 3.8.4 and Appendix 3H; Vogtle Unit 3 Combined License (COL), Appendix C, Section 3.3; and code commitments in ACI 349-01, AWS D1.1:2000, and AWS D1.4:1998. The inspectors observed installation activities to verify 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 the size, spacing, location, orientation, types and locations of splices, and configuration of the reinforcing steel to verify the wall section was constructed in accordance with the approved design drawings, construction specifications, and code commitments in ACI 349-01, AWS D1.1:2000, and AWS D1.4:1998.

The inspectors independently assessed the formwork prior to concrete placement to verify it was secure, leak tight, and free from debris or excess water as required by ACI 349-01, the quality assurance program, and specifications. The inspectors observed concrete pre-placement activities to verify pre-placement planning and training had been completed and the pre-placement inspection was performed by quality control before any concrete was placed as required by specifications, ACI 349-01, NQA-1-1994, and the quality assurance program. The inspectors reviewed the work package to verify it included concrete placement planning and considerations for hot temperatures, inclement weather, and pumping restrictions in accordance with specifications, ACI 349-01, and NQA-1-1994.

The inspectors observed concrete placement activities to verify approved work instructions, procedures, and specifications were available in the work area and were followed throughout the concrete placement as required by the quality assurance program and 10 CFR 50 Appendix B. During the concrete placement, the inspectors observed concrete placement activities to verify the placement did not result in mix segregation as specified in SV4-CC01-Z0-031. Additionally, the inspectors observed concrete lift heights and placement practices to verify they followed the site specifications and ensured adequate consolidation as required by ACI 349-01. The inspectors observed the use of vibrators to verify they were handled and operated to ensure adequate consolidation, avoid voiding or honeycombing, and did not result in concrete segregation in accordance with procedures and specifications.

During the concrete placement, the inspectors evaluated two placement batch tickets as they were being filled out and signed by the concrete truck drivers, field engineers, and quality control inspectors to verify each batch ticket was reviewed for transport

time and truck rotations, verification of proper mix, and placement location in accordance with the quality assurance program, procedures, specifications, and ACI 349-01. The inspectors reviewed two placement batch tickets throughout the concrete placement to verify records were produced and indicated mix, location, time placed, and required signatures were documented in accordance with the quality assurance program, procedures, specifications, and ACI 349-01.

During the concrete placement, the inspectors observed in-process concrete testing, including concrete temperature, slump, air content, and unit weight. The inspectors performed this observation to verify testing was executed at the proper location, frequency, and sample collection and testing techniques conformed to the specifications and ASTM standards. In addition, the inspectors observed the testing to determine if test results were evaluated against applicable quantitative and qualitative acceptance criteria in accordance with the quality assurance program, 10 CFR 50 Appendix B, procedures, specifications, and ASTM standards. During in-process concrete testing, the inspectors observed the making and initial curing of concrete strength test sample cylinders to verify they were made at the required location and frequency and were cured in accordance with specified requirements of the quality assurance program, procedures, specifications, and ASTM standards. The inspectors interviewed the personnel performing the in-process concrete testing to verify they were knowledgeable of and adhered to the requirements of the quality assurance program, 10 CFR 50 Appendix B, and the specifications.

Additionally, the inspectors observed the concrete placement processes and reviewed the process documentation included in the work package to verify process controls were in place; any process related issues did not adversely affect the concrete quality;, and issues identified were adequately documented and corrected in accordance with the quality assurance program, NQA-1-1994, and the specifications.

The inspectors reviewed a sample of three 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 these design changes to verify the issues were resolved and the dispositions had suitable technical bases in accordance with the quality assurance program, design codes, and 10 CFR 50 Appendix B.

b. Findings

No findings were identified.

1A38 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.F-02.04-General QA Review

The inspectors performed inspection activities associated with the Unit 3 wall located on column line 7.3 between the shield building and column line I 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 and engineering and design change requests.

The inspectors performed independent measurements of steel reinforcement bars in the wall to verify it was constructed in accordance with ACI 349-01. 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 met the minimum length for lapped splices as described in the design drawings. The inspectors also reviewed the mechanical and electrical penetrations in the walls to verify additional reinforcement was installed to compensate for large openings in accordance with the licensee's design specifications and drawings. The inspectors reviewed design changes to verify the disposition was in accordance with ACI-349.

b. Findings

No findings were identified.

1A39 (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:

- 65001.07-02.02 - Component Welding
- 65001.B-02.05-Inspection

The inspectors performed direct field inspections of Unit 4 steam generator 2 intermediate support bracket B and reviewed records associated with steam generator 2 intermediate support bracket A to verify if the supports were installed in accordance with the ASME Code, Section III. Specifically, the inspectors observed in-process

welding on bracket B, field weld #8 in the center of the support bracket of the web, and field weld #6 that attached the west side of the support bracket to the weld overlay applied to the wall of the steam generator cavity. The inspectors reviewed the weld traveler for both welds #6 and #8 to determine if the work was coordinated and sequenced; the procedures and drawings were referenced and available; the hold points were established and adhered to; and the required quality inspections were performed in accordance with the ASME Code, Section III, Subsection NF. The inspectors observed in-process manual welding on field weld #8 and machine welding on field weld #6. The inspectors reviewed the welding consumables to determine if they were in compliance with the WPS. Further, the inspectors reviewed the CMTRs associated with the lot to determine if the requirements of the ASME Code, Section II were met. The inspectors reviewed welder qualification records to determine if the welders performing the work were properly qualified for the process and position in the field. The inspectors observed the welders taking preheat and interpass temperature readings to verify if the limits of the WPS were not exceeded.

Finally, the inspectors performed an independent visual inspection of weld #2 that attached the west side of the A support bracket to the weld overlay applied to the wall of the steam generator cavity, and reviewed the liquid penetrant test report and the UT report results to determine if the ASME Code, Section III, Subsection NF requirements were met.

b. Findings

No findings were identified.

1A40 (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.F-02.02-Fabrication Records Review

The inspectors reviewed storage conditions for the Unit 4 pressurizer. Specifically, the inspectors observed the storage area to determine if proper measures were taken to protect against corrosion, contamination, deterioration, misuse, and physical damage in accordance with WECTEC equipment storage quality standards. The inspectors reviewed equipment preservation check records to determine if nitrogen blanket requirements were maintained in accordance with the recommended storage requirements from the Westinghouse technical manual.

b. Findings

No findings were identified.

1A41 (Unit 4) ITAAC Number 2.1.03.02c (71) / Family 05A

a. Inspection Scope

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

- 65001.05-02.07 - Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed an inspection of fabrication activities associated with the Unit 4 reactor pressure vessel. The inspectors reviewed quality records including the Quality Release & CoC, as-built drawings, and vendor dimensional inspection records to verify key as-built dimensions of the reactor vessel were within the specified tolerances in Figure 2.1.3-3 and Table 2.1.3-4 of Appendix C of the COL. In addition, after its placement inside the reactor cavity at elevation 98'-0", the inspectors performed independent measurements of the inside diameters of the reactor vessel inlet and outlet nozzle safe ends to verify the as-built dimensions met the Table 2.1.3-4 criteria.

b. Findings

No findings were identified.

1A42 (Unit 4) ITAAC Number 2.2.03.02a (159) / Family 06F

a. Inspection Scope

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

- 65001.03-02.01 - Purchase and Receipt of Materials
- 65001.03-02.03 - Installation and Welding
- 65001.03-02.05 - Pressure Testing
- 65001.03-02.06 - Nondestructive Examination (NDE)
- 65001.03-02.07 - Review of Records
- 65001.07-02.01 - General Installation
- 65001.B-02.02-Welding Procedure Qualification

- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.06-Records
- 65001.F-02.02-Fabrication Records Review

The inspectors conducted an inspection of Unit 4 Module Q223, which consists of ASME pipe spools and valves in the PXS, to verify it was fabricated in accordance with ASME BPVC, Section III, 1998 Edition 2000 Addenda, WEC design and fabrication specifications, and UFSAR Chapter 6. Specifically, the inspectors reviewed fabrication and welding records applicable to the following pipe spools and their associated pipelines:

- PXS-PLW-020-1A (CMT B inlet line from cold leg D and outlet line to reactor vessel DVI nozzle B, PXS-L017B);
- PXS-PLW-020-1B (CMT B inlet line from cold leg D and outlet line to reactor vessel DVI nozzle B, PXS-L017B);
- PXS-PLW-020-1E (CMT B inlet line from cold leg D and outlet line to reactor vessel DVI nozzle B, PXS- L018B);
- PXS-PLW-020-1F (CMT B inlet line from cold leg D and outlet line to reactor vessel DVI nozzle B, PXS- L018B);
- PXS-PLW-02X-1A (IRWST injection line B to DVI line B, PXS-L118B);
- PXS-PLW-02X-1B (IRWST injection line B to DVI line B, PXS-L118B);

In addition, the inspectors reviewed the fabrication records associated with the installation of the following valves:

- PXS-PL-V015B (CMT B discharge isolation valve), installed by Aecon;
- PXS-PL-V016B (CMT B discharge check valve), installed by WECTEC (onsite); and
- PXS-PL-V122B (IRWST injection B check valve), installed by CB&I Laurens.

Specifically, the inspectors reviewed applicable fabrication records for the pipe spools and valves listed above, as well as the welds in between, to verify their installation was accomplished by qualified personnel and in accordance with approved drawings, qualified procedures, fabrication specifications, and applicable codes and standards. The inspectors reviewed purchase orders and fabrication specifications to verify applicable quality, technical, material, and regulatory requirements were adequately specified in accordance with 10 CFR Part 21 and Part 50, Appendix B, the ASME Code, the UFSAR, and applicable design specifications.

The inspectors reviewed ASME N-5, NPP-1, and NPV-1 code data reports from the applicable vendors to determine whether the materials specified and hydrostatic tests performed met the requirements of the ASME code and the design specification. In addition, the inspectors reviewed the data reports to verify if they were signed by an authorized representative of the N-stamp holder and an ANI. The inspectors also reviewed the hydrostatic test reports for the piping and valve installation to verify the

pressures used, times maintained, and results achieved were in accordance with the hydro test plan and fabrication specifications. The inspectors reviewed the initiated Aecon NCR and Westinghouse N&D to determine whether the condition was appropriately identified and screened, with a proper engineering disposition justification, to meet the requirements of the ASME code.

The inspectors reviewed the applicable code data reports, weld travelers, and vendor and WEC drawings to verify the records provided adequate traceability to identify the associated components, welding procedures, welders, NDE reports, and nonconformance reports, as applicable. Additionally, the inspectors reviewed applicable documents to verify valve and piping materials and welding consumables were of the correct specified type and grade and were uniquely identified by a heat number and markings on the material, when appropriate.

The inspectors reviewed CMTRs to verify materials were properly heat treated and met the specified chemical, mechanical, and nondestructive testing requirements of ASME Section II and ASME Section III, 1998 edition with 2000 addenda, the UFSAR, and WEC design documents. The inspectors also reviewed CMTRs to verify no base material repairs were made without approval from the purchaser in accordance with the ASME Code and WEC fabrication specifications.

The inspectors reviewed a sample of WPSs to verify the processes and all essential variables used were adequately qualified in accordance with ASME Code Section IX. Specifically, the inspectors reviewed the supporting PQRs to verify the ranges of welding variables listed in the WPSs were appropriately qualified and the type and number of qualification tests required received acceptable results in accordance with ASME Code requirements.

The inspectors reviewed a sample of welder performance qualification records to determine whether the welders were assigned a unique identification number and demonstrated their skill by performing specific performance qualification tests, the qualification testing conditions and qualification limits were fully documented, and the appropriate number of acceptable test results was achieved in accordance with ASME Code Section IX, 2007 Edition 2008 Addenda.

The inspectors reviewed radiographic and liquid penetrant records for the welds sampled to determine whether non-destructive testing was performed at the required intervals and in accordance with ASME Code Sections III and V and the applicable WEC fabrication specifications. The inspectors also reviewed the radiograph film for the welds to verify the radiographic examinations were performed and evaluated in accordance with ASME Code requirements. Specifically, the inspectors observed film quality and density, IQI selection and location, and indications on the film to determine if the acceptance criteria in ASME Code Section III and the performance requirements of ASME Code Section V were met.

The inspectors observed the in-process computed radiography examination performed onsite for the welds upstream and downstream of valve V016B (i.e. the welds to pipe spools PXS-PLW-020-1E and PXS-PLW-020-1F) to confirm the examination was being performed by a qualified examiner and in accordance with procedures. For the one weld repair made on the selected sample of welds, the inspectors reviewed the associated weld traveler and NDE records to confirm the repair activities were controlled through the work package; the same NDE method was used that identified the defect; and the final film was found acceptable in accordance with ASME Code requirements and fabrication specifications. Additionally, the inspectors reviewed ultrasonic thickness testing to verify the thickness of the piping met the design requirements listed in the UFSAR.

Lastly, the inspectors observed the module to verify the selected welds didn't have any surface defects; the valves were oriented adequately to match their designed flow direction; the material markings were appropriate, and the pertinent work package; drawings, and procedures were available and up-to-date in accordance with the design specifications and applicable ASME Code sections.

b. Findings

No findings were identified.

1A43 (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.F-02.02-Fabrication Records Review

The inspectors conducted a walkdown of the storage area for the Unit 4 PRHR HX to determine if it met the requirements of QS 13.11 and the PRHR HX technical manual. Specifically, the inspectors performed the walkdown to verify if the PRHR HX was stored in the appropriate storage level; was not resting on the ground; and was protected from corrosion, contamination, deterioration, misuse, and physical damage. In addition, the inspectors reviewed nitrogen concentration records to verify if the PRHR HX tubes were kept under a nitrogen blanket in accordance with the technical manual.

b. Findings

No findings were identified.

1A44 (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
- 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 / Nonconformances

The inspectors reviewed design drawings and observed ongoing work associated with construction of the IRWST floor from elevation 96’ 0” to 103’ 0” to determine whether the design documents defined the final design and arrangement of this structural system. In addition the inspectors observed work activities to verify if construction was in accordance with regulatory requirements and licensee commitments, including 10 CFR 50 Appendix B and the applicable sections of the UFSAR. Specifically, the inspectors independently observed the size, spacing, location, orientation, types and locations of splices, and configuration of the reinforcing steel to verify if the floor was being constructed in accordance with the approved design drawings, construction specifications, and applicable codes and standards.

The inspectors also reviewed a sample of engineering and design coordination reports to determine if design changes conformed to the applicable technical requirements and were subject to design control measures commensurate to those applied to the original design, as required by 10 CFR 50, Appendix B, Criterion III, "Design Control".

b. Findings

No findings were identified.

1A45 (Unit 4) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.F-02.02-Fabrication Records Review

The inspectors reviewed records and ongoing work associated with the Vogtle Unit 4 module CA58, which makes up part of the operating deck floor located on elevation 135' 3". The inspectors reviewed a sample of receipt records and observed a sample of onsite fabrication of the module.

The inspectors observed in-process welding of the module and reviewed two welder qualification records to verify the welders were qualified to perform the welds in accordance with AWS D1.1. The inspectors also observed the welding to verify the filler material, welder travel speed and welding machine characteristics (voltage and current) were in accordance with the welding procedure. The inspectors reviewed CoCs to verify acceptance of the individual components and weld filler material was completed in accordance with licensee procedure F-Q445-004. The inspectors reviewed the associated CMTRs for the weld filler material and an angle component to verify that the chemical and mechanical compositions were in accordance with ASME Section II, Part C, SFA 5.01-1998 and ASTM A572-07, respectively. The inspectors conducted an independent walkdown of CA-58 to verify the fabricated configuration matched what was detailed in the design drawings. The inspectors also observed the storage of the modules to determine if they were being stored in accordance with their Quality Level, as detailed in procedures NPP-10-01 and QS 13.11. For portions of the fabrication that will occur after the module is installed in the plant, the inspectors reviewed a work order SV4-CA58-S5W-863139 to verify steps existed to complete the work in accordance with drawings.

The inspectors also reviewed three N&Ds for module CA58 to determine if they were adequately screened and resolved in compliance with APP-GW-GAP-420.

b. Findings

No findings were identified.

1A46 (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.F-02.04-General QA Review

The inspectors reviewed quality records and performed direct inspection of concrete placement activities associated with Unit 4 shield wall section RC-02, which is located in the plant northeast section of the wall from elevation 100'0" to 117'6" and from azimuth 354 to 53.4 degrees. The inspectors reviewed the 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 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 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, and air content were determined at the mix delivery location as required by specification SV4-CC01-Z0-026 and ACI 349-01.

The inspectors observed concrete placement activities to verify the placement did not result in mix segregation as specified in SV4-CC01-Z0-031. The inspectors observed field engineering and quality control inspections throughout the concrete placement to verify if inspection during placement was performed as required by specification SV4-CC01-Z0-031.

b. Findings

No findings were identified.

1A47 (Unit 4) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A-02.04 - Review As-Built Deviations / Nonconformances

The inspectors reviewed design drawings, work packages, and quality records associated with construction of the reinforced concrete walls listed below to determine whether the design documents defined the final design and arrangement of these wall sections. In addition, the inspectors observed infield work for the following areas to

verify if construction met the applicable technical and quality assurance for the requirements identified in the UFSAR:

- wall along column line 1 between column lines K-2 and N from elevation 100-0 to 135-3; and
- wall along column line I between column lines 1 and 4 from elevation 100-0 and 117-6.

The inspectors independently observed the size, spacing, location, orientation, types and locations of splices, and configuration of the reinforcing steel to verify if the walls were being constructed in accordance with the approved design drawings, construction specifications, ACI 349-01, and AWS D1.4:1998.

The inspectors reviewed a sample of engineering and design coordination reports to determine if changes to the original design conformed to ACI 349-01 and were subject to design control measures commensurate to those applied to the original design as required by 10 CFR 50, Appendix B, Criterion III, "Design Control". Additionally, the inspectors reviewed nonconformance and disposition reports to verify if nonconforming conditions were evaluated, dispositioned, and documented in accordance with 10 CFR 50, Appendix B, Criterion XV, Nonconforming Materials, Parts, or Components.

b. Findings

No findings were identified.

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

1P01 Construction QA Criterion 1

- 35007-A1 - Appendix 1. Inspection of Criterion I – Organization
- 35007-A1.04 - INSPECTION REQUIREMENTS AND GUIDANCE
- 35007-A1.04.01 - Inspection of QA Implementing Documents
- 35007-A1.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed changes to the licensee’s organizational structure at the Vogtle Units 3 and 4 construction site to verify that SNC organizational changes were in accordance with 10 CFR Part 50 Appendix B, Criterion I, Organization. In August 2017, Bechtel was chosen as the lead contractor to complete the construction of Units 3 and 4.

Specifically, the inspectors reviewed the Quality Assurance (QA) implementing documents for SNC (the licensee) and Bechtel (the contractor), to verify the documents addressed recent changes made to the organizational structure of SNC,

Westinghouse, and Bechtel focusing on the relationships between the licensee, the contractors, and the organizations responsible for QA functions; functional responsibilities; and levels of authority as described by the licensee's Quality Assurance Program Description (QAPD), the UFSAR, including NQA-1-1994; and Bechtel's Project Nuclear Quality Assurance Manual (PNQAM).

The inspectors reviewed documents and records and interviewed personnel to verify the following attributes were consistent with the requirements of the QAPD and Bechtel's PNQAM:

- QA program organizations were established and their requirements were clear;
- the organizational structure included corporate and onsite functions;
- interface requirements between SNC and Bechtel clearly describes which QA program would be followed for performing quality-related functions;
- delegation of specific responsibility and authority for planning, establishing, and implementing the QA program was at the appropriate reporting level within the organization;
- personnel conducting quality-affecting work understood their responsibilities and lines of authority;
- staff performing QA functions were independent from the work being performed and had organizational freedom to identify quality problems, initiate or recommend solutions, and verify implantations of solutions; and
- the licensee retained responsibility for the QA program.

b. Findings

No findings were identified.

1P02 Construction QA Criterion 10

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

a. Inspection Scope

The inspectors reviewed applicable sections of the UFSAR and Bechtel's PNQAM to verify the licensee implemented procedures for work-affecting quality in accordance with the NRC-approved QAPD and NQA-1-1994. The inspectors also reviewed procedures used to implement licensee's processes for conducting QC inspections to verify they were in compliance with the PNQAM. The inspectors observed the licensee's inspections of safety related items; performed interviews of personnel

conducting inspections; and reviewed their qualification records to determine whether activities affecting quality were performed using licensee procedures.

The inspectors reviewed section VGT-Q-10.1, Inspection, of the PNQAM to verify that the requirements and responsibilities stated in NQA-1-1994 for inspection activities of safety related items were appropriately implemented. The inspectors sampled a total of 12 QC inspection implementation procedures to determine if they provided references for applicable drawings and specifications, examinations, and measurements. The inspectors also verified the procedures included the methods used to perform inspections, inspection hold points, acceptance criteria, inspection results documentation, and requirements for qualified inspection personnel in accordance with PNQAM and NQA-1-1994.

The inspectors reviewed completed QC inspection reports to verify they identified the item to be inspected, date of inspection, method of inspection, results indicating acceptability of characteristics inspected, the identification of personnel who determined acceptability, and that the inspectable attributes were in accordance with the requirements of Bechtel's PNQAM and NQA-1-1994.

The inspectors reviewed instruction N10.0, Personnel Certification, from the Bechtel Project Nuclear QC Manual (PNQCM) to verify a program was established for the certification of QC inspectors in accordance with NQA-1-1994.

The inspectors observed a safety related QC inspection of embed plates in room 12313 located at elevation 100’ 0”, between walls on column lines K and L in the Unit 4 auxiliary building. The inspectors observed the QC inspector during the inspection to verify he had the current design drawing and appropriate tools to conduct the inspection in accordance with procedure No. 26139-000-2QI-Q07C-N3210. The inspectors reviewed the QC inspector's qualification records to verify they were current and to verify he/she was qualified to perform the inspection in accordance with the PNQCM.

The inspectors verified the embedded items in room 12313 were installed per design drawings by measuring the embed plates, as well as comparing the serial number with those described on the design drawing used by the QC inspector. The inspectors also reviewed the inspection report, where the results of the inspection were documented, to verify the correct item, location, and date was recorded; the identification of the person performing and recording the results of the inspection was the same as the one contained in qualification records; and the results indicating acceptability matched required attributes described in procedure QCI No. 26139-000-2QI-Q07C-N3210, Concrete Operations.

The inspectors observed a QC visual inspection of cable tray support SH-E529 in room 11306 located at EL. 100-2 inside the Unit 3 containment building. The

inspectors observed the QC inspector during the inspection to verify he had the current drawing revision and appropriate tools to conduct the inspection in accordance with visual testing procedure No. 26139-0004MP-T040-S0531. The inspectors also reviewed the QC inspector's qualification records to verify if they were up to date and if the inspector was qualified to perform the inspection he was assigned, in accordance with the PNQCM.

