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

May 12, 2017

Mr. Ronald A. Jones
Vice President, New Nuclear Operations
South Carolina Electric and Gas
P.O. Box 88 (Mail Code P40)
Jenkinsville, SC 29065-0088

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3 - NRC INTEGRATED INSPECTION REPORTS 05200027/2017001, 05200028/2017001

Dear Mr. Jones:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Virgil C. Summer Nuclear Station Units 2 and 3. The enclosed inspection report documents the inspection results, which the inspectors discussed on April 19, 2017, with you and other members of your staff.

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

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

If you contest 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 Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector office at the Virgil C. Summer Nuclear Station Units 2 and 3.

If you disagree with the cross-cutting aspects assigned to either finding, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector office at the Virgil C. Summer Nuclear Station Units 2 and 3.

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

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

Sincerely,

/RA/

Michael Ernstes, Branch Chief
Construction Inspection Branch 3
Division of Construction Oversight

Docket Nos.: 5200027, 5200028
License Nos: NPF-93, NPF-94

Enclosure: NRC Inspection Report (IR) 05200027/2017001, 05200028/2017001
w/Attachment: Supplemental Information

cc w/enclos:

Mr. Jeffrey B. Archie
Sr. Vice President, Nuclear Operations
South Carolina Electric & Gas Company
MC D304
220 Operation Way
Cayce, SC 29033-3172

Gregrey Ginyard
366 Lakeview Drive
Jenkinsville, SC 29065

Mr. Wayne Guilfoyle
Commissioner
District 8
Augusta-Richmond County Commission
4940 windsor Spring Rd
Hephzibah, GA 30815

Gwendolyn Jackson
Burke County Library
130 Highway 24 South
Waynesboro, GA 30830

Mr. Barty Simonton
Team Leader
Environmental Radiation Program
Air Protection Branch
Environmental Protection Division
4244 International Parkway, Suite 120
Atlanta, GA 30354-3906

Ms. Gidget Stanley-Banks
Director
Allendale County EPA
426 Mullberry Street
Allendale, SC 29810

Ms. Ruth Thomas
Environmentalists Inc.
354 Woodland Dr
Columbus, NC 28722

Email

abynum@scana.com (Al Bynum)
acchambe@southernco.com (Amy Chamberlian)
ALPUGH@southernco.com (Amanda Pugh)
andy.barbee@scana.com (Andy Barbee)
annacom@westinghouse.com (Michael J. Annacone)
arice@scana.com (April R. Rice)
awc@nei.org (Anne W. Cottingham)
baucomc@westinghouse.com (Charles T. Baucom)
bedforbj@westinghouse.com (Brian Bedford)
Bill.Jacobs@gdsassociates.com (Bill Jacobs)
burrouno@westinghouse.com (Nicholle Burroughs)
castelca@westinghouse.com (Curtis Castell)
churchcd@westinghouse.com (Carl D. Churchman)
coleja@westinghouse.com (Joseph Cole)
comerj@westinghouse.com (James Comer)
crenshjw@westinghouse.com (John Crenshaw)
david.lewis@pillsburylaw.com (David Lewis)
DCRM-EDMS@SCANA.COM
dgriffin@scana.com (Donna S. Griffin)
durhamdc@westinghouse.com (David Durham)
ed.burns@earthlink.net (Ed Burns)
fbelser@regstaff.sc.gov
Garrett.Sanders@SCANA.com (Garrett Sanders)
gary@jonespartners.net (Gary Jones)
George_Stramback@Charter.net (George Stramback)
gsoult@regstaff.sc.gov (Gene G. Soult)
jannina.blanco@pillsburylaw.com (Jannina Blanco)
jantol1dj@westinghouse.com (David Jantosik)
jarchie@scana.com (Jeffrey B. Archie)
Jeff.hawkins@fluour.com (Jeff Hawkins)
jenkinse@dhec.sc.gov (Susan Jenkins)
jflitter@regstaff.sc.gov
Joseph_Hegner@dom.com (Joseph Hegner)
justin.bouknight@scana.com (Justin R. Bouknight)
karlg@att.net (Karl Gross)
Katie.brown@scana.com (Katie Brown)
kdfili@southernco.com (Karen Fili)
kinneyrw@dhec.sc.gov (Ronald Kinney)
kmstacy@southernco.com (Kara Stacy)
kroberts@southernco.com (Kelli Roberts)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
lchandler@morganlewis.com (Lawrence J. Chandler)
majames@regstaff.sc.gov (Anthony James)