The inspectors observed the QC inspection to verify the tray support was built to the intended configuration described in the design drawing and with the weld profiles described in procedure WPS P1-A-Lh, Cable Tray Support SV3-1133-SH-E529. The inspectors also verified the proper method of inspection was used. After the QC inspector completed their inspection, the inspectors reviewed the weld traveler to verify it contained the same tray support number as described in design drawings as well as the identification of the welder who assembled the support; the description of inspection performed; and the results, indicating acceptability, were recorded in accordance with the visual testing procedure.

b. Findings

No findings were identified.

1P03 Construction QA Criterion 16

- 35007-A16 - Appendix 16. Inspection of Criterion XVI – Corrective Action
- 35007-A16.04 - Inspection Requirements and Guidance
- 35007-A16.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

Quarterly Resident Inspector Corrective Action Program (CAP) Routine Review
The resident inspectors reviewed daily issues entered into the licensee's and its contractors' CAPs to review issues that might warrant additional follow-up inspection, to assess repetitive or long term issues and adverse performance trends, and to verify the various corrective action programs appropriately included regulatory required non-safety related SSCs. The resident inspectors attended CAP 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 conditions entered into the CAPs to determine whether the issues were appropriately classified in accordance with the QA program and CAP implementing procedures. Additionally, the inspectors reviewed corrective actions associated with conditions entered into the CAPs to determine whether appropriate actions to correct the issues were identified and implemented effectively, including immediate or short-term corrective actions, in accordance with the applicable QA programs and 10 CFR Part 50 Appendix B. The inspectors reviewed the corrective

actions taken to determine whether they were commensurate with the significance of the associated condition in accordance with the applicable quality assurance program and implementing procedures. The inspectors completed reviews of CAP entry logs to verify issues from 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 as required by the applicable quality assurance programs and implementing procedures.

Resident Inspector Follow-Up of Selected Issues

Based on items reviewed during routine CAP reviews, the inspectors selected a sample of issues identified in the corrective action programs for a more in-depth review and follow-up.

The inspectors reviewed Corrective Action Prevention and Learnings (CAPAL) 100414624 regarding a trend of unsatisfactory QC inspection reports for steel reinforcement and concrete placements. The inspectors reviewed the detailed description of the issue and clarifying information included in the CAP to verify the issue was identified in a timely manner as required by procedures ND-AD-002 and W2-5.1-101. The inspectors reviewed the licensee's and its contractors' planned and implemented corrective actions to determine whether they were commensurate with the significance of the issue; the resolution of problem was prioritized based on safety significance; actions were appropriately focused and were sufficient to correct the problem identified; identification of causes was completed; actions to preclude recurrence were completed; and actions were completed in a timely manner as required by procedures ND-AD-002 and W2-5.1-101.

The inspectors attended the CAP screening meetings and management review committee meetings where this issue was discussed to verify the issue was screened, classified, escalated, and prioritized in accordance with procedures ND-AD-002 and W2-5.1-101. The inspectors reviewed the reportability screening to verify it was conducted in accordance with 10 CFR Parts 21 and 50. The inspectors reviewed the Management Suspension of Work and associated work control holds to verify the corrective actions were being applied as described in the CAP documents. The inspectors reviewed the site specifications used as the baseline for the unsatisfactory QC inspections to verify the specification requirements were being appropriately applied and referenced in the CAP corrective actions in accordance with procedures ND-AD-002 and W2-5.1-101.

b. Findings

No findings were identified.

1P04 Construction QA Criterion 2

- 35007-A2 - Appendix 2. Inspection of Criterion II – Quality Assurance Program
- 35007-A2.04 - Inspection Requirements and Guidance
- 35007-A2.04.01 - Inspection of QA Implementing Documents
- 35007-A2.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed, in part, aspects of 10 CFR Part 50 Appendix B, Criterion II, "Quality Assurance Program," related to recent changes to the organizational structure at the Vogtle 3 and 4 construction site. In August 2017, Bechtel was chosen as the lead contractor to complete the construction of Units 3 and 4.

The inspectors reviewed the implementing documents for SNC, the licensee, and Bechtel, the contractor, to verify the licensee had effectively implemented its QA implementing documents for work affecting quality. The inspectors also reviewed recent changes made to the organizational structure of SNC, Westinghouse, and Bechtel focusing on the relationships between the licensee, the contractors, and the organizations responsible for QA functions to verify compliance with the licensee's QAPD, the UFSAR, including NQA-1-1994, and Bechtel's PNQAM.

The inspectors reviewed documents and records and interviewed personnel to verify the following attributes were consistent with the requirements of the QAPD and Bechtel's PNQAM:

- implementation of the organizational structures, responsibilities, and authorities met the requirements of the applicable QA programs;
- individuals working under a QA program had an adequate understanding of the program, their roles and responsibilities, and the importance of their compliance with the applicable QA program;
- interface requirements between SNC and Bechtel clearly describes which QA program would be followed for performing work;
- delegation of specific responsibility and authority for planning, establishing, and implementing the QA program was at the appropriate reporting level within the organization;
- staff performing QA functions were independent from the work being performed and had organizational freedom to identify quality problems, initiate or recommend solutions, and verify implantations of solutions;
- personnel conducting quality-affecting work understood their responsibilities and lines of authority;
- personnel qualifications and training were established for selected positions, as determined by management or industry standards; and
- the licensee had adequate measures in place to verify that the contractors and subcontractors followed the applicable QA program.

The inspectors reviewed the most recent revision of the QAPD to verify the changes were documented and submitted to the NRC. The inspector reviewed a sample of the QAPD change packages to verify there were no reduction in commitments compared to the previous revision of the QAPD accepted by NRC.

The inspectors reviewed selected work plans to verify they were approved by the appropriate personnel. The inspectors also interviewed personnel to verify they could clearly follow the work plans that addressed the activities they were performing. The inspectors reviewed the current schedule for management evaluations to verify: it included completed and planned assessments; the assessments were performed on schedule and by qualified personnel; and the assessment results and recommendations were reviewed by management having responsibility for the area evaluated.

The inspectors reviewed a sample of documented conditions adverse to quality that were identified as a result of the planned assessments to determine if they were promptly brought to the attention of the appropriate level of management and entered into the CAP. Documented corrective actions were reviewed to verify they effectively addressed the issues documented in the assessment report.

b. Findings

No findings were identified.

1P05 Construction QA Criterion 3

- 35007-A3.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed the implementation of the site design change process as described in the defined in Nuclear Development Quality Assurance Manual (NDQAM) to verify that it met the requirements of 10 CFR Part 52, Appendix D. The inspectors reviewed samples of the following types of design packages that could impact the Vogtle 3 & 4 current licensing basis (CLB), dated from May 2017 to May 2018, to verify if the licensing applicability determination process and 10 CFR 52 Appendix D Section VIII applicability screenings were completed in accordance with the requirements of site procedures and to verify that the licensee came to the appropriate conclusion:

- E&DCRs,
- N&Ds,
- Design Change Proposals (DCPs), and
- Licensing Document Change Requests (LDCRs).

For design modifications that were screened as not having an impact on the CLB, the inspectors reviewed the design package to verify that the licensee conducted screening in accordance with their procedures. For design modifications that were screened as having an impact on the CLB, the inspectors reviewed the screens to determine if the licensee:

- followed the change/departure process requirements of 10 CFR 52 Appendix D Section VIII.B.5;
- reached the correct decision on whether prior NRC approval was required for the design changes; and
- maintained the integrity of the NRC-approved CLB by updating the affected sections.

b. Findings

No findings were identified.

1P06 Construction QA Criterion 6

- 35007-A6 - Appendix 6. Inspection of Criterion VI – Document Control
- 35007-A6.04 - Inspection Requirements and Guidance
- 35007-A6.04.01 - Inspection of QA Implementing Documents
- 35007-A6.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed implementing documents that addressed preparation, review, approval, distribution, and revision control to verify compliance with the licensee's QAPD and the commitments in the UFSAR, including NQA-1-1994. Specifically, the inspectors reviewed implementing procedures associated with the electronic and paper copy system for issuing, distributing, revising and canceling controlled documents, and interviewed document control personnel, to verify the following attributes:

- access to the list of currently controlled documents was available to personnel conducting quality work;
- controlled documents were reviewed, approved, and where applicable, revised by authorized personnel; and
- controls were in place to notify personnel of document revisions associated with their activity.

The inspectors interviewed the licensee staff and contractors at various work locations, including document control, to verify that current work-controlled documents were controlled and available promptly to personnel and that all quality-affecting work was being conducted in accordance with current revisions of approved documents.

The inspectors reviewed a sample of controlled documents associated with instructions, procedures, drawings, inspections, and control of special processes to verify that the controlled documents were reviewed, approved, and revised by independent, authorized personnel.

b. Findings

No findings were identified.

1P07 Construction QA Criterion 8

- 35007-A8 - Appendix 8. Inspection of Criterion VIII – Identification and Control of Materials, Parts and Components
- 35007-A8.04 - Inspection Requirements and Guidance
- 35007-A8.04.01 - Inspection of QA Implementing Documents
- 35007-A8.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspector reviewed a sample of Bechtel’s implementing documents for the identification and control of safety related and risk significant items to verify whether the documents were developed in accordance with the requirements of the SNC's QAPD, UFSAR, Bechtel's PNQAM, and NQA-1-1994.

Specifically, the inspectors reviewed implementing procedures associated with material receiving, material withdrawal, field material storage control, and field material control and traceability. The inspectors reviewed the implementing procedures to verify if the following attributes:

- markings were maintained for traceability on items throughout fabrication, erection, installation, and use of item;
- markings were applied using methods to provide a clear and legible identification, and did not adversely affect the function or service life of the item,
- markings or other means of identification ensure that only specified and accepted items were used to prevent use of incorrect or defective items, and,
- when physical identification on the item was impractical or insufficient, physical separation, procedural control, documentation, or other appropriate means may be used to ensure traceability.

The inspectors selected eight samples of safety related items that were issued for use and installation, to verify traceability requirements were maintained in accordance with SNC's QAPD, UFSAR, NQA-1-1994, and Bechtel's PNQAM. The inspectors examined associated records for the samples to verify the items were properly identified and controlled in accordance with implementing documents and traceability of the items

were consistent and accurate from identification of the item through the resultant documentation.

The inspectors performed walk downs of the main warehouse, temporary storage areas, and in-process installation areas to verify that item identification methods used physical markings that provided clear and legible identification. Specifically, the inspectors examined a shielded cable that was marked rejected to verify appropriate identification, segregation, and proper documentation were performed in accordance with PNQAM and NQA-1-1994. The shielded cable was marked rejected because of inadequate documentation in the certificate of conformance. The inspectors observed the item marked Inner Anchor Ring Lower Half, UNIT4-SS01.47.002, which was located in a temporary storage and fabrication area. The inspectors verified that the item was properly identified and the associated documents within work package, #SV4-1208-C0W-850003, were accurate and traceable to the item.

The inspectors also interviewed QC and warehouse personnel to verify individuals were familiar with the marking and storage processes in the main warehouse, temporary storage areas, and in-process installation areas.

b. Findings

No findings were identified.

1P08 Construction QA Criterion 9

- 35007-A9 - Appendix 9. Inspection of Criterion IX – Control of Special Processes
- 35007-A9.04 - Inspection Requirements and Guidance

a. Inspection Scope

The inspectors reviewed a sample of Bechtel's QA implementing documents for the control of special processes to determine if they implemented the requirements of their QAPD, the UFSAR, NQA-1 1994, and applicable AWS codes. Specifically, the inspectors reviewed the high level procedures that defined the welding program itself and addressed aspects such as welder qualification, general welding standards, and documentation of welds. Also, the inspectors reviewed a sample of field implementation procedures, such as specific welding and NDE procedures, to determine if they met the applicable quality requirements and the requirements of AWS D1.1, Structural Welding – Steel, and AWS D1.6, Structural Welding – Stainless, as applicable.

The inspectors reviewed records for twelve welds, which had been performed under work packages SV4-Q233-Q2W-800000 and SV4-1152-SHW-800000, to determine if they met the requirements of the Bechtel's welding program. The inspectors reviewed

the WR-5C weld traveler for each weld to determine if the hold points, inspections, and work steps had been fully documented and in the correct order. Also, the inspectors reviewed the travelers to verify if necessary information for traceability (including welder IDs, filler metal heat numbers, and procedures) had been fully documented. Lastly, the inspectors reviewed the welder qualification list to determine if the welders listed on the WR-5C weld travelers were qualified to make the welds.

The inspectors observed welding of Module CH77 Beam seats being performed under work package SV4-1120-SSW-800000, to determine if the welding program was being adequately implemented. The inspectors reviewed the WR-5C weld travelers to determine if the work steps and inspections were being done and signed when required. The inspectors also reviewed travelers to determine if they were completed correctly and gave full traceability of parts of the welding process. The inspectors reviewed the weld filler metal issue sheet and checked the filler metal rods themselves to determine if the right filler metal was being used and if it had been issued per the filler metal control procedure. The inspectors checked travelers to determine if welding variables met the welding procedure; if the weld joints were clean; and if the welding areas were sufficiently protected from wind, rain, moisture, and other possible contaminants as required by the AWS Codes and Bechtel's General Welding Standards. The inspectors also visually inspected the in-process welds to determine if they were being made in a manner that would produce sound welds free from rejectable defects.

b. Findings

No findings were identified.

2. SAFEGUARDS PROGRAMS

Cornerstones: Security Programs for Construction Inspection and Operations

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

2P01 Fitness for Duty - Construction

a. Inspection Scope

This is a security-related input. See non-public report 05200025/2018411 and 05200026/2018411 for details.

b. Findings

See non-public report 05200025/2018411 and 05200026/2018411 for details.

2P02 Security (operational)

a. Inspection Scope

This is a security-related input. See non-public report 05200025/2018411 and 05200026/2018411 for details.

b. Findings

See non-public report 05200025/2018411 and 05200026/2018411 for details.

3. OPERATIONAL READINESS

Cornerstones: Operational Programs

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

3P01 Environmental Qualification

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

a. Inspection Scope

The inspectors reviewed environmental qualifications documents for the NIS in-containment field cabling consisting of specialty cables and connectors mounted in the NIS junction box (commodity EQ50); the NIS to electrical penetration assembly (EPA) feed through interfacing connection assemblies (commodity EQ55); and Class 1E low voltage cables for instrumentation and thermocouple extension cables (commodity EW21), power cables (commodity EW50), and control cables (commodity EW60) to verify that the documents contained:

- the qualification specification for the equipment;
- adequate documentation of the equipment qualification; and
- a statement that the documentation has been reviewed, approved, and the equipment determined to be qualified for its application.

Specifically, the inspectors performed reviews of the commodity codes EQDP packages for the following attributes:

- appropriate limiting design basis parameters (i.e. environmental temperature, pressure, total radiation dose, radiation dose rate, cycling, electrical parameters and humidity) as input for the environmental qualification of the SSC;

- necessary design basis documents and calculations correctly incorporated into the qualification program, as described in the applicable EQDP, for the SSC;
- qualification results met the acceptance criteria stated in the applicable design specification and the ITAAC;
- the documented qualified life was consistent with the results of the qualification activities;
- design loads applied to the cables were limited to remain within the qualified life results;
- licensee records established a basis for acceptance of the ITAAC with qualification criteria attributes;
- the qualification report concluded that the SSC can withstand the conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function; and
- environmental qualification documentation was maintained in an auditable manner, was complete, and clearly documented completion of the ITAAC acceptance criteria for the samples inspected.

Specifically, the inspectors performed these reviews for the following components associated with the indicated commodities:

Commodity EQ50:

- Quartz insulated cable with PEEK insulated triax plug connector to a quadax cable with PEEK insulated triax jack connector with a quadax mechanical seal assembly for application on Source Range and Intermediate Range detector channels.
- Mineral Insulated (MI) cable with PEEK insulated triax plug connector to a quadax cable with PEEK insulated triax jack connector with a quadax mechanical seal assembly for application on Power Range detector channel.

Commodity EQ55:

- Quadax, PEEK connector insulators feedthrough
- Quadax, Rexolite connector insulators feedthrough
- Quadax, PEEK connector insulator with Raychem shim feedthrough
- Cable, Quadax, PEEK connector insulator assembly
- Cable, Quadax, PVDF connector insulator assembly
- Cable, Triax, PEEK jack with moisture dam assembly
- Connector seal, PEEK jack kit
- Connector seal, PVDF plugs kit
- Heat Shrink, Raychem WCSF tubing
- Mini, Triax, PEEK connector insulator feedthrough
- Mini, Triax, Rexolite connector insulator feedthrough
- Cable, Triax, PVDF plug assembly

The inspectors reviewed a sample of test deficiencies for the above commodity codes identified during the environmental qualification process, as documented in the EQDP applicable to each component, to determine if the identified deficiencies were resolved in accordance with the requirements of IEEE Std. 323-1974.

The inspectors reviewed the qualification program documents (such as the EQDP, applicable test procedures, component specifications, and test reports) to verify if the following qualification requirements were incorporated as required by UFSAR Chapter 3 and applicable Westinghouse design specifications:

- qualification methodology per IEEE Std. 323-1974;
- environmental parameters under normal operating conditions, abnormal conditions, and design basis events;
- simulated accident conditions, including, temperature, pressure, radiation, pH, and chemical additives; and
- post-accident conditions, including time and submergence.

The inspectors reviewed the margins applied to test parameters used during qualification of the equipment. Specifically, the inspectors reviewed the parameters for temperature, pressure, and radiation to determine if the margins used met IEEE Std. 323-1974, Section 6.3.1.5.

In addition, the inspectors reviewed the test procedure, test plan, and test reports to verify that the tested profiles enveloped the limiting design basis parameters. Specifically, the inspectors reviewed the simulated accident conditions achieved during the qualification testing including temperature, pressure, radiation, pH, and chemical additives as recorded in the test reports.

b. Findings

No findings were identified.

3P02 Preservice Inspection

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

a. Inspection Scope

The inspectors reviewed procedures and observed in-process field activities of preservice inspections on ASME components. Specifically, the inspectors observed activities associated with the Unit 4 steam generator nozzle to reactor coolant pump casing welds. The inspectors reviewed procedure WDI-STD-1075, "Automated Ultrasonic Examination of the AP1000 Steam Generator Outlet Nozzle to Reactor Coolant Pump Suction Nozzle Weld," to determine if it was in conformance with 10

CFR 50.55a and ASME Code Case N-799, including the conditions imposed by the NRC staff in the safety evaluation for the alternative request (ADAMS Accession No. ML17097A450). The inspectors observed the in-process field activities to determine if procedure WDI-STD-1075 was being followed. Specifically, the inspectors observed the axial exam of the Unit 4 steam generator 2A reactor coolant pump casing to steam generator weld to determine if the scan was receiving appropriate data.

The inspectors noted the licensee independently reviewed the data to determine if the weld met the requirements of the procedure and the ASME Code, Section XI, Table IWB-3410-1. The inspectors also observed the WesDyne technician reconfigure the scanner sled for the circumferential scan and independently confirmed the transducers were the correct type and were in the proper configuration per the procedure requirements. Finally, the inspectors reviewed the Certification of Qualification records for the WesDyne Level III inspector to determine if the requirements of ASNT SNT-TC-1A were met.

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4OA6 Meetings, Including Exit

Exit Meeting.

On July 19, 2018, the inspectors presented the inspection results to Mr. J. Miller, Vogtle Startup Director, and other licensee and contractor staff members. Proprietary information was reviewed during the inspection period, but was not included in the inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

S. Cheyne, WEC Principal Engineer
S. Channarasappa, WEC Consulting Engineer
L. Jesso, WEC Principal Engineer
A. Miller, WEC Licensing Engineer
E. Drake, WEC Equipment Qualification Engineer
C. Perego, WEC Site Licensing - Vogtle
R. Wessel, WEC Principle Engineer
L. Jesso, WEC Principle Engineer
T. Robertson, WEC Principle Engineer
J. Monahan, WEC Licensing Manager
M. Humphrey, SNC Design Oversight
Q. Nguyen, WEC GIC/Nuclear Systems Products & EQ Director
A. Pugh, SNC Licensing Manager
D. Matteo, WEC Quality Ops Manager
N. Bailey, SNC ITAAC Engineer
G. Glenn, WEC Engineer
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M. Washington, SNC Inspection Supervisor
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K. Roberts, SNC Licensing Supervisor
S. Leighty, SNC Senior Licensing Engineer
A. Miller, WEC Licensing Engineer
M. Washington, SNC Licensing Supervisor
J. Odell, SNC Licensing
D. Craigo, SNC Engineering
J. Sciulli, SNC Engineering
J. Hurst, WEC Engineering
C. Perego, WEC Licensing
H. Madronero, SNC Engineering
G. Scott, SNC Licensing Engineer
B. Hirmanpour, SNC Engineering Manager
B. Wilbanks, SNC Ops Supervisor
J. George, WEC Human Factors Engineering
R. Fuld, WEC Human Factors Engineering
M. Mouser, WEC Human Factors Engineering Manager
C. Castell, SNC Licensing
A. Parton, SNC QA Director
J. Martin Bechtel QA Manager
C. Calia, SNC PI/CAP Manager
R. Rountree, Bechtel Field Engineering Manager
M. Pitre, Bechtel Lead Field Welding Engineer
D. Angle, Bechtel Senior Project Administrator
S. Baker, Bechtel Administrator RIMS Lead
J. Boykin, Bechtel QC Supervisor
M. Hanson, Bechtel QC Supervisor
D. Soberski, Bechtel Field QC Engineer Manager

J. Williams, SNC Site Operations Director
B. Exton, Bechtel Proc./Const. Manager
D. Johnson, Bechtel Warehouse Manager
A. Lariscey, Bechtel QC
S. Milliron, Bechtel Field QC Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
05200025/2018002-01	NCV	Open/Closed	Missing Weld Edge Preparation Surface Examination on Pressurizer Lower Head
05200025/2018002-02	NCV	Open/Closed	Failure to Meet Radiographic Film Requirements on PRHR HX

LIST OF DOCUMENTS REVIEWED

Section 1A01

Drawings

APP-MV20-V6-001, AP1000 Pressurizer Surge Nozzle Machining
APP-MV20-V6-005, Upper Head Spray and Safety Relief Nozzle Machining, Revision 2
SV3-MV20-V2-001, AP1000 Pressurizer Bill of Material, Revision 0
SV3-MV20-V2-002, AP1000 Pressurizer Complete Assembly, Revision 3
W2-WLM-00-00-001, AP1000 Pressurizer Weld Location Map, Revision 1

Licensing Documents

Vogtle Electric Generating Plant, Units 3 and 4 Updated Final Safety Analysis Report (UFSAR), Revision 6, Section 5.2.3, Reactor Coolant Pressure Boundary Material
Vogtle Electric Generating Plant, Units 3 and 4 Updated Final Safety Analysis Report (UFSAR), Revision 6, Section 5.4.5, Pressurizer

Material Records

Certificate of Conformance N016-CofC-06 from Mangiarotti, 4/14/2014
Certificate of Conformance from Consolidated Power Supply for Pressurizer Heater Sheath, 8/19/2013
Certificate of Conformance from Consolidated Power Supply for Pressurizer Heater Sheath, 4/10/2014
CMTR 019 from Mangiarotti, SFA 5.4, Heat Number 0281010, 10/12/2011
CMTR 054 from Mangiarotti, SFA 5.4, Heat Number 0411017, 1/8/2013
CMTR 045 from Mangiarotti, SFA 5.14, Heat Number 127492, 12/14/2012
CMTR 047 from Mangiarotti, SFA 5.23, Heat Number PV023300183, 1/16/2013
CMTR 055 from Mangiarotti, SFA 5.4, Heat Number 0421002, 1/8/2013
CMTR 080 from Mangiarotti, SFA 5.23, Heat Number PV118303546, 3/2/2012
CMTR 084 from Mangiarotti, SFA 5.5, Heat Number 5492003, 1/11/2013
CMTR 096 from Mangiarotti, SFA 5.9, Heat Number 97886, 12/20/2012
CMTR 29 from Mangiarotti, SFA 5.5, Heat Number 0252006, 10/11/2017

CMTR 30 from Mangiarotti, SFA 5.5, Heat Number 0234002, 10/11/2017
CMTR 72 from Mangiarotti, SFA 5.14, Heat Number 118177, 1/10/2013
CMTR 103 from Mangiarotti, SFA 5.5, Heat Number 341492009, 10/3/2017
CMTR 139 from Mangiarotti, SFA 5.14, Heat Number 132283, 1/15/2013
CMTR 1100135 from IBF for Pressurizer Surge Nozzle Safe Ends, 9/29/2011
CMTR 1100137 from IBF for Pressurizer Safety Nozzle Safe Ends, 9/29/2011
CMTR 1100184 from IBF for Pressurizer Heater Sleeves, 11/18/2011
CMTR 323 from Forgiatura Morandini S.r.i. for Pressurizer Upper Head, Revision 1, 9/13/2010
CMTR 322/09/01 from Forgiatura Morandini S.r.i. for Pressurizer Upper Shell, 5/5/2010
CMTR 4050 from Forgiatura Morandini S.r.i. for Pressurizer Manway, 1/31/2011
CMTR 320/10 from Forgiatura Morandini S.r.i. for Pressurizer Intermediate Shell, 6/03/2010
CMTR 319/10 from Forgiatura Morandini S.r.i. for Pressurizer Lower Head, 6/29/2010
CMTR 321/10 from Forgiatura Morandini S.r.i. for Pressurizer Lower Shell, Revision 1, 6/09/2010
CMTR from Consolidated Power Supply for SA213 TP316/316L, Heat Number 526585, 3/27/2013

NDE Records
MT-N016-00-09-007-3, Magnetic Particle Test Report, 2/23/2011
MT-N016-20-09-001-5, Magnetic Particle Test Report, 12/13/2010
MT-N016-20-09-001-14, Magnetic Particle Test Report, 5/9/2011
MT-N016-20-09-001-16, Magnetic Particle Test Report, 5/16/2011
N016-DT-W2-PCF-00-09-003-40, Dimensional Test Report, 11/21/2013
N016-MT-W2-PCF-00-09-002-4, Magnetic Particle Test Report, 10/27/2011
N016-MT-W2-PCF-00-09-002-6, Magnetic Particle Test Report, 10/31/2011
N016-MT-W2-PCF-00-09-002-25, Magnetic Particle Test Report, 1/31/2012
N016-MT-W2-PCF-00-09-003-12, Magnetic Particle Test Report, 7/23/2012
N016-MT-W2-PCF-00-09-005-26, Magnetic Particle Test Report, 6/3/2014
N016-MT-W2-PCF-20-09-001-30, Magnetic Particle Test Report, 9/26/2011
N016-PT-W2-PCF-00-09-002-06, Liquid Penetrant Test Report, 11/2/2011
N016-PT-W2-PCF-00-09-003-05, Liquid Penetrant Test Report, 3/2/2012
N016-PT-W2-PCF-00-09-003-10, Liquid Penetrant Test Report, 7/18/2012
N016-PT-W2-PCF-00-09-003-12, Liquid Penetrant Test Report, 7/25/2012
N016-PT-W2-PCF-00-09-003-39, Liquid Penetrant Test Report, 7/4/2012
N016-PT-W2-PCF-00-09-003-41, Liquid Penetrant Test Report, 7/4/2012
N016-PT-W2-PCF-00-09-004-09, Liquid Penetrant Test Report, 4/23/2014
N016-PT-W2-PCF-10-09-003-05, Liquid Penetrant Test Report, 12/7/2012
N016-RT-W2-PCF-00-09-002-06, Radiographic Report, 11/21/2011
N016-RT-W2-PCF-00-09-003-12, Radiographic Test Report, 7/26/2012
N016-RT-W2-PCF-10-09-003-5, Radiographic Test Report, 12/12/2012
N016-RT-W2-PCF-20-09-001-16, Radiographic Report, 7/25/2011
N016-UT-W2-PCF-00-09-002-06, Ultrasonic Report, 11/2/2011
N016-UT-W2-PCF-00-09-002-25, Ultrasonic Report, 1/26/2012
N016-UT-W2-PCF-00-09-003-5.1, Ultrasonic Test Report, 3/28/2012
N016-UT-W2-PCF-00-09-003-12, Ultrasonic Test Report, 7/25/2012
N016-UT-W2-PCF-00-09-003-18, Ultrasonic Test Report, 8/24/2012
N016-UT-W2-PCF-00-09-003-41, Ultrasonic Test Report, 7/10/2012
N016-UT-W2-PCF-20-09-001-30, Ultrasonic Report, 9/27/2011
UT-N016-20-09-001-16, Ultrasonic Report, 5/20/2011
Radiograph 0/1 for weld CW-002
Radiograph 1/2 for weld CW-002

Radiograph 2/3 for weld CW-002
Radiograph 3/4 for weld CW-002
Radiograph 4/5 for weld CW-002
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Specifications

APP-MV20-Z0-200, AP1000 Pressurizer Fabrication Specification, Revision 2
APP-MV20-Z0-100, AP1000 Pressurizer Design Specification for RCS System, Revision 11
APP-VL51-Z0-041, Material Specification for SA-508/SA-508 M Grade 3 Class 2 Forgings, Revision 0
APP-VL51-Z0-112, Material Specification for SA-182 Grade F 316LN Forged or Rolled Alloy Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service, Revision 1
APP-VW20-Z0-040, AP1000 Filler Metal Specification: SFA-5.4 E308L-XX Stainless Steel Electrodes for SMAW of ASME Section III Applications, Revision 0
APP-VW20-Z0-041, AP1000 Filler Metal Specification: SFA-5.4 E309L-XX Stainless Steel Electrodes for SMAW of ASME Section III Applications, Revision 0
APP-VW20-Z0-092, AP1000 Filler Metal Specification: SFA-5.9 Class ER316/EC316L Bare Stainless Steel Material for GTAW, PAW, or GMAW of ASME Section III Applications, Revision 1
APP-VW30-Z0-140, AP1000 Filler Metal Specification: SFA-5.14 ERNiCrFe-7 (UNS N06052) and ERNiCrFe-7A (UNS N06054) Bare Nickel Alloy Filler Metal for GTAW, PAW, or GMAW of ASME Section III Applications, Revision 1
APP-VW40-Z0-050, AP1000 Filler Metal Specification: SFA-5.5 Low Alloy Steel Electrodes for SMAW of ASME Section III Applications, Revision 1
APP-VW40-Z0-230, AP1000 Filler Metal Specification: SFA-5.23 Low Alloy Steel Material for SAW of ASME Section III Applications

Quality Assurance Documents
ASME Form N-1 for Pressurizer, Serial Number 4589, 10/14/2015
ASME Form N-2 for Pressurizer, Serial Number 4589, 9/16/2015
ASME Form N-2 for Pressurizer Heaters, 8/14/2013 (2 Forms)
ASME Form N-2 for Pressurizer Heaters, 3/31/2014
SV3-MV20-VQQ-002, SV3 Pressurizer Quality Release & Certificate of Conformance, Revision 2
W2-PCF-00-09-002, Mangiarotti Fabrication Control Plan, Upper Shell Item 2-05 with Middle Shell Item 3-05 and Lower Shell Item 4-05 Assembly, Revision 5
W2-PCF-00-09-003, Mangiarotti Fabrication Control Plan, Lower Head and Lower Shell Assembly, Revision 10
W2-PCF-10-09-001, Mangiarotti Fabrication Control Plan, Lower Head Machining Item 5-05, Revision 1
W2-PCF-10-09-003, Mangiarotti Fabrication Control Plan, Upper Head and Nozzles Assembly, Revision 4
W2-PCF-10-09-004, Mangiarotti Fabrication Control Plan, Heaters Assembly, Revision 5
W2-PCF-20-09-001, Mangiarotti Fabrication Control Plan, Upper Shell Preparation Item 2-05, Revision 3

E&DCRs
APP-MV20-GEF-011, E&DCR for Pressurizer Simulated Post Weld Heat Treatment Holding Time, Revision 0
APP-MV20-GEF-025, Use of Liquid Penetrant examination in lieu of Magnetic Particle examination, Revision 0

Nonconformance & Disposition (N&D) Reports
Mangiarotti RNC-935, Revision 0
Mangiarotti RNC-1158, Revision 0
Mangiarotti NCR-1448, Revision 0

SV0-MV20-GNR-001, Grain Size Deviation Surge & Safety Nozzle Safe End Forgings, Revision 0
SV0-MV20-GNR-002, AP1000 Pressurizer Head and Shells Chromium Content Nonconformance, Revision 0
SV0-MV20-GNR-003, AP1000 Pressurizer Deviation Notice for Vogtle Surge Nozzle Thermal Sleeve, Slot Key, and Heater Sleeve Forging Bars Grain Size, Revision 1
SV3-MV20-GNR-002, NCR for Pressurizer Wrong Machining on Lower Shell, Revision 0
SV3-MV20-GNR-000004, Revision 0

Test Reports
N016-HY-W2-PCF-00-09-005-23, Hydrostatic Test, 5/30/2014

Weld Records
LTR-12099, Laboratory Test Report, 2/9/2011
N016-TT-W2-PCF-00-09-002-24, Heat Treatment Report, 1/20/2012
N016-TT-W2-PCF-00-09-003-17, Heat Treatment Report, 8/8/2012
N016-TT-W2-PCF-10-09-001-23, Heat Treatment Report, 11/16/2011
N016-TT-W2-PCF-20-09-001-29, Heat Treatment Report, 9/13/2011
Welding Monitoring 10252, 10/28/2011
Welding Monitoring 10253, 10/28/2011
Welding Monitoring 20967, 5/16/2012
Welding Monitoring 20968, 4/28/2012
Welding Monitoring 15592, 7/19/2012
Welding Monitoring 20413, 5/2/2011
Welding Monitoring 20414, 5/13/2011
Welding Monitoring 17901, 9/22/2012
Welding Monitoring 21178, 2/9/2011
Welding Monitoring 21179, 2/9/2011
Welding Monitoring 21166, 2/28/2013
Welding Monitoring 21167, 3/14/2013
Welding Monitoring 13235, 3/1/2012
Welding Monitoring 31315, 10/21/2013

WPS/PQR
W2-WPS-00-00-002, Revision 3
W2-WPS-00-00-002, Revision 5
W2-WPS-00-00-002, Revision 8
W2-WPS-00-00-014, Revision 3
W2-WPS-00-00-014, Revision 4
W2-WPS-00-00-017, Revision 6
PQR WQ 1358
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PQR WQ 1432
PQR WQ 1465
PQR WQ 1488

Welding Operator Performance Qualifications (WOPQ) / Welder Performance Qualifications (WPQ)

WOPQ for identification number GM 35, 5/10/2012
WOPQ for identification number GM 78, 8/25/2005
WOPQ for identification number GM C95, 2/27/2012
WPQ for identification number GM 3F, 8/10/2010
WPQ for identification number GM 35, 8/25/2009
WPQ for identification number GM C19, 10/21/2010
WPQ for identification number GM C24, 1/31/2011
WPQ for identification number GM D13, 3/28/2011
WPQ for identification number GM D86, 2/12/2013

Purchase Orders
SV0-MV20-Z5-003, Appendix 3 Technical Requirements for the AP1000 Pressurizer Purchase Order for the Southern Project, Revision 4

Corrective Action Documents
CAR 270667, NRC potential violation VCS-RT film unacceptable, 7/28/2017
CR 118053, 2011100358, The Vogtle 3 Pressurizer lower shell forging had a gouge that was the result of a machi, 4/15/2011
CR 10232845, Deficiencies noted during review of Unit 4 Pressurizer (PZR) documentation, 6/7/2016
CR 10237219, Deficiencies noted during review of Unit 4 Pressurizer (PZR) documentation, 6/17/2016
CR 10392176, NRC potential violation VCS-RT film unacceptable, 7/28/2017

Corrective Action Documents Generated During the Inspection
CR 10484251, Missing Unit 3 Pressurizer Surface Exam, 4/19/2018
CR 10491047, NRC IOC 18-013, U3 PZR & PRHR Hx RT Film Deficiencies; PD with More than Minor Significance, 5/8/2018
IR-2018-9667, Heat Rate for SPWHT of SV3 Pressurizer Lower Shell Test Specimens Exceeds Westinghouse Requirement, 5/9/2018
IR-2018-9669, SV3 Pressurizer Manway Insert Missing Westinghouse Supplemental Test, 5/9/2018
IR-2018-9671, Nickel content typo on Vogtle Unit 3 PZR Lower Head Chemical Analysis Report, 5/9/2018

Section 1A02
SV3-PH01-V2-001, "AP-1000 Steam Generator Lower Lateral Support Assembly & Details", Revision 1
SV3-PH01-V2-002, "AP-1000 Steam Generator Intermediate Lateral Support Assembly & Details", Revision 1

Section 1A03
P-18-RT-302-0021, Computed Radiography Examination Report, weld SV3-RCS-PLW-041-3, 2/9/2018
P-18-RT-302-0024, Computed Radiography Examination Report, weld SV3-RCS-PLW-043-1, 3/9/2018
P-18-RT-302-0029, Computed Radiography Examination Report, weld SV3-RCS-PLW-044-1, 5/8/2018
P-18-RT-302-0030, Computed Radiography Examination Report, weld SV3-RCS-PLW-043-2, 5/10/2018

ASME Section III, Subsection NB, "Class 1 Components", 1998 Edition including 2000 Addenda
MISTRAS 521-RT-302, Radiographic Examination using Computed Radiography in Accordance with ASME Section V, Article 2, Revision 0

Section 1A04
APP-PV70-Z0-001, Design Specification, Squib (Pyrotechnic Actuated) Valves, ASME BVPC, Section III Class 1, Rev. 6
APP-GW-VLR-010, AP1000 Supplemental Fabrication and Inspection Requirements, Rev. 2
APP-PV70-Z5-002, Purchase Order Appendix 3: Technical Requirements for the Procurement and Delivery of AP1000 Squib Valves (PV70) in Support of AP1000 Projects, Rev. 2
APP-GW-VLR-002, Technical Requirements of Stainless Steels, Nickel-Base Alloys, Carbon and Low Alloy Steels, and Welding Materials for the AP1000, Rev. 2
APP-VL52-Z0-001, Material Specification for Sb-166, UNS N06690, Alloy 690 Rod and bar (Section III-NB), Rev. 2
APP-VL52-Z0-125, Material Specification for SA-479 Type 410 Stainless Steel Bars and Shapes-Annealed Condition, Rev. 1
APP-PV70-V2-003, 14-inch Squib Valve Assembly Drawing Sheet 1 of 3, Rev. 3
APP-PV70-V2-004, 14-inch Squib Valve Assembly Drawing Sheet 2 of 3, Rev. 3
APP-PV70-V2-005, 14-inch Squib Valve Assembly Drawing Sheet 3 of 3, Rev. 3
SV3-PV70-VQQ-002, Quality Release and Certificate of Conformance for PV70 Squib Valves Rev. 2
ASME Form NPV-1, Code Data Report for 14 Squib Valve, dated 2/23/2017
Westinghouse Quality Assurance Inspection Report No. Q445-17-13975, Receipt of WEC Procured ASME III & Non-ASME Items, 12/02/2017
CMTR for Valve Body S/N TN2712-24, Heat # 451710, 12/21/2010
CMTR 190400 for Valve Bonnet S/N 10-04, Heat #1514, 9/20/2010
CMTR 09569 for Shear Cap S/N 11-03, Heat # NX8221HK-11, 2/24/2011
CMTR for Tension Bolt S/N 11-24, Heat/Lot # 524634, 1/24/2011
CMTR 144360 for Bonnet/Body Studs, Heat # 48928, C/C: 5Y41, 9/30/2011
CMTR for Cartridge Cover S/N 10-01, Heat 47766, C/C: E6JB, 9/23/2009

Non-Destructive Examination/Test Records
SPX NDE Certification, Liquid Penetrant Examination for Valve Body S/N TN2712-24, 1/23/2012
SPX NDE Certification, Liquid Penetrant Examination for Tension Bolt S/N 11-24, 8/19/2011
SPX NDE Certification, Liquid Penetrant Examination for Shear Cap S/N 11-03, 2/14/2012
SPX NDE Certification, Liquid Penetrant Examination for Bonnet S/N 10-04, 1/24/2012
SPX Form 705235SQUIB, Squib Valve Inspection and Hydrostatic Test Report, Rev. 2
SPX Form 7.12.105-4, "Squib Valve Assembly Critical Dimensions," Part Number 403677, Serial Number 0920-164451-3-1, Rev. 3
SPX Form 4.4.625, Attachment 1, 14-inch Squib Valve Lot Acceptance Testing for Squib Valve S/N 0920-164451-3-1, 8/9/2012

E&DCRs
APP-GW-GEF-1929, Revisions to Appendix B of the Design Specifications for Safety Related Valves, Rev. 0
APP-PV70-GEF-083, PV70 Design Spec Material Spec Clarification, Rev. 0
APP-PV70-GEF-090, Squib Valve Hydrostatic Testing, Rev. 0
Nonconformance & Disposition (N&D) Reports
APP-PV70-GNR-037, Squib Valve Deviation Notice (Tension Bolt Notch Inspection), Rev. 0

Corrective Action Documents
CR 10486829, Missing Documentation in Unit 3 PV70 (14) Quality Assurance Data Package, 4/26/2018

Storage Documents
QS 13.11, Material, Equipment Storage, Rev. 4
SPX Procedure No. 3.5.149, Material Handling and Contamination Controls for 8 and 14 Squib Valves, Rev. 3
SPX Procedure No. 5.1.137, Storage of Squib Valves and Spare Parts, Rev. 2

Section 1A05
Equipment Qualification Data Package for Reactor Coolant Pump Resistance Temperature Detectors for Use in the AP1000 Plant, APP-MP01-VBR-002, Revision 2
Equipment Qualification Summary Report for Reactor Coolant Pump Resistance Temperature Detectors for Use in the AP1000 Plant, APP-MP01-VBR-001, Revision 2
E&DCR APP-GW-GEF-1628, Implementation of Updated Zone 1 Abnormal Group 1 Pressure per APP-GW-GEE-5226, Revision 0
APP-GW-G1-002 AP1000 Equipment Qualification Methodology, Revision 5
Seismic Test Report for Ultra Reactor Coolant Pump Resistance Temperature Detector Model No. N9004E-1B-AP1.6, APP-MP01-VPR-004, Revision 0
Qualification Report APP-MP01-VPR-006, Revision 1
Summary Report Qualification of Model N9004E-1B-AP1.6 for the Reactor Coolant Pump, APP-MP01-VPR-006, Revision 1
Environmental Qualification Summary Report for EGS Generation 3 QDC Connectors for use in AP1000 Nuclear Power Plants, APP-GW-VPR-014, Revision 2
Design Specification, Reactor Coolant System, APP-MP01-M2-001, Revision 5
APP-MP01-VPH-001, Qualification Test Plan Curtiss-Wright AP1000 Qualification Test of NSPI RCP RTDs and Thermowells, Revision 0
APP-MP01-VPR-001, Final Report, Wear Aging N9004, Revision 0
APP-MP01-VPR-002, Final Report, Thermal Aging N9004 for RCP, Revision 0
APP-MP01-VPR-003, Final Report, Irradiation Services for Four RTDs, Revision 0

Section 1A06
LTR-EQ-16-98, Use of Activation Energy for Determining Qualified Life Greater than 20 Years, dated 9/29/2016.
APP-EW50-VBR-001, Rev. 1 Equipment Qualification Summary Report for Class 1E Low-Voltage Cables for use in the AP1000 Plant, dated: 11/20/2017.
APP-EW50-VBR-002, Rev. 1 "Equipment Qualification Date Package for Class 1E Low-Voltage Cables for Use in the AP1000 Plant dated: 1/8/2016.
APP-EW50-VPR-001, Rev. 1 Thermal Aging Evaluation for the General Cable Low Voltage Safety-Related Cables Qualification Program, dated: 11/2/2017
Design Specification APP-EW21-Z0-002, Rev. 1 Instrumentation and Thermocouple Extension Cables, dated: 2/15/2014.
Design Specification APP-EW21-Z0D-002, Rev. 2 Instrumentation and Thermocouple Extension Cables (Class 1E) Data Sheet, dated: 7/25/2016.
Design Specification APP-EW60-Z0D-001, Rev. 2 Class 1E Control Cables Data Sheet, dated: 7/25/2016.
Design Specification APP-EW60-Z0-001, Rev. 1 Class 1E Control Cables, dated: 8/8/2014.

APP-G1-E0R-001, Rev. 0 Expected Cable Insulation and Jacket Operating Temperature Support of Equipment Qualification, dated: 1/8/2016.