mcintyba@westinghouse.com (Brian McIntyre)
media@nei.org (Scott Peterson)
MSF@nei.org (Marvin Fertel)
Nicholas.Kellenberger@scana.com (Nicholas Kellenberger)
nirsnet@nirs.org (Michael Mariotte)
Nuclaw@mindspring.com (Robert Temple)
patriciaL.campbell@ge.com (Patricia L. Campbell)
Patti.Bonnette@scana.com (Patti Bonnette)
paul.mothena@scana.com (Paul Mothena)
Paul@beyondnuclear.org (Paul Gunter)
pbessette@morganlewis.com (Paul Bessette)
porterhj@dhec.sc.gov (Henry Porter)
r.joshi15@comcast.net (Ravi Joshi)
randall@nexusamllc.com (Randall Li)
RJB@NEI.org (Russell Bell)
Ronald.Jones@scana.com (Ronald Jones)
russpa@westinghouse.com (Paul Russ)
rwink@ameren.com (Roger Wink)
sabinski@suddenlink.net (Steve A. Bennett)
sara@cleanenergy.org (Sara Barczak)
sburdick@morganlewis.com (Stephen Burdick)
sbyrne@scana.com (Stephen A. Byrne)
sfrantz@morganlewis.com (Stephen P. Frantz)
shudson@regstaff.sc.gov (Shannon Hudson)
solleyda@dhec.sc.gov (David Solley)
stephan.moen@ge.com (Stephan Moen)
TGATLIN@scana.com (Thomas Gatlin)
tom.miller@hq.doe.gov (Tom Miller)
TomClements329@cs.com (Tom Clements)
Vanessa.quinn@dhs.gov (Vanessa Quinn)
vcsnrc@scana.com (NRC Senior Resident Inspector
weave1dw@westinghouse.com (Doug Weaver)
William.Cherry@scana.com (William Cherry)
wmcherry@santeecooper.com (Marion Cherry)

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3 - NRC INTEGRATED INSPECTION REPORTS 05200027/2017001, 05200028/2017001

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NAME	T. Nazario	C. Cheung	B. Griman	J. Vasquez	C. Smith	A. Nielsen	R. Kellner	N. Karlovich	A. Artayet
DATE	05/10/2017	05/09/2017	05/05/2017	05/04/2017	05/04/2017	05/04/2017	05/04/2017	05/04/2017	05/03/2017
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NAME	K. McCurry	J. Walker	A. Ponko	R. Mathis	P. Donnelly	D. Piccirillo	S. Smith	D. Harmon	C. Jones
DATE	05/03/2017	05/03/2017	05/03/2017	05/03/2017	05/02/2017	05/02/2017	05/02/2017	05/02/2017	05/02/2017
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SIGNATURE	**/RA via email/**	**/RA via email/**	**/RA via email/**	**/RA via email/**	**/RA via email/**	**ME**			
NAME	M. Magyar	S. Ray	T. Steadham	Y. Wong	C. Read	M. Ernstes			
DATE	05/02/2017	05/01/2017	05/01/2017	05/01/2017	05/01/2017	05/12/2017			