Section 1A07

SV3-MW01-V0-002, Unit 3 ADS Sparger As-Built Dimensions, Rev. 0
SV3-MW01-V0K-891550 Sheets 1-4, Unit 3 ADS Sparger As-Built Elevation Verification, Rev. 0
26139-000-4MP-T81C-N3201, Construction Survey, Rev. 0
APP-MW01-V1-001, ADS Sparger Outline Detail Drawing, Rev. 2
APP-MW01-V0-001, ADS Sparger Envelope Dimensions, Rev. 2
SV3-MW01-V2-001-R0, ADS Sparger Assembly Drawing, Rev. 0

Section 1A08

FA01:

APP-MI01-S3C-032, "AP1000 RESM Seismic and LOCA Analyses," Rev. 3
CN-NRFE-08-76, "AP1000 Fuel Assembly Weight Calculation," Rev. 2
CN-NRFE-09-7, "AP1000 Fuel Assembly Simplified Beam and Detailed Finite Element Model Development," Rev. 3
CN-NRFE-10-21, "AP1000 Fuel Assembly Seismic/LOCA Analysis," Rev. 6
CN-NRFE-13-1, "AP1000 Fuel Assembly Seismic/LOCA Analysis for End-Of-Life Condition," Rev. 2
GCCD-12-138, "AP1000 Mid Grid End-of-Life (EOL) Dynamic Crush Strength Test Report," Rev. 1
NRFE-09-234, "AP1000 Fuel Assembly Mechanical Test Report - Final Verification Test," Dated February 23, 2010
NRFE-10-136, "AP1000 Longitudinal eRFA Mid Grid Dynamic Crush Strength Final Verification Test Report," Dated August 3, 2010
NRFE-10-149, "AP1000 Longitudinal eIFM Grid Dynamic Crush Strength Final Verification Test Report," Dated August 12, 2010
THHT-13-3, "AP1000 Fuel Assembly Mechanical Final Verification Test Report End of Life Condition," Dated February 27, 2013
WCAP-9401, Verification Testing and Analyses of the 17X17 Optimized Fuel Assembly, Dated April 16, 1980
CN-NRFE-13-2, "AP1000 Fuel Assembly Seismic/LOCA Analysis for End-Of-Life Condition with 20% Damping," Rev. 1

FG01 & FR01:

NRFE-11-24, "DR 06-6: AP1000 Gray Rod Control Assembly: Design Closeout Review Package," Rev. 1
NRFE-11-29, "GCCD-11-33, NG RCCA Program Final Design Closeout Meeting Package," Rev. 2
ADE-85-008, NKMODE Computer Program Verification, Dated January 9, 1985
NRFE-14-1, "Seismic Qualification of the AP10001 RCCAs and GRCAs," Dated April 24, 2014
WCAP-9401, Verification Testing and Analyses of the 17X17 Optimized Fuel Assembly, Dated April 16, 1980

MV11:

APP-MV11-Z0-001, Design Specification For AP1000 Control Rod Drive Mechanism (CRDM) For System: RXS, Revision 7
APP-MV11-S3R-002, Generic Design Report, Revision 7

APP-MV01-Z0-101, Design Specification for AP1000 Reactor Vessel for System: Reactor Coolant System (RCS), Revision 15
APP-MV11-S3C-002, Generic ASME III Calcnote, Revision 7
APP-MV11-S3C-024, Generic FIV & PP Loads, Revision 0
APP-MI01-GEF-394, Engineering & Design Coordination Report (E&DCR) Assessment of Outlet Nozzle and Alignment Plate Gaps, Revision 0
APP-MV11-S3C-025, Generic Seismic & LOCA Loads With Assumption, Revision 0
APP-MV11-GEF-020, E&DCR for CRDM Analysis Update to Address APP-GW-GEE-5450, Revision 0
APP-MI01-S3C-032, AP1000 RESM Seismic and LOCA Analyses, Revision 3
LTR-MRCDA-16-143, Reconciliation of Generic Seismic Load with Final RESM loads, Revision 0
APP-GW-GEE-5450, RESM Seismic Analysis Change, Revision 0
APP-MV01-V2-003, Drawing for Reactor Vessel and Closure Head Assembly Elevation thru Inlet Nozzles, Revision 5
APP-RCS-M1-001, Reactor Coolant System Design Transients, Revision 5

MY91:
APP-MV01-S3R-002, AP1000 Quickloc Design Report, Revision 5
APP-MV01-S3C-002, AP1000 Quickloc Pressure Boundary Stress Analysis, Revision 4
APP-MV11-S3R-020, CRDM Nozzle and CRDM Housing Thermal Transients for AP1000, Revision 5
WWN/DCP0242, Letter Thermal Transients for AP1000 Instrument Nozzles, Revision 1, Dated: 9/4/2012
APP-MV01-GEM-900A, Maintenance Manual for P1000 Quickloc Instruction Manual, Revision 3

Section 1A09
EQ50:
General Documentation Reviewed:
APP-PMS-VBR-010, Rev. 3 Equipment Qualification Data Package for the NIS In-Containment Field Cabling and Cable and Connectors at the NIS Junction Box for use in the AP1000 Plant dated: October 2016.
APP-JE92-Z0-001, Rev. 4 AP1000 Excore Source Range Detector Design Specification. Dated: October 2016.
APP-EW30-J8Y-001, Rev. 2 AP1000 Protection and Safety Monitoring System Nuclear Instrumentation System Specialty Cable Drawing Package dated: 11/20/2015
APP-EW30-Z0-004, Rev. 2 AP1000 Protection and Safety Monitoring System Nuclear Instrumentation System Specialty Cable Design Specification. Dated: Sept. 15, 2016.
Drawings Reviewed:
10004D98, Rev. 2 AP1000 NIS EQ IN-CONTAINMENT CABLE TEXT FIXTURE FABRICATION.
10023B02, Rev. 1 STANDARD SAFETY AP1000 INSTRUMENT WELL BOTTOM COVER FOR GSI-191 REQUIREMENT
10048D73, Rev. 4 STANDARD SAFETY SOURCE RANGE MODERATED EXCORE DETECTOR ASSEMBLY.
10048D74, Rev. 4 STANDARD SAFETY INTERMEDIATE RANGE MODERATED EXCORE DETECTOR ASSEMBLY.
10048D75, Rev. 4 STANDARD SAFETY POWER RANGE MODERATED EXCORE DETECTOR ASSEMBLY.
10049D54, Rev. 4 STANDARD SAFETY QUADAXIAL CABLE PROCUREMENT.

10079D71, Rev.4 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 1 of 8.
10079D71, Rev.4 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 2 of 8.
10079D71, Rev.4 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 3 of 8.
10079D71, Rev.4 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 4 of 8.
10079D71, Rev.3 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 5 of 8.
10079D71, Rev.0 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 6 of 8.
10079D71, Rev.0 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 7 of 8.
10079D71, Rev.0 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 8 of 8.
10081D81, Rev. 6 STANDARD SAFETY NIS TRIAXIAL CONNECTOR KITS.
10122D67, Rev. 1 NUCLEAR INSTRUMENTATION SYSTEM GSI-191 HUB KIT.
10125D01, Rev. 4 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 1 of 6
10125D01, Rev. 3 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 2 of 6
10125D01, Rev. 3 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 3 of 6
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10125D01, Rev. 3 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 5 of 6
10125D01, Rev. 4 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 6 of 6
10125D06, Rev. 3 STANDARD SAFETY NIS FIELD CABLE ZINC RING ANODE DETAIL.
APP-1020-P2-0014, Rev. 4 Nuclear Island Containment and Shield BLDG General Arrangement Plan at Elev. 82-6.
APP-1100-ER-200, Rev. 5 Containment Building Ex Core Instrumentation Embedded Conduit Plan, Sections and Details.

EQ55:
General Documentation Reviewed:
APP-PMS-VBR-014, Rev. 2 Equipment Qualification Data Package for the Nuclear Instrumentation System (NIS) to Electrical Penetration Assembly (EPA) Feedthrough Connection Assemblies Full Qualified Life (60 Year) Period for Use in the AP1000 Plant, dated: 8/25/2016.
APP-PMS-J4-021, Rev. 3 Protection and Safety Monitoring System Nuclear Instrumentation System Design Specification
10125D05, Rev. 4 AP1000 Nuclear Instrumentation System Equipment Qualification Feedthrough and Cable Assembly Sheet 1 of 2
APP-JE92-VPC-004, Rev. 0 AP1000 Nuclear Instrumentation System (NIS) and Radiation Monitoring System (RMS) Electrical Penetration Feedthrough Connections Equipment Qualification Thermal Aging Calculation dated: 5/9/2014.
Kinectrics Test Procedure: K-115257-PSWI-0002 R07 Test Procedure for Qualification Testing of Full Life Feedthrough Connection Assemblies dated: 6/1/2015.
Kinectrics Test Report: K-115257-RA-0002 R01 Test Report for Qualification Testing of Feedthrough Connection Assemblies dated: 2/9/2015.
Drawings:
10049D53, Rev. 3 Standard Safety Triaxial Cable Procurement.
10049D54, Rev. 4 Standard Safety Quadaxial Cable Procurement. Sheet 1 of 2
10049D54, Rev. 0 Standard Safety Quadaxial Cable Procurement. Sheet 2 of 2

10081D81, Rev. 6 Standard Safety NIS Triaxial Connector Kits.
10125D05, Rev. 4 AP1000 Nuclear Instrumentation System Equipment Qualification Feedthrough and Cable Assembly Sheet 1 of 2.
10125D05, Rev. 3 AP1000 Nuclear Instrumentation System Equipment Qualification Feedthrough and Cable Assembly Sheet 2 of 2
Design Specifications:
APP-EY01-Z0-001, Rev. 6 Electrical Penetration Assemblies dated: 2/17/2016.
APP-EY01-Z0D-020, Rev. 2 Specification Datasheet for Class 1E I&C Electrical Penetration Assemblies dated: 11/7/2014.
APP-JE67-Z0-001, Rev. 1 AP1000 Nuclear Instrumentation Hardware Design Specification dated: 1/12/2016.

Section 1A10

EQ50:

General Documentation Reviewed:
APP-PMS-VBR-010, Rev. 3 Equipment Qualification Data Package for the NIS In-Containment Field Cabling and Cable and Connectors at the NIS Junction Box for use in the AP1000 Plant dated: October 2016.
APP-JE92-Z0-001, Rev. 4 AP1000 Excore Source Range Detector Design Specification. Dated: October 2016.
APP-EW30-J8Y-001, Rev. 2 AP1000 Protection and Safety Monitoring System Nuclear Instrumentation System Specialty Cable Drawing Package dated: 11/20/2015
APP-EW30-Z0-004, Rev. 2 AP1000 Protection and Safety Monitoring System Nuclear Instrumentation System Specialty Cable Design Specification. Dated: Sept. 15, 2016.
Drawings Reviewed:
10049D58, Rev. 2 STANDARD SAFETY NIS CABLE POST ACCIDENT CABLE CLAMPING ASSEMBLY.
10125D21, Rev.0 AP1000 NIS JUNCTION BOX PANEL MOUNTING AND INSTALLATION. Sheet 1 of 3.
10125D21, Rev.0 AP1000 NIS JUNCTION BOX PANEL MOUNTING AND INSTALLATION. Sheet 2 of 3.
10125D21, Rev.0 AP1000 NIS JUNCTION BOX PANEL MOUNTING AND INSTALLATION. Sheet 3 of 3.
10144D63, Rev.0 AP1000 NIS SR/PR QUADAXIAL CABLE CLAMP ASSEMBLY PROCUREMENT.
10356D24, Rev.1 Nuclear Instrumentation System GSI-191 Domestic AP1000 Installation. Sheet 1 of 2.
10356D24, Rev.1 Nuclear Instrumentation System GSI-191 Domestic AP1000 Installation. Sheet 2 of 2.

EQ55:

General Documentation Reviewed:
APP-PMS-VBR-014, Rev. 2 Equipment Qualification Data Package for the Nuclear Instrumentation System (NIS) to Electrical Penetration Assembly (EPA) Feedthrough Connection Assemblies Full Qualified Life (60 Year) Period for Use in the AP1000 Plant, dated: 8/25/2016.
APP-PMS-J4-021, Rev. 3 Protection and Safety Monitoring System Nuclear Instrumentation System Design Specification
APP-JE67-J8Y-003, Rev. 0 AP1000 Nuclear Instrumentation System In-Containment System Installation Drawing Package dated: 10/15/2014.

Drawings:
10001C04, Rev 1 Nuclear Instrumentation System Equipment Qualification Triaxial Monitoring Cable with Plug Assembly.

Section 1A11
SV3-SGS-PY-CO3B-2, "Weld Data Sheet", Revision 0
SV3-SGS-PY-CO3A-2, "Weld Data Sheet", Revision 0
RJB9997, "Record of Welder Performance Qualification Test - ASME Section IX Groove Weld", 2/14/2018
MAJ2161, "Record of Welder Performance Qualification Test - ASME Section IX Groove Weld", 3/1/2018
V-18-RT-301-0193, "Radiography Examination Report - Weld SV3-SGS-PY-C03A-2", 4/19/2018
V-18-RT-301-0192, "Radiography Examination Report - Weld SV3-SGS-PY-C03B-2", 4/20/2018

Section 1A12
WEC SV3-EY01-VQQ-001, QR & QAPD, Rev. 3 (2949 pages)
WEC SV3-EY01-VQQ-002, Common Records for EY01, Rev. 0 (239 pages)
WEC SV3-EY01-VQQ-003, QR & QAPD, Rev. 0 (823 pages)
WEC APP-EY01-MV01-Z0-001, Design Specification for the Electrical Penetration Assemblies, Revision 7
WEC SV3-EY01-MLK-886761, Weld Map for Containment Vessel Electrical Penetrations, Sheet 1 of 2, Rev. 0
WEC/Construction Dwg. SV3-1100-P0-909-R3, Electrical Penetration Assembly Details for AP1000
Mirion Weld Traveler Control No. 8453 (P15Y), 4/22/13
Mirion Weld Traveler Control No. 8454 (P16Y), 4/22/13
Mirion Weld Traveler Control No. 8461 (P14Z), 12/18/13
Mirion Solvent Removable Visible Dye Penetrant Test, QCI 9-23, Revisions P (5/28/2012) and R (9/25/2013)
Mirion near-vision acuity and color contrast records for quality lead DP (12/5/2012) and inspector KL (12/10/12)
Mirion Report of Liquid Penetrant Inspection (Visible), Control No. 8461 (EPA -P14Z), SA-240 to SA-333 Gr. 6; 0.75" Thk (2 welds accepted), 12-18-13
Mirion Report of Liquid Penetrant Inspection (Visible), Control No. 8453 (EPA -P15Y), SA-240 to SA-333 Gr. 6; 0.75" Thk (2 welds accepted), 4-22-2013
Mirion Report of Liquid Penetrant Inspection (Visible), Control No. 8454 (EPA -P16Y), SA-240 to SA-333 Gr. 6; 0.75" Thk (2 welds accepted), 4-22-2013
Mirion IPS-2412 Appendix A - Data Sheet A - EPA, Control-No. 8461 (P14Z), 10/31/2016
Mirion IPS-2412 Appendix A - Data Sheet A - EPA, Control-No. 8453 (P15Y), 7/16/2014
Mirion IPS-2412 Appendix A - Data Sheet A - EPA, Control-No. 8454 (P16Y), 7/16/2014

Section 1A13
APP-PV16-Z0R-001, Auxiliary Relief Valves, ASME Boiler and Pressure Vessel Code, Section III, Class 1, 2 and 3 Valve Data Sheet Report, Revision 8
APP-PV16-VBR-002, Equipment Qualification Data Package for Auxiliary Relief Valves for Use in the AP1000 Plant, Revision 1
APP-PV16-VBR-001, Equipment Qualification Summary Report for Auxiliary Relief Valves for Use in the AP1000 Plant, Revision 1
APP-GW-VP-010 Equipment Qualification Methodology and Documentation Requirements for AP1000 Safety-Related Valves and Valve Appurtenances, Revision 2

Engineering Procedure T-161162, Test Procedure, Revision 5
Engineering Procedure VQT-38188, valve qualification Test Procedure, Rev 6
APP-PV16-Z0D-102, Datasheet for relief valve SFS-PL-V067, Revision 5
APP-PV16-Z0D-106, Datasheet for relief valve CCS-PL-V220, Revision 5
APP-PV16-Z0D-108, Datasheet for relief valve VWS-PL-V080, Revision 1
5607, ASME QME-1 Test Report for APP-PV16-Z0D-102, Revision 4
5636, ASME QME-1 Test Report for APP-PV16-Z0D-106, Revision 2
5615, ASME QME-1 Test Report for APP-PV16-Z0D-108, Revision 2
EC-2828, Engineering Calculation, Design Report, AG-Crosby 1x1 Style 951 Relief Valve, Revision 1
EC-2830, Engineering Calculation, Design Report, AG-Crosby 1x1 Style 861 Relief Valve, Revision 1
EC-2839, Engineering Calculation, Design Report, AG-Crosby 3x4 Style JLT-JBS-E-75 Relief Valve, Revision 5
EC-2831, Engineering Calculation, Design Report, AG-Crosby 1x1 Style 951 Relief Valve, Revision 1
EC-2832, Engineering Calculation, Design Report, AG-Crosby 1x2 Style JOS-E-75 Relief Valve, Revision 3
Tech Manual APP-PV16-VMM-001, Installation, Operation, and Maintenance Manual for AP1000 PV16 Auxiliary Relief Valves, ASME Section III Classes 2 and 3, Revision
IR-2018-8572 Incorrect Model Number In list of Test Specimens in APP-PV16-VBR-001 and APP-PV16-VBR-002, Origination Date: 04/12/2018
IR-2018-9130 Corrective Action for Typographical Errors in APP-PV16-VBR-001 and APP-PV16-VBR-002 Found During the NRC EQ Inspection of the PV16 Commodity, Origination Date: 04/25/2018

Section 1A14

LTR-EQ-16-98, Use of Activation Energy for Determining Qualified Life Greater than 20 Years, dated 9/29/2016.
APP-EW50-VBR-001, Rev. 1 Equipment Qualification Summary Report for Class 1E Low-Voltage Cables for use in the AP1000 Plant, dated: 11/20/2017.
APP-EW50-VBR-002, Rev. 1 "Equipment Qualification Date Package for Class 1E Low-Voltage Cables for Use in the AP1000 Plant dated: 1/8/2016.
APP-EW50-VPR-001, Rev. 1 Thermal Aging Evaluation for the General Cable Low Voltage Safety-Related Cables Qualification Program, dated: 11/2/2017
Design Specification APP-EW21-Z0-002, Rev. 1 Instrumentation and Thermocouple Extension Cables, dated: 2/15/2014.
Design Specification APP-EW21-Z0D-002, Rev. 2 Instrumentation and Thermocouple Extension Cables (Class 1E) Data Sheet, dated: 7/25/2016.
Design Specification APP-EW60-Z0D-001, Rev. 2 Class 1E Control Cables Data Sheet, dated: 7/25/2016.
Design Specification APP-EW60-Z0-001, Rev. 1 Class 1E Control Cables, dated: 8/8/2014.
APP-G1-E0R-001, Rev. 0 Expected Cable Insulation and Jacket Operating Temperature Support of Equipment Qualification, dated: 1/8/2016.

Section 1A15

N024-CofC-17, Certificate of Conformance, Rev. 00
ASME form N-1 for PRHR HX (S/N 4607), dated 1/25/17
ASME form N-2 for PRHR HX (S/N 4607), dated 1/24/17
ASME form NS-1 for PRHR HX (S/N 4607), dated 1/23/17

APP-ME02-Z0R-100, AP1000 Passive Residual Heat Removal Heat Exchanger Generic Design Report, Rev. 4
SV3-ME02-Z0R-001, AP1000 Passive Residual Heat Removal Heat Exchanger Vogtle Unit 3 (SV3) ASME Code Design, Rev. 1
SV0-ME02-Z5-003, Appendix 3 Technical Requirements for the AP1000 Passive Residual Heat Removal Heat Exchanger Purchase Order for the Southern Project, Rev. 4
Accelerometer report SV3 PRHR Charleston to Site, dated 3/17/17
C-SV3-PXS-ME-01-201815, Passive RHR HX Equipment Preservation Check Record, dated 4/9/18
APP-ME02-Z0M-101, AP1000 PRHR HX Standard Technical Manual, Rev. 2
NPP 10.01, Material Receipt, Storage, and Control, Rev. 1.00
QS 13.11, Material, Equipment Storage, Rev. 4.00
WEC-16-125, Internal Audit Report Westinghouse Electric Company Mangiarotti , S.P.A, Rev. 0
Vogtle Unit 3 UFSAR, Section 5.4.14 Passive Residual Heat Removal Heat Exchanger, Version 6.2
Vogtle Unit 3 UFSAR, Section 5.2.3 Reactor Coolant Pressure Boundary Materials, Version 6.2
Design and Material Specifications
APP-ME02-Z0-101, Design Specification for AP1000 Passive Residual Heat Removal Heat Exchanger for System PXS, Rev 13
APP-ME02-Z0-200, AP1000 PRHR HX Fabrication Specification, Rev 2
APP-VW40-Z0-280, AP1000 Filler Metal Specification: SFA-5.28 Bare Low alloy Steel Filler Metal for GTAW or GMAW of ASME Section III Applications, Rev 1
APP-VW40-Z0-050, AP1000 Filler Metal Specification: SFA-5.5 Low Alloy Steel Electrodes for SMAW of ASME Section III Applications, Rev 1
APP-VW20-Z0-090, AP1000 Filler Metal Specification SFA-5.9 Class ER308L/EC308L Bare Stainless Steel Material for GTAW, PAW, or GMAW of ASME Section III Applications, Rev 0
APP-VW20-Z0-040, AP1000 Filler Metal Specification: SFA-5.4 E308L-XX Stainless Steel Electrodes for SMAW of ASME Section III Applications, Rev 0
APP-VW20-Z0-041, AP1000 Filler Metal Specification: SFA-5.4 E309L-XX Stainless Steel Electrodes for SMAW of ASME Section III Applications, Rev 0
APP-VL51-Z0-041, Material Specification for SA-508/SA-508 M Grade 3 Class 2 Forgings Rev 0
APP-VL51-Z0-124, Material Specification for SA-240 Type 304L (UNS S30403) Stainless Steel Plate, Rev 1
APP-GW-VLR-002, Technical Requirements of Stainless Steels, Nickel-Base Alloys, Carbon and Low Alloy Steels, and Welding Materials for the AP1000, Rev 2
APP-VL52-Z0-001, Material Specification for SB-166, UNS N06690, Alloy 690 Rod and Bar (Section III-NB), Rev 2

Welding Monitoring Sheets
Welding Monitoring 17892, dated 10/8/12
Welding Monitoring 22703, dated 3/18/13
Welding Monitoring 27281, dated 7/18/12
Welding Monitoring 5106, dated 1/13/11
Welding Monitoring 13422, dated 12/10/10
Welding Monitoring 43438, dated 12/3/10
Welding Monitoring 16088, dated 7/25/12
Welding Monitoring 10644, dated 11/14/11
Welding Monitoring 12145, dated 12/6/11
Welding Monitoring 17169, dated 9/5/12

Welder qualifications
Qualifications for welder ID GM28, dated 1/3/11
Qualifications for welder ID GM45, dated 11/20/09
Qualifications for welder ID GM86, dated 3/9/06
Qualifications for welder ID GM94, dated 11/12/10
Qualifications for welder ID GMC04, dated 9/16/10
Qualifications for welder ID GMC05, dated 3/28/11
Qualifications for welder ID GMC49, dated 7/12/12
Qualifications for welder ID GMD09, dated 1/28/11
Qualifications for welder ID GMD71, dated 9/21/12
Qualifications for welder ID GME10, dated 4/2/13

Drawings
W1-DWF-00-09-050, AP1000-Passive Residual Heat Removal Heat Exchanger, As-built drawing, dated 7/3/16
W1-WLM-00-00-001 AP1000 Passive Residual Heat Removal Heat Exchanger Weld Location Map Head and Tubesheet, Rev 0
W1-WLM-00-00-002, AP1000 Passive Residual Heat Removal Heat Exchanger Weld Location Map Upper and Lower Housing Supports, Rev 0
W1-WLM-00-00-003, AP1000 Passive Residual Heat Removal Heat Exchanger Weld Location Map Housing, Rev 0
W1-WLM-00-00-006, AP1000 Passive Residual Heat Removal Heat Exchanger Weld Location Map Tube Supports, Rev 0
W1-WLM-00-00-007, AP1000 Passive Residual Heat Removal Heat Exchanger Weld Location Map Tube Supports, Rev 0
APP-ME02-V2-002, AP1000 Passive Residual Heat Removal Heat Exchanger Header Assembly, Rev 3
APP-ME02-V2-003, AP1000 Passive Residual Heat Removal Heat Exchanger Housing Assembly, Rev3
APP-ME02-V2-005, AP1000 Passive Residual Heat Removal Heat Exchanger Extended Flange & Support Shell Assembly, Rev 2
APP-ME02-V2-006, AP1000 Passive Residual Heat Removal Heat Exchanger Lower Support Assembly, Rev 4
APP-ME02-V2-008, AP1000 Passive Residual Heat Removal Heat Exchanger Upper Support Assembly, Rev 3
APP-ME02-V6-001, AP1000 Passive Residual Heat Removal Heat Exchanger Tube Support Arrangement, Rev 3
APP-ME02-V6-012, AP1000 Passive Residual Heat Removal Heat Exchanger Tube Sheet Detail, Rev 4
APP-ME02-V6-015, AP1000 Passive Residual Heat Removal Heat Exchanger Tube Schedule, Rev 3
W1-DWF-00-09-050, AP1000 Passive Residual Heat Removal Heat Exchanger, Rev 6

Weld List
W1-WB-00-00-002, Welding List for AP1000 PRHR, Rev 13
W1-WB-00-00-003, Welding List for AP1000 PRHR, Rev 7
W1-WB-00-00-006, Welding List for AP1000 PRHR, Rev 5

CMTRs
CMTR 017 from Mangiarotti, SFA 5.4, Heat Number 281012, 1/21/13
CMTR 019 from Mangiarotti, SFA 5.4, Heat Number 281010, 10/12/11

CMTR 020 from Mangiarotti, SFA 5.4, Heat Number 294001, 1/31/13
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CMTR 029 from Mangiarotti, SFA 5.5, Heat Number 252006, 10/12/11
CMTR 052 from Mangiarotti, SFA 5.4, Heat Number 0481001, 6/13/12
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CMTR 082 from Mangiarotti, SFA 5.4, Heat Number 1121011, 1/11/13
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CMTR 14129/09 from Forge Monchieri, for Upper Tubesheet, 5/25/10
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W1-WPS-00-00-001, Rev 3
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E&DCRs
APP-VL51-GEF-002, Change to Testing Requirements for PRHR and PZR Forgings Specified in APP-VL51-Z0-041, Rev 0
APP-VL51-GEF-001, Modification of term cooling rates, Rev 0
APP-ME02-GEF-008, PRHR HX Simulated Post Weld Heat Treatment Holding Time, Rev 0
APP-ME02-GEF-007, PRHR HX 309L Tensile Test Requirements, Rev 0

Deviation Notices
SV3-ME02-GNR-001, Vogtle Unit 3 Tube Material Nonconformance, Rev. 0
SV3-ME02-GNR-004, Vogtle Unit 3 Chromium Content Nonconformance, Rev 0
SV3-ME02-GNR-036, Deviation Notice for AP1000 PRHR-HX Lower Support Stiffener Plate Chemical Analysis, Rev 0
SV3-ME02-GNR-037, Deviation Notice for AP1000 PRHR Vogtle 3 Lower Support Flange Support Weld, Rev. 0

Corrective Action Documents
CAPAL 100461922, AP1000 PRHR HX Housing Welds, RT of CJP Butt welds per NF-5212, dated 3/31/17
CAPAL 100501094, Vogtle 3&4 PRHR Weldment Archive Sample NDE Inspections at Mangiarotti (SNC CR 10421628), dated 11/1/17
CR 10491047, U3 PZR & PRHR Hx RT Film Deficiencies, dated 5/8/18
CR 10354320, Potential missed RT on U4 and U3 PRHR HX's, dated 4/13/17
CR 10392176, NRC potential violation VCS-RT film unacceptable, dated 7/28/17
CR 10490570, ASME RT film review for Unit 3 Pressurizer and PRHR, dated 5/7/18
CR 10491517, ASME Component Inspection Observation, dated 5/9/18
SV3-ME02-GNR-000002, SV3 PRHR HX RT Film Deficiency, Rev. 0

NDE reports
PT test report, N024-PT-W1 -PCF-00-09-001-05, dated 10/26/12
RT test report, N024-RT -W1-PCF-00-09-001-6, dated 11/5/12
MT test report, N024-MT-W1-PCF-00-09-001-13, dated1/4/13
UT test report, N024-UT -W1-PCF-00-09-001-13, dated 1/8/13
RT test report, N024-RT -W1-PCF-00-09-001-13, dated 2/16/13
VT test report, N024-VT-W1-PCF-00-09-004-5, dated 3/18/13
PT test report, N024-PT-W1-PCF-00-09-004-5, dated 3/19/13
VT test report, N024-VT -W1-PCF-00-09-00422, dated 7/18/13
PT test report, N024-PT-W1-PCF-00-09-004-22, dated 7/18/13
MT test report, N024-MT-W1-PCF-11-09-006-27, dated 12/20/10
MT test report, N024-MT-W1-PCF-11-09-006-37, dated 1/14/11
MT test report, N024-MT-W1-PCF-11-09-006-40, dated 1/19/11
RT test report, N024-RT-W1-PCF-11-09-006-40, dated 1/20/11
MT test report, N024-MT -W1-PCF-11-09-006-55, dated 8/9/11
UT test report, N024-UT-W1-PCF-11-09-006-55, dated 8/10/11
UT test report, N024-UT-W1-PCF-11-09-005-51 B, dated 7/5/11
PT test report, N024-PT-W1-PCF-11-09-005-51-INOX, dated 7/4/11
VT test report, N024-VT-W1-PCF-11-09-005-51, dated 7/4/11
PT test report, N024-PT-W1-PCF-11-09-006-51-INOX, dated 6/24/11
UT test report, N024-UT-WJ-PCF-11-09-006-51INOX, dated 6/25/11
VT test report, N024-VT-W1-PCF-11-09-006-51, dated 6/28/11
UT test report, N024-UT-W1-PCF-11-09-006-51B, dated 6/25/11
UT test report, N024-UT-W1-PCF-11-09-006-54-THK, dated 8/16/11
UT test report, N024-UT-W1-PCF-11-09-006-54, dated 8/16/11
PT test report, N024-PT-W1-PCF-11-09-006-54-INOX, dated 8/12/11
VT test report, N024-VT-W1-PCF-11-09-006-54, dated 8/12/11
PT test report, N024-PT-W1-PCF-00-09-002-80, dated 6/25/12
VT test report, N024-VT-W1-PCF-00-09-002-80, dated 6/25/12
VT test report, N024-VT-W1-PCF-21-09-016-10, dated 11/9/14

PT test report, N024-PT-W1-PCF-21-09-016-10, dated 11/9/11
VT test report, N024-VT-W1-PCF-16-09-003-44-47, dated 12/5/11
PT test report, N024-PT-W1-PCF-16-09-003-44-47, dated 12/5/11
VT test report, N024-VT -W1-PCF-16-09-003-91-92, dated 12/13/11
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VT test report, N024-VT-W1-PCF...00-09-007-8, dated 8/14/13
PT test report, N024-PT -W1-PCF-00-09-007-8, dated 8/14/13
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V-18-RT-301-0279, Radiographic examination report, dated 6/4/18

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SV3-GW-VFY-001, "AP1000 Weld End Configuration for Stainless Steel, Carbon Steel and Alloy Steel Auxiliary Piping Components," Revision 1
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FMC-1, "Filler Material Control", Revision 1
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Weld Data Sheets (WDSs) SV3-PXS-PH-11R0269-2, Rev. 0
Welding Material Requisition (WMR) 370290, 4/17/18
Lincoln Electric CMTR 63399162, Lot-No. 1150S for 5/32" dia. E7018 MR, Mar, 24, 2014

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WECTEC WPS1-8.10HGT-NF-6, Rev. 1, 6/29/2016
Weld Data Sheets (WDS) SV3-PXS-PH-11R2107-1, Rev. 0
Weld Data Sheets (WDS) SV3-PXS-PH-11R2107-4, Rev. 0
Welding Material Requisitions (WMRs) 366809 for welder CTB2095, 4/17/18
Welding Material Requisitions (WMRs) 367670 for welder DVL2226, 4/17/18
Lincoln Electric CMTR 6338965, Lot-No. 1181K for 3/32" dia. ER309L, March 28, 2014
Lincoln Electric CMTR 6338965, Lot-No. 1181J for 1/8" dia. ER309L, March 28, 2014
Lincoln Electric CMTR 7341113, Lot-No. 1243S for 1/8" dia. ER309L, Aug. 31, 2015
CB&I Welder Performance Qualification for GTAW stainless steel Test-No.1SS-02, welder CTB2095, 03/31/2015
CB&I Welder Performance Qualification for GTAW stainless steel Test-No.1SS-02, welder DVL2226, 12/13/2016

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SV3-PXS-PLW-023, "Passive Core Cooling System Containment Building Room 11207 Accumulator Discharge to DVIB", Revision 1
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APP-GW-VFY-001, "Weld End Configuration Proposed Changes to APP-GW-VFY-001", Revision 0
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WPS1-8.8T01, "Welding Procedure Specification ASME Section IX", Revision 9

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WEC Construction isometric drawing SV3-PXS-PLW-024-R1, "Passive Core Cooling System Containment Building Room 11207 Accumulator Discharge to DVIB", Rev. 1
CBI Weld Record of Work Order SV3-PXS-POW-ME3237 for Weld Number SV3-PXS-PLW-024-1, dated 11/10/14
MISTRAS V-18-RT-302-0242, Computed Radiography Examination Report, Weld No. SV3-PXS-PLW-024-1, 5/14/2018
ASME Section III, Subsection NC, Class 2 Components, 1998 Edition including 2000 Addenda
MISTRAS 521-RT-302, "Radiographic Examination using Computed Radiography in Accordance with ASME Section V, Article 2", Revision 0

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ASME Section II, "Part A - Ferrous Material Specifications", 1998 with 2000 Addenda
GWS-1, "ASME General Welding Specification", Revision 7
SV3-PXS-PLW-041, "Passive Core Cooling System Containment Building Room 11300 PRHR Return Line to SG 01", Revision 1
CMTR, Heat 89613, Serial No. AA006636, 10/08/2013
CMTR, Heat 574713, Serial No. 816594-1, 10/11/2013

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ASME Section III, Subsection NC, "Class 2 Components", 1998 with 2000 Addenda
ASME Section II, "Part A - Ferrous Material Specifications", 1998 with 2000 Addenda
GWS-1, "ASME General Welding Specification", Revision 7
SV0-PV01-VMM-001, "Maintenance Manual for AP1000 PV01 Size 3 or Larger Motor Operated Gate Valves, Section III, Class 1, 2 & 3", Revision 0
CMTR, Heat K3713, Serial No. 2, 3/10/2011
CMTR, Heat L2601, Serial No. 1, 3/21/2011

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APP-PV70-Z0-001, Design Specification, Squib (Pyrotechnic Actuated) Valves, ASME BVPC, Section III Class 1, Rev. 6
APP-GW-VLR-010, AP1000 Supplemental Fabrication and Inspection Requirements, Rev. 2
APP-PV70-Z5-002, Purchase Order Appendix 3: Technical Requirements for the Procurement and Delivery of AP1000 Squib Valves (PV70) in Support of AP1000 Projects, Rev. 2
APP-GW-VLR-002, Technical Requirements of Stainless Steels, Nickel-Base Alloys, Carbon and Low Alloy Steels, and Welding Materials for the AP1000, Rev. 2
APP-VL52-Z0-001, Material Specification for Sb-166, UNS N06690, Alloy 690 Rod and bar (Section III-NB), Rev. 2
APP-VL52-Z0-125, Material Specification for SA-479 Type 410 Stainless Steel Bars and Shapes-Annealed Condition, Rev. 1
SPX Drawing No. D-403678 Sheets 1-4, 8 inch [200] HP-R Squib Valve Assembly, Rev. 14
SV3-PV70-VQQ-004, Quality Release and Certificate of Conformance for PV70 Squib Valves, Rev. 2
ASME Form NPV-1, Code Data Report for 8 HP-R Squib Valve, dated 7/20/2017
Westinghouse Quality Assurance Inspection Report No. Q445-17-12849, Receipt of WEC Procured ASME Items, 8/23/2017
CMTR for Valve Body S/N TN2711-38, Heat # 444210, 9/23/2010
CMTR 14-077 for Shear Cap S/N 14-61R, Heat # NX1271HK11, 2/4/2015
CMTR 829424 FD221 for Bonnet S/N 829424-5, Heat # G21499, Rev. 2
CMTR 129933 for Cartridge Cover Nuts, Heat # F15L, Lot # 50223140, 11/30/2010
Non-Destructive Examination/Test Records
SPX NDE Certification, Liquid Penetrant Examination for Valve Body S/N TN2711-38, 11/3/2011
SPX NDE Certification, Liquid Penetrant Examination for Bonnet S/N 829424-5, 9/17/2015
SPX NDE Certification, Liquid Penetrant Examination for Piston S/N 14-27R, 10/16/2014
SPX NDE Certification, Liquid Penetrant Examination for Shear Cap S/N 14-61R, 12/14/2015
Industrial Testing Laboratory Services Ultrasonic Inspection Report No. L27788 for Shear Cap S/N 14-61R, 3/25/2015

SPX Form 705235SQUIB for Valve S/N 0920-164451-4-2, Squib Valve Inspection and Hydrostatic Test Report, Rev. 2
SPX Form 7.12.105-4, "Squib Valve Assembly Critical Dimensions," Part Number 403677, Serial Number 0920-164451-3-1, Rev. 3
SPX Form 4.4.625, Attachment 1, 14-inch Squib Valve Lot Acceptance Testing for Squib Valve S/N 0920-164451-4-2, 12/3/2015
E&DCRs
APP-GW-GEF-1929, Revisions to Appendix B of the Design Specifications for Safety Related Valves, Rev. 0
APP-PV70-GEF-083, PV70 Design Spec Material Spec Clarification, Rev. 0
APP-PV70-GEF-090, Squib Valve Hydrostatic Testing, Rev. 0
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APP-PV70-GNR-037, Squib Valve Deviation Notice (Tension Bolt Notch Inspection), Rev. 0
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CR 10486828, Missing Documentation from Unit 3 PV70 (8) Quality Assurance Data Package, 4/26/2018
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QS 13.11, Material, Equipment Storage, Rev. 4
SPX Procedure No. 3.5.149, Material Handling and Contamination Controls for 8 and 14 Squib Valves, Rev. 3
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APP-PV16-VBR-002, Equipment Qualification Data Package for Auxiliary Relief Valves for Use in the AP1000 Plant, Revision 1
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Tech Manual APP-PV16-VMM-001, Installation, Operation, and Maintenance Manual for AP1000 PV16 Auxiliary Relief Valves, ASME Section III Classes 2 and 3, Revision
IR-2018-8572 Incorrect Model Number In list of Test Specimens in APP-PV16-VBR-001 and APP-PV16-VBR-002, Origination Date: 04/12/2018

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LTR-EQ-16-98, Use of Activation Energy for Determining Qualified Life Greater than 20 Years, dated 9/29/2016.
APP-EW50-VBR-001, Rev. 1 Equipment Qualification Summary Report for Class 1E Low-Voltage Cables for use in the AP1000 Plant, dated: 11/20/2017.
APP-EW50-VBR-002, Rev. 1 "Equipment Qualification Date Package for Class 1E Low-Voltage Cables for Use in the AP1000 Plant dated: 1/8/2016.
APP-EW50-VPR-001, Rev. 1 Thermal Aging Evaluation for the General Cable Low Voltage Safety-Related Cables Qualification Program, dated: 11/2/2017
Design Specification APP-EW21-Z0-002, Rev. 1 Instrumentation and Thermocouple Extension Cables, dated: 2/15/2014.
Design Specification APP-EW21-Z0D-002, Rev. 2 Instrumentation and Thermocouple Extension Cables (Class 1E) Data Sheet, dated: 7/25/2016.
Design Specification APP-EW60-Z0D-001, Rev. 2 Class 1E Control Cables Data Sheet, dated: 7/25/2016.
Design Specification APP-EW60-Z0-001, Rev. 1 Class 1E Control Cables, dated: 8/8/2014.
APP-G1-E0R-001, Rev. 0 Expected Cable Insulation and Jacket Operating Temperature Support of Equipment Qualification, dated: 1/8/2016.

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SV3-PXS-MTK-892047, CMTs Bottom Inside Tank Surface Comparison to DVI Nozzle Centerline Elevation, Rev. 1
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Documents
2.2.03.08c.v.01-U3-PRF-Rev 0 CMT B Elevation, Vogtle Unit 3 Principal Closure Document Review, April 13, 2018
Vogtle Electric Generating Plant, Units 3 and 4 UFSAR, Section 2, System Based Design Descriptions and ITAAC, Rev. 6

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APP-PV16-Z0R-001, Auxiliary Relief Valves, ASME Boiler and Pressure Vessel Code, Section III, Class 1, 2 and 3 Valve Data Sheet Report, Revision 8
APP-PV16-VBR-002, Equipment Qualification Data Package for Auxiliary Relief Valves for Use in the AP1000 Plant, Revision 1
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5636 ASME QME-1 Test Report for APP-PV16-Z0D-107, Revision 1
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EC-2830, Engineering Calculation, Design Report, AG-Crosby 1x1 Style 861 Relief Valve, Revision 1
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Tech Manual APP-PV16-VMM-001, Installation, Operation, and Maintenance Manual for AP1000 PV16 Auxiliary Relief Valves, ASME Section III Classes 2 and 3, Revision
IR-2018-8572 Incorrect Model Number In list of Test Specimens in APP-PV16-VBR-001 and APP-PV16-VBR-002, Origination Date: 04/12/2018
IR-2018-9130 Corrective Action for Typographical Errors in APP-PV16-VBR-001 and APP-PV16-VBR-002 Found During the NRC EQ Inspection of the PV16 Commodity, Origination Date: 04/25/2018

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APP-PV16-Z0R-001, Auxiliary Relief Valves, ASME Boiler and Pressure Vessel Code, Section III, Class 1, 2 and 3 Valve Data Sheet Report, Revision 8
APP-PV16-VBR-002, Equipment Qualification Data Package for Auxiliary Relief Valves for Use in the AP1000 Plant, Revision 1
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5626 ASME QME-1 Test Report for APP-PV16-Z0D-105, Revision 3
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EC-2832, Engineering Calculation, Design Report, AG-Crosby 1x2 Style JOS-E-75 Relief Valve, Revision 3
Tech Manual APP-PV16-VMM-001, Installation, Operation, and Maintenance Manual for AP1000 PV16 Auxiliary Relief Valves, ASME Section III Classes 2 and 3, Revision
IR-2018-8572 Incorrect Model Number In list of Test Specimens in APP-PV16-VBR-001 and APP-PV16-VBR-002, Origination Date: 04/12/2018
IR-2018-9130 Corrective Action for Typographical Errors in APP-PV16-VBR-001 and APP-PV16-VBR-002 Found During the NRC EQ Inspection of the PV16 Commodity, Origination Date: 04/25/2018

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EQ-QR-126, Qualification Summary Report for Standard Pentair Seismic Cabinet, Rev. 1
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APP-GW-G1-002, "Equipment Qualification Methodology," Revision 5, Dated October 2016
APP-PMS-VBR-002, "Equipment Qualification Data Package for PMS Cabinets and NIS Auxiliary Panels for Use in the AP1000 Plant," Revision 9, Dated September 2017
APP-PMS-VBR-003, "Equipment Qualification Summary Report for PMS Cabinets and NIS Auxiliary Panels for Use in the AP1000 Plant," Revision 10, Dated September 2017
APP-PMS-T1-502, "AP1000 Protection and Safety Monitoring System Equipment Qualification Unit Configuration and Test Specification," Revision 2, dated January 2013
APP-GW-VP-030, "AP1000 Environmental Conditions, Revision 6," dated October 2016
APP-PMS-VPP-002, "Environmental Test Procedure for the AP1000 Plant Protection and Safety Monitoring System Equipment Qualification Cabinets," Revision 1, Dated March 2012
APP-PMS-VPR-001, "Environmental Test Report for the AP1000 Protection and Safety Monitoring System and Nuclear Instrumentation System Auxiliary Panels," Revision 0, Dated November 2012
WNA-AR-00371-WAPP, "AP1000 Protection and Safety Monitoring System Pentair Equipment Qualification Cabinet to Production Cabinet Hardware Comparison," Revision 0, Dated August 2013
APP-PMS-VPY-005, "Seismic and Environmental Evaluation of the Tested AP1000 Plant PMS and NIS Cabinet Configurations to Production Pentair Cabinet Configurations," Revision 1, Dated January 2014

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APP-GW-G1-002, "Equipment Qualification Methodology," Revision 5, Dated October 2016
APP-PMS-VBR-002, "Equipment Qualification Data Package for PMS Cabinets and NIS Auxiliary Panels for Use in the AP1000 Plant," Revision 9, Dated September 2017
APP-PMS-VBR-003, "Equipment Qualification Summary Report for PMS Cabinets and NIS Auxiliary Panels for Use in the AP1000 Plant," Revision 10, Dated September 2017
APP-PMS-T1-502, "AP1000 Protection and Safety Monitoring System Equipment Qualification Unit Configuration and Test Specification," Revision 2, Dated January 2013
APP-PMS-VPY-009, "Pentair Cabinet Shielding Effectiveness Evaluation for the Plant Protection and Safety Monitoring System," Revision 0, Dated January 2016
APP-PMS-VPR-003, "AP1000 Plant Protection and Safety Monitoring System Electromagnetic Compatibility Qualification Report," Revision 3, Dated May 2017
WNA-AR-00371-WAPP, "AP1000 Protection and Safety Monitoring System Pentair Equipment Qualification Cabinet to Production Cabinet Hardware Comparison," Revision 0, Dated August 2013
APP-PMS-VPY-002, "AP1000 Plant Protection and Safety Monitoring System Electromagnetic Compatibility Qualification Production Component Evaluation," Revision 1, Dated September 2013