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V. Hall, NRO
C. Weber, NRO
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M. Ernstes, RII
J. Heisserer, RII
R. Musser, RII
R. Nease, RII
A. Artayet, RII
P. Carman, RII
C. Cheung, RII
P. Donnelly, RII
B. Griman, RII
D. Harmon, RII
P. Heher, RII
C. Jones, RII
N. Karlovich, RII
R. Kellner
A. Lerch, RII
R. Mathis, RII
M. Magyar, RII
K. McCurry, RII
T. Nazario, RII
A. Nielsen. RII
D. Piccirillo, RII
A. Ponko, RII
C. Read, RII
C. Smith, RII
S. Smith, RII
T. Steadham, RII
S. Temple, RII
J. Walker, RII
J. Vasquez, RII
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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200027 5200028
License Numbers:	NPF-93 NPF-94
Report Numbers:	05200027/2017001 05200028/2017001
Licensee:	South Carolina Electric & Gas
Facility:	Virgil C. Summer Nuclear Station Unit 2 Virgil C. Summer Nuclear Station Unit 3
Location:	Jenkinsville, SC and Cranberry Township, PA
Inspection Dates:	January 1, 2017 through March 31, 2017
Inspectors:	A. Artayet, Senior Construction Inspector, DCO C. Cheung, Construction Project Inspector, DCO P. Donnelly, Resident Inspector, DCO B. Griman, Construction Inspector, DCO D. Harmon, Construction Inspector, DCO C. Jones, Senior Construction Inspector, DCO N. Karlovich, Resident Inspector, DCO R. Kellner, Senior Health Physicist, DRS M. Magyar, Construction Inspector, DCO R. Mathis, Construction Inspector, DCO K. McCurry, Construction Inspector, DCO T. Nazario, Senior Resident Inspector, DCO A. Nielsen, Senior Health Physicist, DRS D. Piccirillo, Senior Construction Inspector, DCO A. Ponko, Senior Construction Inspector, DCO C. (Mac) Read, Resident Inspector, DCO C. Smith, Construction Inspector, DCO S. Smith, Senior Construction Inspector, DCO T. Steadham, Senior Construction Inspector, DCO J. Vasquez, Construction Inspector, DCO J. Walker, Resident Inspector, DCO
Accompanying Personnel:	Lauren Kent, Reactor Operations Engineer, NRO/DCIP/HOIB Jorge Cintron, Electrical Engineer, NRR/DE/EEEB/EET Sheila Ray, Sr. Electrical Engineer, NRR/DE/EEEB Yuken Wong, Sr. Mechanical Engineer, NRO/DEIA/MEB
Approved by:	Michael Ernstes, Branch Chief Construction Inspection Branch 3 Division of Construction Oversight

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200027/2017001, 05200028/2017001; 01/01/2017 through 03/31/2017; Virgil C. Summer Nuclear Station Unit 2, Virgil C. Summer Nuclear Station Unit 3, Inspection of the ITAAC-Related Design and Fabrication Requirements and Quality Assurance Program Implementation.

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

A. NRC-Identified and Self Revealed Findings

Green: The inspectors identified an ITAAC finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion III, "Design Control" for South Carolina Electric & Gas Company's (SCE&G) failure through their contractor Westinghouse Electric Company (WEC) to adequately implement measures to assure that the design basis was correctly translated into design output documents. The licensee entered this finding into their corrective action program as SCE&G Condition Report (CR) CR-NND-17-30445 and WEC Corrective Action, Prevention, and Learning (CAPAL) System Issue DI 100460545. Corrective actions are planned to ensure design changes to the affected floor modules are met prior to pouring the concrete.

The finding was associated with the Design / Engineering Cornerstone. The finding was considered more than minor because the performance deficiency represented a substantive failure to adequately implement a quality assurance process that rendered the quality of a structure, system, and component (SSC) indeterminate. The inspectors evaluated the finding in accordance with IMC 2519, "Construction Significance Determination Process," and determined the finding was of very low safety significance because the licensee was able to demonstrate with reasonable assurance that the design function of the containment internal structures (CIS) floor at elevation 107'-2" would not be impaired. The inspectors determined that the finding represented an ITAAC finding because it was material to the acceptance criteria of VCSNS Unit 2 ITAAC 760, in that, if left uncorrected, the licensee may not have been able to demonstrate that the acceptance criteria of these ITAAC were met. The acceptance criteria of these ITAAC require that all deviations between the as-built structures and the approved designs be reconciled to verify that the as-built structures will withstand the design basis loads without a loss of structural integrity or other safety-related functions. The inspectors determined that the failure to adequately implement measures to assure that the design basis was correctly translated into design output documents may have resulted in a deviation from the approved design that would not have been reconciled by the licensee. The inspectors reviewed the finding for a possible cross-cutting aspect in accordance with IMC 0613 Appendix F, "Construction Cross-Cutting Areas and Aspects," and determined the finding was not related to any of the cross-cutting aspects (CCA) discussed in IMC 0613. (Section 1A24)

Green: The inspectors identified a construction finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion V, “Instructions, Procedures and Drawings”, for South Carolina Electric & Gas Company’s (SCE&G) failure through their contractor Westinghouse Electric Company (WEC) to generate adequate instructions and procedures to control the fabrication of safety-related parts in an on-site machine shop. The licensee stopped work in the machine shop until the work package was updated with steps to define the scope of work, including inspection hold points. All parts were inspected for compliance before being installed. The licensee entered this finding into their corrective action program as SCE&G CR-NND-17-30375 and WEC CAPAL System Issue DI 100455172.