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APP-DS01-VBR-001, Equipment Qualification Summary Report for 250 VDC Switchboard for Use in the AP1000 Plant, Rev. 3
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NRC Inspection Report 99900404/2016-206, dated December 9, 2016, (Adams Accession No. ML16336A244)
NRC Inspection Report Number 99900404/2017-202, dated July 30, 2018, (Adams Accession No. ML18207A243)
APP-OCS-GEH-320, AP1000 Human Factors Engineering Integrated System Validation Plan, Revision 6, dated January 2015
APP-OCS-GEH-320, AP1000 Human Factors Engineering Integrated System Validation, Revision 7, dated February 2018
APP-OCS-GER-320, AP1000 Human Factors Engineering Integrated System Validation Report, Rev.3
APP-OCS-GER-420, AP1000 Human Engineering Discrepancy Resolution Summary Report, Rev. 0
WNA-WI-0056-WAPP, Human Factors Engineering Integrated System Validation Work Instruction, Rev 5.
ND-RA-001-008, ITAAC Principal Closure Document Review and Development version 10.1

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NRC Inspection Report Number 99900404/2017-202, dated July 30, 2018, (Adams Accession No. ML18207A243)
APP-OCS-GEH-320, AP1000 Human Factors Engineering Integrated System Validation Plan, Rev. 7
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APP-OCS-GER-420, AP1000 Human Engineering Discrepancy Resolution Summary Report, Rev. 0
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APP-1278-GEF-058, AP1000 Shield Building RC AI/TR General Notes Update to facilitate the installation of lifting lugs, Rev. 0
APP-1278-GEF-064, Shield Building, Air Inlet Structure, Cold Formed Pipe Manufacturing Tolerance, Rev. 0
APP-1278-GEF-081, Shield Building Steel Wall Panels Update Attachment Plates EL. 248'-6 1/2" to EL. 274-0 1/16" Incorporation Changes of CH64, CH65 AND CH66, Rev. 0
APP-1278-GEF-083, Shield Building Steel Wall Panels. Update on Attachment Plates. Incorporation of Updated Loads by APP-CH71-GEF-010, Rev. 0
APP-1278-GEF-850024, AI/TR-Incr in Allowable Fillet Weld Root Opening AI Pipes to Liner PL, rev. 0
APP-1278-GEF-850046, Shield Building AI/TR Fabrication Critical Measurement Temperatures, Rev. 0
APP-1278-GEF-850055, Shield Building Air Inlet pipes, Rev. 0

APP-1278-GEF-850061, Shield Building AI/TR panels. Attachment plates dimension tolerances, Rev. 0
APP-1278-GEF-850074, Air Inlet - Modified Strong-back Substitution, Rev. 0
APP-1278-GEF-850086, 18" AI pipe weld to AI panel liner plate optimization, Rev. 0
APP-GW-GEF-1746, Shield Building, Air Inlet Steel Structure, Supplemental Pipe Material Specifications, Rev. 0

Non-Conformance Report
APP-1278-GNR-850034, NNI NCR 2765A for SV3-1278-SC-AI21, Item NNI AI1103, Six oval pipe sleeve holes out of location, Rev. 0
APP-1278-GNR-850067, NNI NCR 3041C for SV3-1278-SC-AI21 Weld Penetration for Pipe Sleeve Out of Tolerance, Rev. 0
APP-1278-GNR-850077, NNI NCR 3191A for SV3-1278-SC-AI42, Welding not performed IAW NCR instructions, Rev. 0
APP-1278-GNR-850080, NNI NCR 3217A for SV3-1278-SC-AI42 GROUP 12 Pipe Sleeve out of Tolerance, Weld Joint AI0109, Rev. 0

Calculations
APP-1278-CCC-003, Enhanced Shield Building Roof Air Inlet and Tension Ring Design, Rev. 2
APP-GW-GLR-602, AP1000 Shield Building Design Details for Select Wall and RC/SC Connection, Rev. 5
APP-1278-S3C-010, Shield Building, Air Inlet & Tension Ring Portion, Design of Attachments, Rev. 0

Specifications
APP-VL52-Z0-572, Material Specification for ASTM A572 Grade 50 for SC Shield Building, Rev. 0
APP-1208-Z0-001, Specification for the Fabrication and Field Erection of the SC Panels and the Conical Roof Steel Structure for the AP1000 Shield Building, Rev. 2

Vendor Documents
SV3-1278-SC-AI42, Documentation Package for AP1000 Air Inlet Structural Modules Group 12
SV3-1278-SC-AI21, Documentation Package for AP1000 Air Inlet Structural Modules Group 11

Issue Report
IR-2018-10546, Missing a more detailed information on E&DCR APP-GW -GEF-1746 rev 0 to explain the approach taken for the material substitution

Drawings
SV3-1278-SC-150-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels General Notes
SV3-1278-SC-151-R1, Shield Building Air Inlet & Tension Ring Structural Steel Panels Location and Identification Rollout View
SV3-1278-SC-181-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels El. 248-6 1/2 to 274-1/16 Attachment Plates, Details (I)
SV3-1278-SC-182-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels El. 248-6 1/2 to 274-1/16 Attachment Plates, Details (II)
SV3-1278-SC-192-R0, Shield Building Air Inlet Panels El. 248-6 1/2 to 266-3 15/16 Critical Erection Tolerances, Plan and Section
SV3-1278-SC-211-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels Air Inlet Panel Group 21

SV3-1278-SC-212-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels Air Inlet Panel Group 21 Details 1
SV3-1278-SC-213-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels Air Inlet Panel Group 21 Details 2
SV3-1278-SC-214-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels Air Inlet Panel Group 21 Details 3
SV3-1278-SC-215-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels Air Inlet Panel Group 21 Details 4
SV3-1278-SC-901-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels General Details (Sheet 1)
SV3-1278-SC-902-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels General Details (Sheet 2)
SV3-1278-SC-905-R0, Shield Building Air Inlet & Tension Ring Structural Steel Panels General Details (Sheet 5)

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SV3-0000-C9-001, "AP1000 Concrete General Notes," Rev. 7
SV3-0000-C9-002, "AP1000 Concrete General Notes," Rev. 6
SV3-0000-C9-002A, "AP1000 Concrete General Notes," Rev. 2
SV3-1200-CR-910, "Auxiliary Building Areas 1 & 2 Concrete Reinforcement Wall 11 Elevation," Rev. 8
SV3-1240-CC-917, "Auxiliary Building Concrete Outline Areas 1 & 2 El. 117-6 Section K," Rev. 4
SV3-1240-CR-970, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 4
SV3-1240-CR-971, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 3
SV3-1240-CR-972, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 2
SV3-1240-CR-973, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 3
SV3-1240-CR-974, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 3
SV3-1240-CR-975, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 4
SV3-1240-CR-976, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 4
SV3-1240-CR-977, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 4
SV3-1240-CR-978, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 4
SV3-1240-CR-980, "Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections and Details," Rev. 3
SV3-ML05-V2-231, "AP1000 Special Penetrations (12406/404-Ml-Po1) Line 11 Wall Anchors SP21 Modified Main Steam Details," Rev. 1
SV3-ML05-V2-232, "AP1000 Special Penetrations (12406/404-Ml-Po3) Line 11 Wall Anchors SP22 Modified Main Feedwater Details," Rev.1

Miscellaneous:

AMEC SCC Testing Log, Pour #4106, 06/29/2018
APP-1200-GEF-1050, "4 Inch Shake Space Requirement," Rev. 0
APP-CR01-GEF-850465, "EL 100' 11 and I-Wall CJ Changes," Rev. 0
Concrete/Grout Delivery Ticket #49301, Pour #4106, 06/29/2018
Concrete/Grout Delivery Ticket #49302, Pour #4106, 06/29/2018
Specification SV4-CC01-Z0-026, "Safety Related Mixing and Delivering Concrete," Revision 7
Specification SV4-CC01-Z0-027, "Safety Related Concrete Testing Services," Revision 6
Specification SV4-CC01-Z0-031, "Safety Related Placing Concrete and Reinforcing Steel," Revision 7
SV3-CC01-GEF-000021, "Eliminate CJ in Col. Line 11 Wall," Rev. 0

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SV3-1200-CR-931-R9, Auxiliary Building Areas 2&3 Concrete Reinforcement Wall 7.3 Elevation, Rev. 19
SV3-1230-CR-931-R6, Auxiliary Building Areas 2&3 Concrete Reinforcement Wall 7.3- Sections and Details El 100-0, Rev. 6
SV3-1200-CR-991-R5, Auxiliary Building Concrete Reinforcement Typical Opening Detail, Rev. 7

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APP-1200-GEF-850089, Diagonal #5 Reinforcement for Openings, Rev. 0
SV3-CR01-GEF-000439, Wall 7.3 El 100-0 to 117-6, Rev. 0
SV0-CR01-GEF-001084, Wall 7.3 View G El. 100-0 to 117-6

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ASME Section III, Division 1, Subsection NE, "Class MC Components", 1998 Addition with 2000 Addenda
ASME Section II, Part C, "Specifications for Welding Rods, Electrodes, and Filler Metals", 1998 Addition with 2000 Addenda
SV4-PH01-V2-002, "AP1000 Steam Generator Intermediate Lateral Support Assembly & Details", Revision 1
NDE-913581-036, "Report of Nondestructive Examination Visible, Solvent Removable Liquid Penetrant Examination", 5/11/2018
13416242. UT-74, "Ultrasonic Examination Technique Sheet", 5/16/2018

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APP-MV20-VHM-001, AP1000 Pressurizer Technical Manual: Instructions for Receipt Inspection, Storage and Assembly, Revision 0
QS 13.11, Material, Equipment Storage, Revision 4
Equipment Preservation Check Record for Serial Number 4590, 4/9/2018

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Document Number, "Document Title", Revision X (If there is no revision number, enter the date)
Drawings
D-AA-11104-M06, "AP1000 Reactor Vessel Vogtle #4 Vessel As-Built," Rev. 0
D-AA-11104-M07, "AP1000 Reactor Vessel Vogtle #4 Vessel As-Built," Rev. 0
D-AA-11104-M09, "AP1000 Reactor Vessel Vogtle #4 Vessel As-Built," Rev. 0
Documents
SV4-MV01-VQQ-001, "Quality Release & Certificate of Conformance," Rev. 1

DOOSAN-CFQC-120228, "Dimensional Inspection Record AP1000 Vogtle Reactor Vessel Lower Shell (#4)," February 28, 2012
F09176010-6054, "Dimensional Inspection Record AP1000 Vogtle Reactor Vessel Lower Head (#4)," July 1, 2011

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A00002-001-SK-03, ISI Weld Layout & Mapping Record for Weld No. W1, Revision 0
A00002-001-SK-03, ISI Weld Layout & Mapping Record for Weld No. W2, Revision 0
APP-PXS-PH-11R01391, Pipe Support Drawing PXS System APP-PXS-PH-11R0139, Revision 0
APP-PXS-PH-11R02781, Pipe Support Drawing PXS System APP-PXS-PH-11R0278, Revision 0
APP-PXS-PH-11R05801, Pipe Support Drawing PXS System APP-PXS-PH-11R0580, Revision 0
APP-PXS-PLW-020, Passive Core Cooling System Containment Building Room 11207 ISOL Valves to Common Injection HDR, Revision 5
APP-PXS-PLW-02X, Passive Core Cooling System Containment Building Room 11207 IRWST & Cont. Recirc. To DVI-B, Revision 2
APP-Q223-P2-001, Module 1123-Q2-23 DVI B Valve Module Isometric View (Piping Only) Looking North/West, Revision 1
APP-Q223-SS-500, Module 1123-Q2-23 DVI B Valve Module Welded Connection Details, Revision 0
APP-Q223-SS-501, Module 1123-Q2-23 DVI B Valve Module Welded Connection Details, Revision 0
APP-Q223-V0-001, Module 1123-Q2-23 DVI B Valve Module Drawing Index, Revision 6
APP-Q223-V1-201, Module 1123-Q2-23 DVI B Valve Module Field Connections, Revision 1
APP-Q223-V1-401, Module 1123-Q2-23 DVI B Valve Module General Outline Plan and Section, Revision 1
APP-Q223-V2-402, Module 1123-Q2-23 DVI B Valve Module Pipe Support Locations, Revision 0
SV0-PV03-V2-186001, AP1000 Nozzle Check Valve, 8 Class 1707, Assembly Drawing APP-PV03-Z0D-186, Revision 3
SV4-Q223-PXS-PLW-01, Passive Core Cooling System Pipe Spool, Revision 2
SV4-Q223-PXS-PLW-03, Passive Core Cooling System Pipe Spool, Revisions 0 and 4

Design Specifications

APP-Q223-GDY-001, AP1000 Technical Release Package (TRP) for Mechanical Module Q223, Revision 1
APP-Q223-VFX-001, Mechanical Module Q223 Released Documents List (RDL), Revision 3

Fabrication Specifications

APP-GW-P0-007, AP1000 Specification for Shop Fabricated Piping, Revision 8
APP-GW-P0-007-ADD-05, Supplemental QA Requirements for ASME III Pipe Fabrication, Revision 7
APP-GW-P0-008, AP1000 Specification for Field Fabricated Piping and Installation ASME III, Code Classes 1, 2, and 3 and ASME B31.1, Revision 7
APP-GW-P0-008-ADD-02, Supplemental QA Requirements for the Pressurizer Upper Lateral Support Assembly (PRZUL)-Ring Girder and ASME III Mechanical Modules KB36, Q223, Q233, Q240, Q305 and Q601, Revision 9

APP-GW-VLR-002, Technical Requirements of Stainless Steels, Nickel-Base Alloys, Carbon and Low Alloy Steels, and Welding Materials for the AP1000, Revision 2
APP-GW-VLR-010, AP1000 Supplemental Fabrication and Inspection Requirements, Revision 2
APP-GW-Z0-620, AP1000 Requirements for Marking of Reactor Plant Components and Piping, Revision 2

Travelers/Weld Data Sheets
891700-42-01-00027, CB&I Laurens, Inc. Shop Traveler for Weld Nos. 5 and 6, dated July 13, 2016
SV4-Q223-P0W-800000, Weld Data Sheet for Weld No. SV4-PXS-PLW-020-1, Revision 0
SV4-Q223-P0W-800000, Weld Data Sheet for Weld No. SV4-PXS-PLW-020-3, Revision 0
TRV-A00002Y23-008, Module Q223: Piping and Support Installation SV4-Q223-PXS-PLW-03, Quantity 1, Revision 0

Code Data Reports
Form N-5, Certificate Holders Data Report for Installation or Shop Assembly of Nuclear Power Plant Components, Supports, and Appurtenances, Installed and Certified by CB&I Laurens, Installed for CB&I Stone & Webster, System Serial No. SV4-PXS-PLW-02X-1, Valve BN-156, Piping Subassemblies SV4-PXS-PLW-02X-1A and SV4-PXS-PLW-02X-1B, dated November 30, 2016
Form N-5, Certificate Holders Data Report for Installation or Assembly of Nuclear Power Plant Components, Supports, and Appurtenances, Installed and Certified by Aecon Industrial, Installed for WECTEC Global Project Services, System Serial No. SV4-Q223-PXS-PLW-03, Piping Subassemblies SV4-PXS-PLW-020-1A and SV4-PXS-PLW-020-1B, Support Nos. SV4-PXS-PH-11R0139 and SV4-PXS-PH-11R0580, dated May 15, 2018
Form N-5, Supplemental Sheet, Installed and Certified by Aecon Industrial, Installed for WECTEC Global Project Services, System Serial No. SV4-Q223-PXS-PLW-03, Piping Subassembly SV4-PXS-PLW-020-1ER1, dated May 15, 2018
Form N-5, Certificate Holders Data Report for Installation or Assembly of Nuclear Power Plant Components, Supports, and Appurtenances, Installed and Certified by Aecon Industrial, Installed for WECTEC Global Project Services, System Serial No. SV4-Q223-PXS-PLW-01-A, Piping Subassembly SV4-PXS-PLW-02X-1, Support No. SV4-PXS-PH-11R0128, dated May 15, 2018
Form N-5, Supplemental Sheet, Installed and Certified by Aecon Industrial, Installed for WECTEC Global Project Services, System Serial No. SV4-Q223-PXS-PLW-01-B, Piping Subassembly SV4-PXS-PLW-02X-1, Support Nos. SV4-PXS-PH-11R0128 and SV4-PXS-PH-11R0132, dated May 15, 2018
Form NPP-1, Certificate Holders Data Report for Fabricated Nuclear Piping Assemblies, Fabricated and Certified by CB&I Laurens, Fabricated for CB&I Stone & Webster, SV4-PXS-PLW-020-1A, dated June 27, 2016
Form NPP-1, Certificate Holders Data Report for Fabricated Nuclear Piping Assemblies, Fabricated and Certified by CB&I Laurens, Fabricated for CB&I Stone & Webster, SV4-PXS-PLW-020-1E, dated June 27, 2016
Form NPP-1, Certificate Holders Data Report for Fabricated Nuclear Piping Assemblies, Fabricated and Certified by CB&I Laurens, Fabricated for CB&I Stone & Webster, SV4-PXS-PLW-02X-1A, dated July 13, 2016
Form NPP-1, Certificate Holders Data Report for Fabricated Nuclear Piping Assemblies, Fabricated and Certified by CB&I Laurens, Fabricated for CB&I Stone & Webster, SV4-PXS-PLW-02X-1B, dated July 13, 2016

Form NPP-1, Certificate Holders Data Report for Fabricated Nuclear Piping Assemblies, Fabricated and Certified by CB&I Laurens, Fabricated for CB&I Stone & Webster, SV4-PXS-PLW-020-1F, dated XX
Form NPV-1, Certificate Holders Data Report for Nuclear Pumps or Valves, Manufactured and Certified by Fisher Controls International, Valve 19089914, dated November 9, 2018
Form NPV-1, Certificate Holders Data Report for Nuclear Pumps or Valves, Manufactured and Certified by Flowserve Corporation, Manufactured for Westinghouse Electric Company, Valve BN-156, dated July 13, 2016
Form NS-1, Certificate Holders Certificate of Conformance for Welded Supports, Manufactured by LISEGA, Manufactured for CB&I Stone & Webster, Support No. SV4-PXS-PH-11R0128, dated August 19, 2016
Form NS-1, Certificate Holders Certificate of Conformance for Welded Supports, Manufactured by LISEGA, Manufactured for CB&I Stone & Webster, Support No. SV4-PXS-PH-11R0580, dated October 28, 2015

Base Metal CMTRs
Enertech Certified Material Test Report, SA-479 Gr. F316, Mill Heat No. 2H246, Enertech Heat Code NHV, dated February 7, 2014
Enertech Certified Material Test Report, SA-479 Gr. F316, Mill Heat No. 2H246, Enertech Heat Code NID, dated December 11, 2013
Keokuk Steel Castings Co. Certified Material Test Report, SA-351 GR. CF3M, Heat No. 13325, Heat Code JVXJ, dated September 4, 2014
OYYC1278, Sumitomo Metal Industries Inspection Certificate, SA-312 GR. TP316LN, Heat No. F12A094, dated June 27, 2016
OYYC1341, Sumitomo Metal Industries Inspection Certificate, SA-312 GR. TP316LN, Heat No. F12A024, dated June 26, 2012
OYYU5566RJ, Sumitomo Metal Industries Inspection Certificate, SA-312 GR. TP304L, Heat No. F119138, dated December 9, 2011
OYYU5590, Sumitomo Metal Industries Inspection Certificate, SA-312 GR. TP304L, Heat No. F119139, dated January 10, 2012

Filler Material CMTRs
4931885, Lincoln Electric Company Certificate of Conformance & Certified Material Test Report, ER316/316L, Lot No. 1030C, dated February 17, 2017
7300982, Lincoln Electric Company Certificate of Conformance & Certified Material Test Report, 316L, Lot No. 1254E, dated February 29, 2015
7308070, Lincoln Electric Company Certificate of Conformance & Certified Material Test Report, ER316/316L, Lot No. 1254K, dated August 31, 2015
7308081, Lincoln Electric Company Certificate of Conformance & Certified Material Test Report, ER316/316L, Lot No. 1254L, dated August 14, 2015
7341122, Lincoln Electric Company Certificate of Conformance & Certified Material Test Report, ER316/316L, Lot No. 1243V, dated August 31, 2015
AT9349, Weldstar Certificate of Compliance / Conformance, ER316/316L, Heat# 740574, Lot# AT9349, dated March 26, 2012
CF0140, Weldstar Certificate of Compliance / Conformance, ER316/316L, Heat# e140778, Lot# CF0140, dated July 13, 2016
CT9460, Weldstar Certificate of Compliance / Conformance, ER316/316L, Heat# 741358, Lot# CT9460, dated August 1, 2011
DF0140, Weldstar Certificate of Compliance / Conformance, ER316/316L, Heat# e140778, Lot# DF0140, dated July 13, 2016

Arcos Industries Certified Material Test Report, ER316/316L, Heat# 740574, Lot# AT9349, dated August 11, 2011
Arcos Industries Certified Material Test Report, ER316/316L, Heat# 741358, Lot# CT9460, dated July 27, 2011
Arcos Industries Certified Material Test Report, ER316/316L, Heat# 741358, Lot# CT9460, dated August 11, 2011

WPSs
88-200-N50, Aecon Welding Procedure Specification (WPS) for GTAW of P8 Group 1 to P8 Group 1, Revision 3
AP1000-803, CB&I Laurens Welding Procedure Specification for GTAW of P-No. 8 to P-No. 8, Revision 8
WPS1-8.8T01, WECTEC Welding Procedure Specification for GTAW of P-No. 8 to P-No. 8, Revision 10

PQRs
88-200-715, Procedure Qualification Record (PQR) to Support WPS# 88-200-N50, Revision 0
PQ574, Procedure Qualification Record to Support WPS1-8.8T01, Revision 1
PQ589, Procedure Qualification Record to Support WPS1-8.8T01, Revision 1
PQ595, Procedure Qualification Record to Support WPS1-8.8T01, Revision 0
PRN 070, Procedure Qualification Record to Support WPS No. 803, dated June 15, 1990
PRN 130-1, Procedure Qualification Record to Support WPS No. AP1000 803 and AP1000 808, dated February 6, 2015

Welder Quals
Welder ID No. AER2621, Record of Welder Performance Qualification Test ASME Section IX Grove Weld, dated February 2, 2018
Welder ID No. DLR7312, Record of Welder Performance Qualification Test ASME Section IX Grove Weld, dated February 2, 2018
Welder ID No. JAS1892, Record of Welder Performance Qualification Test ASME Section IX Grove Weld, dated February 12, 2018

NDE Records
CB&I Liquid Penetrant Examination Report for APP-PXS-PLW-02X, performed 6/8/2018
CB&I Radiographic Examination Report for Piece Mark # SV4-PXS-PLW-02X-1, welds 5 and 6, dated 7/12/2016
PT-Y23-037, Aecon Liquid Penetrant Examination Report, performed 1/13/2017
PT-Y23-039, Aecon Liquid Penetrant Examination Report, performed 12/05/2016
PT-Y23-046, Aecon Liquid Penetrant Examination Report, performed 12/05/2016
PT-Y23-048, Aecon Liquid Penetrant Examination Report, performed 12/01/2016
PT-Y23-051, Aecon Liquid Penetrant Examination Report, performed 12/01/2016
PT-Y23-052, Aecon Liquid Penetrant Examination Report, performed 1/09/2017
RT-Y2303-05, Radiographic Examination, performed 1/12/2017
RT-Y2303-05-R1, Radiographic Examination, performed 1/16/2017
RT-Y2303-06, Radiographic Examination, performed 1/11/2017
UT-Y2303-02, Acuren Nondestructive Examination Report UT Thickness, performed 1/09/2017
UT-Y2303-07, Acuren Nondestructive Examination Report UT Thickness, performed 1/10/2017
UT-Y2303-09, Acuren Nondestructive Examination Report UT Thickness, performed 1/16/2017
V-18-PT-301-2026, MISTRAS Liquid Penetrant Examination Report, performed 5/22/2018
V-18-PT-301-2069, MISTRAS Liquid Penetrant Examination Report, performed 5/24/2018
V-18-RT-302-0260, Computed Radiography Examination Report, performed 5/26/2018

V-18-RT-302-0260, MISTRAS Computed Radiography Examination Report, performed 5/26/2018
V-18-RT-302-0267, MISTRAS Computed Radiography Examination Report, performed 5/31/2018

Hydrostatic Test Records
N&D No. APP-Q223-GNR-850092, SV4-Q223 Valve Gland Packing Leakage (Aecon NCR-0618), Revision 0
NCR No. A00002-000-0618, Module Q223: Unit - Y23, Valve Serial No. 0019089914, Revision 01
SV4-Q223-PXS-PLW-HYD-01, AP1000 Modules - Hydro Test Plan, Revision 1
SV4-Q223-PXS-PLW-HYD-03, AP1000 Modules - Hydro Test Plan, Revision 3
Y23-HYD-001, Pressure Test Report, dated January 18, 2017
Y23-HYD-003, Pressure Test Report, dated January 18, 2017

Miscellaneous
132176-C601.08, Purchase Order for CB&I Laurens Shop Fabricated ASME III Piping for ASME III Mechanical Modules, Revision 8
E&DCR No. APP-Q223-GEF-850015, EDCR Q223 Equipment Scope Transfer, Revision 0
Element Grain Size Determination Record for Heat Code NID, Purchase Order Number 121934, dated May 29, 2013, revised August 4, 2018
Enertech Lot Item Serial Number Log for Assigned Heat Code NHV, dated August 12, 2011
Enertech Lot Item Serial Number Log for Assigned Heat Code NID, dated August 29, 2011
Enertech Operating Procedure (EOP) 8076, Procedure for the Marking and Traceability of Items, Revision Q
Lot Traceability Log for Pressure Retaining Items, S/N 11908, Enertech Project 960033, Valve Check 8-1500 INT ERV-Z
Quality Control Procedure (QCP) 405.16, Repair of Weld Metal Defects in Nuclear Items, Revision 2

Condition Reports Initiated
CR 10502393, IOC 180916 NRC Identified minor violation Ref Q223, dated 6/8/2018

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C-SV4-PXS-ME-01-201815, Passive RHR HX Equipment Preservation Check Record, dated 4/9/18
QS 13.11, Material, Equipment Storage, Rev. 4.00
APP-ME02-Z0M-101, AP1000 PRHR HX Standard Technical Manual, Rev. 2

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APP-0000-C9-002, AP1000 CONCRETE GENERAL NOTES, REV. 8
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APP-1110-CR-106, CONTAINMENT CONCRETE REINFORCEMENT FROM EL. 96-0 UP TO EL. 103-0 TYPE DETAILS (SHEET 2), REV. 5
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APP-1110-CR-549, CONTAINMENT CONCRETE REINFORCEMENT DRAWING PLAN VIEW FROM EL. 98-0 UP TO 98-6, REV. 4
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SV4-1110-CR-619, CONTAINMENT CONCRETE REINFORCEMENT FROM EL. 96-0 UP TO EL. 103-0. REBAR CAGE PLAN AT EL. 103-0. PSX B COMPARTMENT, REV. 2
SV4-1110-CR-620, CONTAINMENT CONCRETE REINFORCEMENT FROM EL. 103-0 UP TO EL. 107-2 A. REBAR CAGE PLAN AT EL. 104-7 AND 107-2. REV. 3
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132175-FPR12-01836-7 CMTR, COC and CMTR for weld filler material E7018 lot 1231D, dated 2/20/2015
GBI-229-GDP, CMTR and CoC package including A572 grade 50 angle heat #SE16101043, dated 2/13/2017
MRR J132176-MRR-17-00944, Material Receipt Report for Angles (Commodity Code SV4-CA58-S5B-002_MK36), Rev. 0
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Engineering and Design Coordination Reports (E&DCRs)
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Quality Assurance & Quality Control Manuals:
NDQAM, SNC Nuclear Development Quality Assurance Manual, Version Number 18 (per SNC UFSAR, the QAPD is the SNC Nuclear Development Quality Assurance Manual)
Bechtel Power Corporation Project Nuclear Quality Assurance Manual (PNQAM)
Vogtle Unit 3 & 4 Construction Completion Project, Revision 000
Bechtel Power Corporation Project Nuclear Quality Control Manual (PNQCM) Vogtle Units 3 & 4 Construction Completion Project, Revision 0
26139-000-GQA-GAQG-N0004, Bechtel Power Corporation Nuclear Quality Control Manual, 2015 Edition, Revision 1

Procedures:
ND-QA-008, Quality Assurance Training and Qualification of Personnel, Version 20.0
Bechtel Units 3&4 Construction Completion Project Site Training Plan, No. 26139-000-G67-GAM-00001, Revision 001

26139-000-4MP-T81C-N1302, Nuclear Construction Site Training Non-Manual and Craft Personnel, Revision 0
26139-000-GPP-GCX-00002, Construction Project Procedures Manual (Legacy)

Licensing Documents:
LDCR-2017-138, Changes to the NDQAM Resulting from the Organizational Changes, Approved 20 December, 2017
LDCR-2017-153, Changes to the NDQAM Resulting from the Organizational Changes, Approved 18 June, 2018

Audits, Surveillances, and Assessments:
SNC Surveillance Plan NDQA-2018-S00, WEC Supplier Oversight, Approved January 26, 2018
2QP-Q01B-00302, Auditor/Lead Auditor Qualification, Revision 003
SNC Surveillance Plan NDQA-2018-S003, Bechtel QA Program Implementation: Welder Qualification Program, Approved March 29, 2018
SNC Surveillance Plan NDQA-2018-S007, Development and Implementation of Work Packages, Approved April 26, 2018
Audit Report, Quality Assurance Audit Vogtle Units 3 & 4 Construction Completion Project, No.: 26139-000-2QA-GAQ-18001, Revision 0
SNC letter ND-18-0844, Nuclear Development Quality Assurance (NDQA) Audit Report for the NDQA Audit of the Bechtel QA Program, SNC-ND-2018.04-Bechtel-SITE-QA; Dated June 20, 2018.
WECTEC Surveillance Log July 20, 2017 June 2018
ND-17-1524, 2017/2018 Nuclear Development Quality Assurance Audit Schedule (Rev. 1)
ND-18-0403, 2018/2019 Nuclear Development Quality Assurance Audit Schedule (Rev. 1)
SNC Audit Finding Report (AFR), AFR 2018-01; Audit Date(s): May 14, 2018 June 7, 2018
SNC AFR 2018-02; Audit Date(s): May 14, 2018 June 7, 2018

Miscellaneous:
ND-17-2023, Vogtle 3&4 Construction Project Quality Assurance Interface Document - Bechtel, Revision 0
SVP_SV0_005074, Approved Vogtle 3 & 4 Construction Project Quality Assurance Interface Document, Revision 1

Corrective Action Documents:
Condition Report (CR) 10502176 - 2018 NDQA Bechtel Audit AFR # 2018-01 Bechtel; Entry Date: 06/07/2018
CR 10502177 - 2018 NDQA Bechtel Audit AFR # 2018-02 Cyber; Entry Date: 06/07/2018

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Project Nuclear Quality Assurance Manual (PNQAM), Vogtle Units 3 & 4 Construction Completion Project, Revision 0
Project Nuclear Quality Control Manual (PNQCM), Vogtle Units 3 & 4 Construction Completion Project, Revision 0
26139-000-GPP-GCX-00002, Construction Project Procedures Manual (Adopted Construction Procedures for Vogtle Units 3 & 4), Revision 6
Procedures)
26139-000-4MP-T81C-N3701, Welding Program, Revision 0
QAD 02.15, Qualification and Certification of Inspection and Test Personnel, Revision 08.01

26139-0004MP-T040-S0531, Nondestructive Examination Procedure Visual Examination, VT-AWS D1.1, Revision 1
26139-000-4MP-T040-S0021, Bechtel General Welding Standard GWS-Structural (2000) (For Vogtle Job Only), Revision 2
26139-000-4MP-T81C-N7101, Construction Quality Verification Program, Revision 0
26139-000-4MP-T81C-N3210, Concrete Operations, Rev.1
QCI 26139-000-2QI-Q07C-N3210, Concrete Operations, Rev.1
26139-000-4MP-T81C-N3504, Pipe Supports, Revision 0
QCI 26139-000-2QI-Q07C-N3502, Fabrication and Installation of Piping, Revision 0
26139-000-4MP-T81C-N3221, Structural Steel Erection, Rev.1
QCI 26139-000-2QI-Q07C-N3601, Vessel, Tank, Exchanger and other Stationary Equipment Installation, Revision 0
QCI 26139-000-2QI-Q07C-N7102, Control of Measuring and Test Equipment, Revision 0

Inspection Reports
26139-SV4-IR-C0-00294-N3210, Concrete Placement Inspection Record, Embed Plate Verification.
WPS P1-A-Lh, Cable Tray Support SV3-1133-SH-E529, Revision 0

Work Packages
SV3-1130-SHW-800003, Fabrication of Cable Tray Supports Containment Building EL. 100-2, Room 11306.
SV4-1232-C0W-800002, Placement of Aux Building Slab SP-18A in Area 2 at EL. 100-0

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V-G-0239, Protractor, Model 154455

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SV4-CC01-Z0-031, "Safety Related Placing Concrete and Reinforcing Steel," Revision 7
Management Suspension of Work 132175-MSOW-17-0001
ND-AD-002, "Nuclear Development Program Corrective Action Program," Rev. 27.0
W2-5.1-101," Westinghouse Corrective Action Program Procedure," Rev. 5.1

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Quality Assurance & Quality Control Manuals:
NDQAM, SNC Nuclear Development Quality Assurance Manual, Version Number 18 (per SNC UFSAR, the QAPD is the SNC Nuclear Development Quality Assurance Manual)

Bechtel Power Corporation Project Nuclear Quality Assurance Manual (PNQAM)
Vogtle Unit 3 & 4 Construction Completion Project; Revision 000
Bechtel Power Corporation Project Nuclear Quality Control Manual (PNQCM) Vogtle Units 3 & 4 Construction Completion Project, Revision 0
26139-000-GQA-GAQG-N0004, Bechtel Power Corporation Nuclear Quality Control Manual, 2015 Edition; Revision 1

Procedures:
ND-QA-008, Quality Assurance Training and Qualification of Personnel, Version 20.0
Bechtel Units 3&4 Construction Completion Project Site Training Plan, No. 26139-000-G67-GAM-00001; Revision 001
26139-000-4MP-T81C-N1302, Nuclear Construction Site Training Non-Manual and Craft Personnel, Revision 0
26139-000-GPP-GCX-00002, Construction Project Procedures Manual (Legacy)

Licensing Documents:
LDCR-2017-138, Changes to the NDQAM Resulting from the Organizational Changes, Approved 20 December, 2017
LDCR-2017-153, Changes to the NDQAM Resulting from the Organizational Changes, Approved 18 June, 2018
Audits, Surveillances, and Assessments:
SNC Surveillance Plan NDQA-2018-S00, WEC Supplier Oversight; Approved January 26, 2018
2QP-Q01B-00302, Auditor/Lead Auditor Qualification; Revision 003
SNC Surveillance Plan NDQA-2018-S003, Bechtel QA Program Implementation: Welder Qualification Program; Approved March 29, 2018
SNC Surveillance Plan NDQA-2018-S007, Development and Implementation of Work Packages; Approved April 26, 2018
Audit Report, Quality Assurance Audit Vogtle Units 3 & 4 Construction Completion Project, No.: 26139-000-2QA-GAQ-18001; Revision 0
SNC letter ND-18-0844, Nuclear Development Quality Assurance (NDQA) Audit Report for the NDQA Audit of the Bechtel QA Program, SNC-ND-2018.04-Bechtel-SITE-QA; Dated June 20, 2018.
WECTEC Surveillance Log July 20, 2017 June 2018
ND-17-1524, 2017/2018 Nuclear Development Quality Assurance Audit Schedule (Rev. 1)
ND-18-0403, 2018/2019 Nuclear Development Quality Assurance Audit Schedule (Rev. 1)
SNC Audit Finding Report (AFR), AFR 2018-01; Audit Date(s): May 14, 2018 June 7, 2018
SNC AFR 2018-02; Audit Date(s): May 14, 2018 June 7, 2018

Miscellaneous:
ND-17-2023, Vogtle 3&4 Construction Project Quality Assurance Interface Document - Bechtel, Rev. 0
SVP_SV0_005074, Approved Vogtle 3 & 4 Construction Project Quality Assurance Interface Document, Rev. 1

Corrective Action Documents:
Condition Report (CR) 10502176 - 2018 NDQA Bechtel Audit AFR # 2018-01 Bechtel; Entry Date: 06/07/2018
CR 10502177 - 2018 NDQA Bechtel Audit AFR # 2018-02 Cyber; Entry Date: 06/07/2018

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Procedures:
APP-GW-GAP-140, AP1000 Licensing Applicability Determination and 10 CFR 50.59/10 CFR 52 Appendix D Section VIII Screening, Rev. 1
APP-GW-GAP-142, AP1000 10 CFR 52 Appendix D Section VIII Processes for Changes and Departures Evaluations, Rev. 0
APP-GW-GAP-147, AP1000 Current Licensing Basis Review, Rev. 9
ND-LI-VNP-002, Applicability Determination and 50.59 / Departure Screening for VEGP 3&4, Rev. 13
ND-LI-VNP-003, 50.59 / Departure Evaluations for Vogtle 3&4, Rev. 7
ND-LI-VNP-007, Licensing Document Change Requests For VEGP Units 3&4, Rev. 6.5

Licensing Basis Documents:
Vogtle Electric Generating Plant (VEGP) 3&4 UFSAR, Revision 6.2
VEGP 3&4 UFSAR, Revision 5.2
VEGP COL Licenses Nos. NPF-91 and NPF-92, Amendment Nos. 123 and 122
Final Safety Evaluation Report, for the Combined Licenses for Vogtle Electric Generating Plant, Units 3 and 4; Volume 1, 2, & 3 (NUREG-2124); Published September 2012
ND-16-2518, Protected Information for Request for License Amendment Regarding Shield Building Roof Changes (LAR 16-031), Enclosure 2

DCPs:
APP-GW-GEE-5472, VRS Consolidation of Follow on E&DCR's, Rev. 0
APP-GW-GEE-5482, VXS Consolidation of Follow on E&DCRs, Rev. 0
APP-GW-GEE-5492, JE02 Inline Pressure Element Length, Rev. 0
APP-GW-GEE-5494, Resolution to CAPAL 100400745 (TDS Pipe Routing), Rev. 0
APP-GW-GEE-5497, Correction of RXS Control Cabinet Nomenclature, Rev. 0
APP-GW-GEE-5501, Compliance with ASME Section Ill Code ND-7142 for RNS Valves VOOSNB, Rev. 0
APP-GW-GEE-5505, Resolution of WGS Shield Wall Location Discrepancy, Rev. 0
APP-GW-GEE-5519, PORV Noise Mitigation, Rev. 0
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APP-GW-GEE-5451, Updating CMT and ADS Technical Specifications for RCS Vacuum Refill, Rev. 0
APP-GW-GEE-5496, Update to Effective Flow Area and Stroke time for the ADS Stages 2 and 3 control valves, Rev. 0

LDCRs:
LDCR-2014-112, Indication of Reactor Vessel Head Vent Isolation Valve RCS-PL-V233 Position Status, Dated 14 Sep 2017
LDCR-2015-118, Refueling Machine and Fuel Handling Machine Clarifications, Dated 18 May 2017
LDCR-2015-124, Clarification of Combined License Information in the VEGP 3&4 UFSAR, Dated 3 Jan 2018
LDCR-2015-129, Miscellaneous Editorial and Consistency Changes RG 1.59 & RG 1.190, Dated 28 Mar 2018
LDCR-2016-143, In-Containment Refueling Water Storage Tank (IRWST) Volume Changes (LAR-17-002), Dated 2 Aug 2017
LDCR-2016-166, Classification of Nonsafety-Related Instrumentation (LARâ€‘16â€‘029), Dated 25 May 2017

LDCR-2017-015, Hydrogen Venting from Passive Core Cooling System (PXS) Compartments (LAR-17-003), Dated 29 Aug 2017
LDCR-2017-050, VBS Supplemental Air Filtration Fan Performance Data Changes, Dated 10 May 2017
LDCR-2017-053, Correction of Typographical Error in UFSAR Table 13.4-201, Dated 2 Jun 2017
LDCR-2017-100, Changes to the Classifications in Table 3.2-3, Dated 9 Aug 2017
LDCR-2017-114, Change to RNS Suction Relief Valve Design Parameters, Dated 16 Feb 2018
LDCR-2017-134, Added Thermal Relief Valve to Startup Feedwater Header Line, Dated 15 Dec 2017
LDCR-2017-152, Passive Residual Heat Removal Heat Exchanger Tube Inspection Requirements, Dated 16 Mar 2018
LDCR-2017-096, Changes to the As-designed Pipe Rupture Hazard Analysis, Dated 28 Jul 2017
LDCR-2017-140, WLS Relief Valve Addition and Pump Design Change, Dated 16 Jan 2018

E&DCRs:
SV0-CR01-GEF-000923, Unidentified bars under CA03, Rev. 0
SV4-CA01-GEF-000039, NI4-Containment-CA01 B-plate Shear lug and Anchor Rod Mod, Rev. 0
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APP-EGS-GEF-850068, Cable tray expansion splice plate grounding option, Rev. 0
APP-GW-GEF-1943, Incorporation of APP-GW-GEE-5394, Rev. 0
APP-RCS-GEF-412, Update to RCS-506 and RCS-602 Acceptance Criteria, Rev. 0
APP-FSAR-GLR-011, Generic Licensing Impact Determination for Nuclear Island Electrical Raceway Arrangement Drawings, Raceway Support Drawings, Raceway Support Calculations and Bill of Materials, Rev. 0

N&Ds:
APP-1208-GNR-850800, NNI NCR 2881A for SV3-1208-SC-09F for Final Critical Dimensions, Rev. 0
APP-1278-GNR-850021, NNI NCR 2732 A, (SV3-1278-SC-AI06) AI9005-040 weld joint depth of penetration not achieved, Rev. 0

APP-1278-GNR-850027, NNI NCR 2739A, SV3-1278-SC-AI14, Item NNI AI1103, Six oval pipe sleeve holes out of location, Rev. 0
APP-1278-GNR-850066, NNI NCR 3133A for final critical measurement SV3-1278-SC-AI29, Rev. 0
APP-KB36-GNR-850142, [Aecon to WEC] SV3-KB36 weld on item No. 2 of APP-PCS-PH-12R02161 (NCR 896), Rev. 0
APP-ML05-GNR-850029, Collar plate deformed SV3-12454-ML-P10, Rev. 0
APP-SS01-GNR-850243, SS01.00-SV3_PVS NCR no. 51426: Ht no. 447663/W21x101, Failed CGD Below Allowable Weight, Rev. 0
SV0-XE01-GNR-000030, AMEC FW CR-SV-298: San Diego oven out of tolerance, Rev. 0
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SV3-CE01-GNR-000248, Unit-3 Aux Bldg: Wall #51 @ J1-line, Embed damaged by drilling formwork cleanout, Rev. 0
SV3-CE01-GNR-000282, Plate APP-12556-CE-PF531, Rev. 0
SV3-CE50-GNR-000123, SV3 Annex Wall 01 Sleeve MK I01 Rebar Clash, Rev. 0
SV3-CR01-GNR-000877, Missing Bars Wall J-1 Wall 1 to CA20, Rev. 0
SV3-CR01-GNR-000938, Doorway Clear Cover Wall P and 11, Rev. 0
SV3-MH20-GNR-000070, SV3 220 Ton Crane Drive Train Alignment Details, Rev. 0
SV3-SS01-GNR-000728, U3 IWRST Tower Baseplate to P3 Embed Connection Issue, Rev. 0
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SV3-SS30-GNR-000003, Trunnion Sleeves not press fit into Steam Generator Intermediate Lateral Supports, Rev. 0
SV3-WRS-GNR-000114, SV3-WRS-PLW-660 FW2 SHRINKAGE, Rev. 0
SV4-CA01-GNR-000148, B-097 CLEAR SPACING BETWEEN ANGLE, Rev. 0
SV4-CA20-GNR-000204, SV4-CA20 FLOOR SEAT ANGLE, Rev. 0
SV4-CA20-GNR-000231, CA20_12 Interior Channel Damage, Rev. 0
SV4-CR01-GNR-000244, Slab Placement 4 Form Saver Interference, Rev. 0

Miscellaneous:
CR 10494140 - IOC 18-015, NRC Criterion III Inspection; Observation; Entry Date: 05/16/2018
IR-2018-9970, Licensing Impact Determination (LID) for N&D APP-1278-GNR-850027; Origination Date: 5/17/18

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0GM-M01G-00801, Records Management Program, Revision 000
0GM-M01G-00802, Records Disposition Program Records Retention Schedule; Revision 000
0GM-M01G-00806, Quality Records, Revision 001
26139-000-4KP-K01G-00001-001, Blue Sheeted Procedures Master Index, Revision 001
26139-000-2KP-K01G-00002, Project Administration Instruction Manual Master Index, Revision 001
26139-000-4MP-T81C-N1204, Construction Implementation and Closing of Work Packages, Revision 3
26139-000-G30-GAK-00001, Records Retention Plan, Revision 000
ND-CS-VNP-007, Work Package Planning and Development, Version 4.0
ND-CS-VNP-008, Work Package Closure, Version 4.0

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SV4-1208-C0W-850003, Unit 4 Shield Lower Anchor Ring El. 726-696 Work Package
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APP-JE67-J0M-002, Technical Manual for NY-10950 Intermediate Range Detector Channel Connector Seal Assembly Kit For Use at Penetration Connections, Revision 2
APP-JE67-J0M-005, Technical Manual for NY-10948 Power Range Detector Channel Connector Seal Assembly Kit For Use at Connections Within Junction Box, Revision 1
APP-JE67-J0M-009, Technical Manual for NY-10885 & NY-10947 IR J-Box Cable Clamp Assembly and Cable Restraining Hardware with Connector Seal Assembly Kit, Revision 1

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Surveillance NDQA-2018-S003, Bechtel QA Program Implementation: Welder Qualification Program 3/29/18
26139-000-4MP-T81C-N3701, Welding Program, Revision0
26139-000-4MP-T040-S0531 Bechtel Nondestructive Examination Procedure Visual Examination VT-AWS D1.1, Revision1
26139-000-4MP-T040-S0563 Bechtel Nondestructive Examination Procedure Liquid Penetrant Examination PT (SR)-AWS D1.1, Revision 0
26139-000-4MP-T040-S0532, Bechtel Nondestructive Examination Procedure Magnetic Particle Examination MT-AWS D1.1, Revision0
26139-000-4MP-T040-S0078, Bechtel Welding Performance Qualification Specification [ASME IX] WQ-1, Revision0
26139-000-GMX-GCE-00001, Special Processes Manual Master Index, Revision0
26139-000-4MP-T040-S0038, Bechtel Welding Specification Welding Filler material Control WFMC-1, Revision2
2KP-K01G-00038, Construction Documents, Revision000
26139-000-4MP-T040-W0162, Bechtel Welding Procedure Specification P10H-T-Ag, Revision 1
Bechtel Welding Procedure Qualification Record 1635, 9/28/09
Bechtel Welding Procedure Qualification Record 1927, 2/23/18
26139-000-4MP-T040-W0140, Bechtel Welding Procedure Specification P1-A-Lh (Structural), Revision 0
WR-5C forms, referenced weld maps, and summary of welders qualification for Work Package SV4-1152-SHW-800000
WR-5C forms, referenced weld maps, and summary of welders qualification for Work Package SV4-Q233-Q2W-800000
WR-5C Forms and summary of welders' qualification for CH77 Module Beam Seats in work package SV4-1120-SSW-800000
26139-000-4MP-T040-S0013, Bechtel General Welding Standard GWS-1, Revision 3
26139-000-4MP-T040-S0021, Bechtel General Welding Standard GWS-Structural (2000), Revision 2
26139-000-4MP-T040-S0036, Bechtel Welding Standard Documentation of Welds WD-1, Revision 2
26139-000-4MP-T040-S0079, Bechtel Welding Performance Qualification Specification [D1.1] WQ-2 (2000), Revision 0

Section 2P01

This is a security-related input. See non-public report 05200025/2018411 and 05200026/2018411 for details.