The finding was associated with the Procurement/Fabrication Cornerstone. The finding was considered more than minor because there was a substantive failure to establish an adequate procedure or quality oversight function to ensure safety-related parts were being fabricated in accordance with design requirements. The inspectors evaluated the finding in accordance with Appendix A, of IMC 2519, “AP1000 Construction Significance Determination Process.” The inspectors determined the finding was of very low safety significance (GREEN) because at the time of discovery, the installation of the rebar connection plate to the electrical penetration assembly had not yet been completed, nor had any EPAs been installed into the shield building wall. This finding was assigned a cross-cutting aspect in accordance with IMC 0613 Appendix F, “Construction Cross-Cutting Areas and Aspects,” in the area of Human Performance, Work Management. [H.5] The inspectors determined that the most significant causal factor of the performance deficiency was due to a lack of work controls established in the machine shop. (Section 1P03)

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Construction Status

In Unit 2, the second of three rings that make up the vertical walls of the containment vessel was installed and welded to ring 1, bringing it to elevation 155'. Inside containment on the north side, concrete was placed up to elevation 105'2" and steam generator #2 was placed in the east steam generator compartment. The east reactor coolant piping was welded to the reactor coolant pump casings and the west reactor coolant piping was welded to the reactor vessel nozzles in preparation for steam generator #1. In the auxiliary building, walls are progressing up to the 117' elevation and concrete was placed within the CA20 module in the area that will make up the spent fuel pool floor.

In Unit 3, concrete was placed in the shield building up to elevation 103' and inside containment up to elevation 87'6". Welding progressed between the CA05 module, which makes up portions of the Passive Core Cooling System (PXS) valve room walls, to CA01, the steam generator, pressurizer and refueling cavity module. Auxiliary building walls are progressing up to the 100' elevation.

1. CONSTRUCTION REACTOR SAFETY

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

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

1A01 (Unit 2) 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 Procedures (IPs)/sections to perform this inspection:

- 65001.06-02.01 - General Installation
- 65001.06-02.02 - Component Welding
- 65001.B-02.04 - Production Controls
- 65001.F-02.01 - Design Document Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors reviewed records and observed in-process welding to determine if the steam generator supports were installed in accordance with drawing, American Society of Mechanical Engineers (ASME) and Final Safety Analysis Report (FSAR) requirements. In addition, the inspectors observed the installation of steam generator #2 to determine if the location was within design requirements. Specifically, the inspectors observed fabrication activities associated with the steam generator supports to determine whether the activities met applicable quality and technical requirements.

The inspectors reviewed the AP1000 fabrication specification APP-SS30-P5-001, "RCS Primary Equipment Supports Fabrication," to determine if it met the requirements of ASME Code, Section III, Subsection NF as required by the FSAR. The inspectors reviewed certified material test reports (CMTRs) for the plate and weld filler material used to fabricate the lower, intermediate, and upper lateral supports to determine if they met ASME Section III, Subsection NF code requirements. The inspectors observed in-process welding activities on the lower and intermediate lateral supports to determine whether:

- work was conducted in accordance with a traveler, which included appropriate references to procedures and hold points for inspection signoffs;
- the weld joint was sufficiently protected from inclement conditions;
- the surfaces to be welded were smooth, uniform, and free from significant discontinuities and harmful foreign material;
- weld joint geometry, including root opening and fit-up tolerances, were as specified;
- each weld was traceable to the welders that worked it;
- shielding gas flow was as specified in the welding procedure specification (WPS);
- preheat and inter-pass temperature limits as specified in the WPS were monitored and adhered to;
- welding consumables utilized were in compliance with the WPS and ASME code;
- welding variables specified in the WPS were routinely verified; and
- post-weld heat treating performed met ASME code requirements.