Section 2P02

This is a security-related input. See non-public report 05200025/2018411 and 05200026/2018411 for details.

3. OPERATIONAL READINESS

Section 3P01

General Documentation:
APP-PMS-VBR-010, Rev. 3 Equipment Qualification Data Package for the NIS In-Containment Field Cabling and Cable and Connectors at the NIS Junction Box for use in the AP1000 Plant dated: October 2016
APP-JE92-Z0-001, Rev. 4 AP1000 Excore Source Range Detector Design Specification. Dated: October 2016
APP-EW30-J8Y-001, Rev. 2 AP1000 Protection and Safety Monitoring System Nuclear Instrumentation System Specialty Cable Drawing Package dated: 11/20/2015
APP-EW30-Z0-004, Rev. 2 AP1000 Protection and Safety Monitoring System Nuclear Instrumentation System Specialty Cable Design Specification. Dated: Sept. 15, 2016
APP-PMS-VBR-014, Rev. 2 Equipment Qualification Data Package for the Nuclear Instrumentation System (NIS) to Electrical Penetration Assembly (EPA) Feedthrough Connection Assemblies Full Qualified Life (60 Year) Period for Use in the AP1000 Plant, dated: 8/25/2016
APP-PMS-J4-021, Rev. 3 Protection and Safety Monitoring System Nuclear Instrumentation System Design Specification
10125D05, Rev. 4 AP1000 Nuclear Instrumentation System Equipment Qualification Feedthrough and Cable Assembly Sheet 1 of 2
APP-JE92-VPC-004, Rev. 0 AP1000 Nuclear Instrumentation System (NIS) and Radiation Monitoring System (RMS) Electrical Penetration Feedthrough Connections Equipment Qualification Thermal Aging Calculation dated: 5/9/2014
Kinectrics Test Procedure: K-115257-PSWI-0002 R07 Test Procedure for Qualification Testing of Full Life Feedthrough Connection Assemblies dated: 6/1/2015
Kinectrics Test Report: K-115257-RA-0002 R01 Test Report for Qualification Testing of Feedthrough Connection Assemblies dated: 2/9/2015
LTR-EQ-16-98, Use of Activation Energy for Determining Qualified Life Greater than 20 Years, dated 9/29/2016
APP-EW50-VBR-001, Rev. 1 Equipment Qualification Summary Report for Class 1E Low-Voltage Cables for use in the AP1000 Plant, dated: 11/20/2017
APP-EW50-VBR-002, Rev. 1 Equipment Qualification Date Package for Class 1E Low-Voltage Cables for Use in the AP1000 Plant dated: 1/8/2016.
APP-EW50-VPR-001, Rev. 1 Thermal Aging Evaluation for the General Cable Low Voltage Safety-Related Cables Qualification Program, dated: 11/2/2017
APP-G1-E0R-001, Rev. 0 Expected Cable Insulation and Jacket Operating Temperature Support of Equipment Qualification, dated: 1/8/2016

Drawings:
10004D98, Rev. 2 AP1000 NIS EQ IN-CONTAINMENT CABLE TEXT FIXTURE FABRICATION
10023B02, Rev. 1 STANDARD SAFETY AP1000 INSTRUMENT WELL BOTTOM COVER FOR GSI-191 REQUIREMENT
10048D73, Rev. 4 STANDARD SAFETY SOURCE RANGE MODERATED EXCORE DETECTOR ASSEMBLY
10048D74, Rev. 4 STANDARD SAFETY INTERMEDIATE RANGE MODERATED EXCORE DETECTOR ASSEMBLY

10048D75, Rev. 4 STANDARD SAFETY POWER RANGE MODERATED EXCORE DETECTOR ASSEMBLY
10049D54, Rev. 4 STANDARD SAFETY QUADAXIAL CABLE PROCUREMENT
10079D71, Rev.4 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 1 of 8
10079D71, Rev.4 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 2 of 8
10079D71, Rev.4 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 3 of 8
10079D71, Rev.4 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 4 of 8
10079D71, Rev.3 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 5 of 8
10079D71, Rev.0 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 6 of 8
10079D71, Rev.0 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 7 of 8
10079D71, Rev.0 NUCLEAR INSTRUMENTATION SYSTEM EQUIPMENT QUALIFICATION JUNCTION BOX Sheet 8 of 8
10081D81, Rev. 6 STANDARD SAFETY NIS TRIAXIAL CONNECTOR KITS
10122D67, Rev. 1 NUCLEAR INSTRUMENTATION SYSTEM GSI-191 HUB KIT
10125D01, Rev. 4 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 1 of 6
10125D01, Rev. 3 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 2 of 6
10125D01, Rev. 3 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 3 of 6
10125D01, Rev. 4 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 4 of 6
10125D01, Rev. 3 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 5 of 6
10125D01, Rev. 4 AP1000 NIS EQ JUNCTION BOX PANEL ASSEMBLY. Sheet 6 of 6
10125D06, Rev. 3 STANDARD SAFETY NIS FIELD CABLE ZINC RING ANODE DETAIL
APP-1020-P2-0014, Rev. 4 Nuclear Island Containment and Shield BLDG General Arrangement Plan at Elev. 82-6
APP-1100-ER-200, Rev. 5 Containment Building Ex Core Instrumentation Embedded Conduit Plan, Sections and Details
10049D53, Rev. 3 Standard Safety Triaxial Cable Procurement
10049D54, Rev. 4 Standard Safety Quadaxial Cable Procurement Sheet 1 of 2
10049D54, Rev. 0 Standard Safety Quadaxial Cable Procurement Sheet 2 of 2
10081D81, Rev. 6 Standard Safety NIS Triaxial Connector Kits
10125D05, Rev. 4 AP1000 Nuclear Instrumentation System Equipment Qualification Feedthrough and Cable Assembly Sheet 1 of 2
10125D05, Rev. 3 AP1000 Nuclear Instrumentation System Equipment Qualification Feedthrough and Cable Assembly Sheet 2 of 2

Design Specifications:
APP-EY01-Z0-001, Rev. 6 Electrical Penetration Assemblies dated: 2/17/2016
APP-EY01-Z0D-020, Rev. 2 Specification Datasheet for Class 1E I&C Electrical Penetration Assemblies dated: 11/7/2014
APP-JE67-Z0-001, Rev. 1 AP1000 Nuclear Instrumentation Hardware Design Specification dated: 1/12/2016
APP-EW21-Z0-002, Rev. 1 Instrumentation and Thermocouple Extension Cables, dated: 2/15/2014
APP-EW21-Z0D-002, Rev. 2 Instrumentation and Thermocouple Extension Cables (Class 1E) Data Sheet, dated: 7/25/2016

APP-EW60-Z0D-001, Rev. 2 Class 1E Control Cables Data Sheet, dated: 7/25/2016
APP-EW60-Z0-001, Rev. 1 Class 1E Control Cables, dated: 8/8/2014

Section 3P02

WDI-STD-1075, "Automated Ultrasonic Examination of the AP1000 Steam Generator Outlet Nozzle to Reactor Coolant Pump Suction Nozzle Weld", Revision 1
WDI-STD-1077, "Remote Eddy Current Examination of the AP1000 SC Outlet Nozzle to Cast Stainless Steel RCP Casing Suction Nozzle Weld", Revision 0
ASME Code Case N-799, "Dissimilar Metal Welds Joining Vessel Nozzles to Components, Section XI, Division 1", 12/20/2010
ML17097A450, "Alternative Request VEGP 3&4-PSI-ALT-05 Regarding Preservice Inspection Requirements for Steam Generator Nozzle to Reactor Coolant Pump Casing Welds", 4/17/2017
33476, "Certificate of Qualifications", 1/16/18

LIST OF ACRONYMS

ACI	American Concrete Institute
ADS	Automatic Depressurization System
AI	Air Inlet
AISC	American Institute of Steel Construction
ANI	Authorized Nuclear Inspector
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
BPVC	Boiler and Pressure Vessel Code
CAP	Corrective Action Program
CAPAL	Corrective Action Prevention and Learnings
CFR	Code of Federal Regulations
CLB	Current Licensing Basis
CMT	Core Makeup Tank
CMTR	Certified Material Test Report
CoC	Certificate of Conformance
COL	Combined License
CR	Condition Report
DCO	Division of Construction Oversight
DCP	Design Change Proposals
DVI	Direct Vessel Injection
E&DCR	Engineering and Design Coordination Reports
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EPA	Electrical Penetration Assembly
EQDP	Equipment Qualification Data Package
EQSR	Equipment Qualification Summary Report
ESD	Electrostatic Discharge
GTAW	Gas Tungsten Arc Welding
HFE	Human Factors Engineering
IEEE	Institute of Electrical and Electronics Engineers
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IQI	Image Quality Indicator
IR	Inspection Report
IRWST	In-Containment Refueling Water Storage Tank
ISV	Integrated System Validation
ITAAC	Inspections, Tests, Analysis, and Inspection Criteria
LDCR	Licensing Document Change Requests
M&TE	Measuring & Test Equipment
MCR	Main Control Room
MI	Mineral Insulated

MT	Magnetic Particle Testing
N&D	Nonconformance and Disposition Report
NCR	Non-conformance Report
NCV	Non-Cited Violation
NDE	Non-Destructive Examination
NIS	Nuclear Instrumentation System
NRC	Nuclear Regulatory Commission
PCD	Principal Closure Document
PEEK	Polyether Ether Ketone
PMS	Protection and Safety Monitoring System
PNQAM	Project Nuclear Quality Assurance Manual
PNQCM	Bechtel Project Nuclear QC Manual
PO	Purchase Order
PQR	Procedure Qualification Record
PRHR	Passive Residual Heat Removal
PRHR HX	Passive Residual Heat Removal Heat Exchanger
PT	Liquid Penetrant Testing
PWHT	Post Weld Heat Treatment
PXS	Passive Core Cooling System
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QC	Quality Control
RCS	Reactor Coolant System
RFI	Radio Frequency Interference
RNS	Normal Residual Heat Removal System
RT	Radiographic Testing
SC	Steel Composite
SMAW	Shielded Metal Arc Welding
SNC	Southern Nuclear Operating Company
SSC	Structure, System, and Component
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing
VEGP	Vogtle Electric Generating Plant
VT	Visual Testing
WEC	Westinghouse Electric Company
WMR	Welding Material Requisition
WPS	Welding Procedure Specification

13	2.1.02.02a	2.a) The components identified in Table 2.1.2-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The piping identified in Table 2.1.2-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements. 3.a) Pressure boundary welds in components identified in Table 2.1.2-1 as ASME Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in piping identified in Table 2.1.2-2 as ASME Code Section III meet ASME Code Section III requirements. 4.a) The components identified in Table 2.1.2-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure. 4.b) The piping identified in Table 2.1.2-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure. 5.b) Each of the lines identified in Table 2.1.2-2 for which functional capability is required is designed to withstand combined	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested. Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability. Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.	The ASME Code Section III design reports exist for the as-built components and piping identified in Tables 2.1.2-1 and 2.1.2-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Table 2.1.2-1 and Table 2.1.2-2 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that each of the as-built lines identified in Table 2.1.2-2 for which functional capability is required meets the requirements for functional capability. An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the

		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.		dynamic effects of a line break is provided.

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

				combination of type tests and analyses.
36	2.1.02.08d.v	8.d) The RCS provides automatic depressurization during design basis events.	v) Inspections of the elevation of the ADS stage 4 valve discharge will be conducted. vi) Inspections of the ADS stage 4 valve discharge will be conducted. viii) Inspection of the elevation of each ADS sparger will be conducted.	v) The minimum elevation of the bottom inside surface of the outlet of these valves is greater than plant elevation 110 feet. vi) The discharge of the ADS stage 4 valves is directed into the steam generator compartments. viii) The centerline of the connection of the sparger arms to the sparger hub is < 11.5 feet below the IRWST overflow level.
71	2.1.03.02c	2.c) The reactor vessel arrangement is as shown in Figure 2.1.3-3.	Inspection of the as-built system will be performed.	The as-built RXS will accommodate the reactor vessel arrangement shown in Figure 2.1.3-3.

75	2.1.03.06.i	6. The seismic Category I equipment identified in Table 2.1.3-1 can withstand seismic design basis loads without loss of safety function. 9.a) The Class 1E equipment identified in Table 2.1.3-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 2.1.3-1 is located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) Type tests, analysis, or a combination of type tests and analysis will be performed on Class 1E equipment located in a harsh environment. ii) Inspection will be performed of the as-built Class 1E equipment and the associated wiring, cables, and terminations located in a harsh environment.	i) The seismic Category I equipment identified in Table 2.1.3-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) A report exists and concludes that the Class 1E equipment identified in Table 2.1.3-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. ii) A report exists and concludes that the as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.1.3-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a

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

98	2.2.01.05.i	5. The seismic Category I equipment identified in Table 2.2.1-1 can withstand seismic design basis loads without loss of structural integrity and safety function. 6.a) The Class 1E equipment identified in Table 2.2.1-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. 6.d) The non-Class 1E electrical penetrations identified in Table 2.2.1-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of containment pressure boundary integrity.	i) Inspection will be performed to verify that the seismic Category I equipment and valves identified in Table 2.2.1-1 are located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) Type tests, analyses, or a combination of type tests and analyses will be performed on Class 1E equipment located in a harsh environment. ii) Inspection will be performed of the as-built Class 1E equipment and the associated wiring, cables, and terminations located in a harsh environment. i) Type tests, analyses, or a combination of type tests and analyses will be performed on non-Class 1E electrical penetrations located in a harsh	i) The seismic Category I equipment identified in Table 2.2.1-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of structural integrity and safety function. iii) The as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) A report exists and concludes that the Class 1E equipment identified in Table 2.2.1-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. ii) A report exists and concludes that the as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.2.1-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type

			environment. ii) Inspection will be performed of the as-built non-Class 1E electrical penetrations located in a harsh environment.	tests and analyses. i) A report exists and concludes that the non-Class 1E electrical penetrations identified in Table 2.2.1-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of containment pressure boundary integrity. ii) A report exists and concludes that the as-built non-Class 1E electrical penetrations identified in Table 2.2.1-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

159	2.2.03.02a	2.a) The components identified in Table 2.2.3-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The piping identified in Table 2.2.3-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements. 3.a) Pressure boundary welds in components identified in Table 2.2.3-1 as ASME Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in piping identified in Table 2.2.3-2 as ASME Code Section III meet ASME Code Section III requirements. 4.a) The components identified in Table 2.2.3-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure. 4.b) The piping identified in Table 2.2.3-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure. 5.b) Each of the lines identified in Table 2.2.3-2 for which functional capability is required is designed to withstand combined	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested. Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability. Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.	The ASME Code Section III design reports exist for the as-built components and piping identified in Table 2.2.3-1 and 2.2.3-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Table 2.2.3-1 and 2.2.3-2 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that each of the as-built lines identified in Table 2.2.3-2 for which functional capability is required meets the requirements for functional capability. An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS piping and piping materials, or a pipe break evaluation report exists and concludes that protection from the

		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.		dynamic effects of a line break is provided.

165	2.2.03.05a.i	5.a) The seismic Category I equipment identified in Table 2.2.3‑1 can withstand seismic design basis loads without loss of safety function. 7.a) The Class 1E equipment identified in Table 2.2.3-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	i) Inspection will be performed to verify that the seismic Category I equipment and valves identified in Table 2.2.3-1 are located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) Type tests, analyses, or a combination of type tests and analyses will be performed on Class 1E equipment located in a harsh environment. ii) Inspection will be performed of the as-built Class 1E equipment and the associated wiring, cables, and terminations located in a harsh environment.	i) The seismic Category I equipment identified in Table 2.2.3-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of safety function. For the PXS containment recirculation and IRWST screens, a report exists and concludes that the screens can withstand seismic dynamic loads and also post-accident operating loads, including head loss and debris weights. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. For the PXS containment recirculation and IRWST screens, a report exists and concludes that the as-built screens including their anchorage are bounded by the seismic loads and also post-accident operating loads, including head loss and debris weights. i) A report exists and concludes that the Class 1E equipment

				identified in Table 2.2.3-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. ii) A report exists and concludes that the as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.2.3‑1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.
187	2.2.03.08c.v.01	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	v) Inspections of the elevation of the following tanks will be conducted: 1. CMTs	v) The elevation of the bottom inside tank surface is higher than the direct vessel injection nozzle centerline by the following: 1. CMTs ≥ 7.5 ft

259	2.2.05.05a.i	5.a) The seismic Category I equipment identified in Table 2.2.5‑1 can withstand seismic design basis loads without loss of safety function.	i) Inspection will be performed to verify that the seismic Category I equipment and valves identified in Table 2.2.5-1 are located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions.	i) The seismic Category I equipment identified in Table 2.2.5-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions.

361	2.3.06.05a.i	5.a) The seismic Category I equipment identified in Table 2.3.6-1 can withstand seismic design basis loads without loss of safety function. 7.a) The Class 1E equipment identified in Tables 2.3.6-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 2.3.6-1 is located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) Type tests, analyses, or a combination of type tests and analyses will be performed on Class 1E equipment located in a harsh environment. ii) Inspection will be performed of the as-built Class 1E equipment and the associated wiring, cables, and terminations located in a harsh environment.	i) The seismic Category I equipment identified in Table 2.3.6-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. i) A report exists and concludes that the Class 1E equipment identified in Table 2.3.6-1 as being qualified for a harsh environment can withstand the environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. ii) A report exists and concludes that the as-built Class 1E equipment and the associated wiring, cables, and terminations identified in Table 2.3.6-1 as being qualified for a harsh environment are bounded by type tests, analyses, or a combination of type tests and analyses.

522	2.5.02.02.i	2. The seismic Category I equipment, identified in Table 2.5.2-1, can withstand seismic design basis loads without loss of safety function. 3. The Class 1E equipment, identified in Table 2.5.2-1, has electrical surge withstand capability (SWC), and can withstand the electromagnetic interference (EMI), radio frequency interference (RFI), and electrostatic discharge (ESD) conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. 4. The Class 1E equipment, identified in Table 2.5.2-1, can withstand the room ambient temperature, humidity, pressure, and mechanical vibration conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function.	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 2.5.2‑1 is located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. Type tests, analyses, or a combination of type tests and analyses will be performed on the equipment. Type tests, analyses, or a combination of type tests and analyses will be performed on the Class 1E equipment identified in Table 2.5.2-1.	i) The seismic Category I equipment identified in Table 2.5.2‑1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions. A report exists and concludes that the Class 1E equipment identified in Table 2.5.2‑1 can withstand the SWC, EMI, RFI, and ESD conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. A report exists and concludes that the Class 1E equipment identified in Table 2.5.2-1 can withstand the room ambient temperature, humidity, pressure, and mechanical vibration conditions that would exist before, during, and following a design basis accident without loss of safety

				function for the time required to perform the safety function.
597	2.6.03.02.i	2. The seismic Category I equipment identified in Table 2.6.3-1 can withstand seismic design basis loads without loss of safety function.	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 2.6.3-1 is located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions.	i) The seismic Category I equipment identified in Table 2.6.3-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions.

742	3.2.00.01c.ii	1. The HFE verification and validation program is performed in accordance with the HFE verification and validation implementation plan and includes the following activities: c) Integrated system validation	c) (ii) Tests and analyses of the following plant evolutions and transients, using a facility that physically represents the MCR configuration and dynamically represents the MCR HSI and the operating characteristics and responses of the AP1000 design, will be performed: – Normal plant heatup and startup to 100% power – Normal plant shutdown and cooldown to cold shutdown – Transients: reactor trip and turbine trip – Accidents: - Small-break LOCA - Large-break LOCA - Steam line break - Feedwater line break - Steam generator tube rupture	c) (ii) A report exists and concludes that: The test and analysis results demonstrate that the MCR operators can perform the following: – Heat up and start up the plant to 100% power – Shut down and cool down the plant to cold shutdown – Bring the plant to safe shutdown following the specified transients – Bring the plant to a safe, stable state following the specified accidents
743	3.2.00.01d	1. The HFE verification and validation program is performed in accordance with the HFE verification and validation implementation plan and includes the following activities: d) Issue resolution verification	d) An evaluation of the implementation of the HFE design issue resolution verification will be performed.	d) A report exists and concludes that: HFE design issue resolution verification was conducted in conformance with the implementation plan and includes verification that human factors issues documented in the design issues tracking system have been addressed in the final design.

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.