The inspectors performed direct observation of licensee surveillance activities associated with the installation of the lower and intermediate lateral supports. In addition, the inspectors reviewed surveillance reports generated by WECTEC of their review of the lateral support installation activities. The inspectors also reviewed Nuclear Construction and Startup Procedure (N&D) VS2-PH01-GNR-000010, “CA01 Northeast SG UL Support," and Engineering and Design Coordination Report (E&DCR) APP-PH01-GEF-014, "Steam Generator B Lower and Intermediate Lateral Supports Inlay/Overlay Work Point As-Built," to determine if the requirements of ASME Section III, Subsection NF-4441 were met.

The inspectors reviewed the lift plan for the steam generator and observed the lift and set into the steam generator compartment inside the containment vessel. Finally, the inspectors reviewed survey data of the installed steam generator to determine if the as-built configuration met design drawing requirements.

The inspectors also observed in process welding of FW-05 for the intermediate alpha lateral support associated with the west steam generator (SG #1) and reviewed the qualification records of the welder to verify whether the welder was qualified. The inspectors observed the in-process liquid penetrant testing (PT) of a weld, FW-08, for the intermediate bravo lateral support associated with SG #1 to verify that the meter used to measure temperature was in calibration, and that the procedure was followed for the temperature measured. The inspectors reviewed the qualification records for the quality control (QC) inspector performing the PT to verify whether they were qualified.

b. Findings

No findings were identified.

1A02 (Unit 2) ITAAC Number 2.1.02.02b (14) / Family 03F

a. Inspection Scope

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

- 65001.03-02.01 - Purchase and Receipt of Materials
- 65001.03-02.02 - Storage and Handling
- 65001.03-02.07 - Review of Records
- 65001.03-02.08 - Problem Identification and Resolution
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed procurement and fabrication records associated with the Unit 2 reactor coolant system (RCS) loop piping to verify that materials met the applicable requirements of design documents and the ASME Section III Code. Specifically, the inspectors reviewed the following records for the pressurizer surge line (Line No. L003, Serial No. L0903386) to verify the material's chemical composition, mechanical properties, and fabrication requirements were met: quality assurance data packages, certificates of conformance, certified material test reports, nonconformance reports, and visual and dimensional analysis reports.

The inspectors reviewed a sample of nonconforming reports related to out of tolerance dimensional measurements on the surge line. The inspectors reviewed these reports to determine whether the conditions were properly evaluated against ASME Code requirements and design specifications, and received the appropriate amount of review.

The inspectors reviewed the receipt inspection records to verify the receipt activity checklist was completed and the quality assurance inspection report received satisfied conditions. The inspectors performed an independent visual inspection and took key dimensional measurements of the surge line to verify there were no surface defects and the diameters and thicknesses of the pipe spools conformed to design requirements. The inspectors also checked storage conditions to verify that the material met storage and handling requirements.

b. Findings

No findings were identified.

1A03 (Unit 2) ITAAC Number 2.1.02.03a (15) / Family 06B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.03a (15). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.B- Inspection of the ITAAC - Related Welding Program
- 65001.B-02.01 - Program and Procedures Review
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.05 - Inspection

The inspectors reviewed Carolina Energy Services (CES') welding and nondestructive examination (NDE) programs to verify compliance with the requirements of the ASME Boiler and Pressure Vessel Code Section III Division I – Subsection NB, Class 1 Components, 1998 Edition, 2000 addenda. Specifically, the inspectors reviewed CES' NPT/NA ASME Quality Assurance Manual, Welding Procedure Manual, two WPSs, and a liquid dye penetrant examination procedure. In addition, the inspectors reviewed two WPSs, and a welding operator qualification record and continuity log for stamp number CES0674 to determine whether WPSs and performance qualifications were qualified in accordance with the requirements of the current edition of ASME Section IX, Welding and Brazing Qualifications.

b. Findings

No findings were identified.

1A04 (Unit 2) ITAAC Number 2.1.02.03b (16) / Family 03B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.03b (16). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.03-02.03 - Installation and Welding
- 65001.B-02.01 - Program and Procedures Review
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors reviewed the CES welding and NDE programs with respect to the assembly of the reactor coolant system (RCS) piping system to verify compliance with the requirements of the ASME Boiler and Pressure Vessel Code Section III Division I – Subsection NB, Class 1 Components, 1998 Edition, 2000 addenda. Specifically, the inspectors reviewed CES' NPT/NA ASME Quality Assurance Manual, Welding Procedure Manual, two welding procedure specifications, and a liquid dye penetrant

examination procedure. In addition, the inspectors reviewed two WPSs, and a welding operator qualification record, and continuity log for stamp number CES0674 to determine whether WPSs and performance qualifications were qualified in accordance with the requirements of the current edition of ASME Section IX, Welding and Brazing Qualifications.

The inspectors observed in-process remote machine gas tungsten arc weld (GTAW) on the VCS Unit 2 RCS weld number FW-BHL02 associated with the east steam generator (SG-B) for the hot leg RCS-L001B to the steam generator nozzle to determine if the narrow-groove welding process was performed in accordance with the requirements of ASME Section III, Subsection NB, and within the welding parameters described in welding procedure CWPS-8-8-T-A01. The inspectors also:

- reviewed the welding procedure and associated qualification records to determine if it was written and qualified in accordance with the current edition of the ASME code Section IX, Welding and Brazing Qualifications;
- reviewed the welder's qualification records to determine if he had been qualified to perform the welding in accordance with ASME Code Section IX; and
- reviewed the weld material withdrawal slip to determine if the weld filler metal being used was appropriately issued and controlled by the quality controlled welding filler metal program.

The inspectors also observed in-process remote machine RCS piping welding for the hot leg and two cold legs on the Unit 2 reactor vessel side for piping going to the west steam generator. The weld numbers associated with the observed welding were: FW-AHL01 for hot leg RCS-L001A, FW-ACL04 for cold leg RCS-L002B, and FW-ACL06 for cold leg RCS-L002A. The inspectors reviewed calibration sheets associated with the calibration of two welding machines (number 6806806, which was used for the RCS cold leg 2B, and number 6806991, which was used for the RCS cold leg 2A) to verify whether the welding machines were calibrated. The inspectors also reviewed the work packages to verify that welding activities were being controlled in accordance with the instructions specified in the weld travelers. Also, the inspectors observed the flow of secondary welding gas to verify whether it was in accordance with welding procedure CWPS-8-8-T-A01. The inspectors reviewed the qualifications of one of the welders to verify that he was qualified.

The inspectors reviewed weld repair documents associated with the removal of two indications at separate locations identified during the second stage of informational radiography for field weld FW-BCL03 that joins the reactor coolant system piping cold leg RCS-L002C to the reactor coolant pump (RCP-2A nozzle, to determine whether the repair of weld metal was performed in accordance with the requirements of ASME Section III, NB-4450. Specifically, the inspector reviewed the following CES documents for the repairs:

- Nonconformance Report (NCR) No. VCS-17-011;
- Causal evaluation for the rejectable weld metal anomaly;
- Actual weld bead log sheets for each deposited weld layer;
- Repair traveler WT-4403001-BCL03 with preliminary review signature by the Authorized Nuclear Inspector (ANI);
- NDE-PT report for both excavated repair cavities with mapping and three-dimensional sketch prior to rewelding;

- Acceptable informational NDE-RT after completion of welding repair cavities; and
- Acceptable final NDE-RT report at completion of FW-BCL03.

b. Findings

No findings were identified.

1A05 (Unit 2) ITAAC Number 2.1.02.05a.ii (20) / Family 14E
(Unit 3) ITAAC Number 2.1.02.05a.ii (20) / Family 14E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.05a.ii (20). 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, specifically Equipment Qualification Data Package (EQDP) APP-PV18-VBR-002 and Equipment Qualification Summary Report (EQSR) APP-PV18-VBR-001 for vacuum relief valves (commodity PV18), and interviewed personnel to verify if:

- the licensee was using the appropriate design basis parameters for qualification and that the design basis was appropriately translated into structures, systems, and components (SSCs) qualification test or qualification analysis;
- limiting design basis parameters were used as input for the qualification of the SSC and that the necessary design basis documents and calculations, as appropriate, were correctly incorporated into the qualification program for the SSC;
- required qualifications of SSCs were adequately completed and controlled in accordance with regulatory requirements, applicable industry standards, design specifications, and approved procedures; and
- licensee's records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes.

The inspectors reviewed problems identified during the qualification process, including test anomalies and evaluated corrective action documents to determine the effectiveness of the licensee's corrective measures.

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

- RCS-PL-V010A, Automatic Depressurization System (ADS) Discharge Header A Vacuum Relief Valve (PV18)

The inspectors performed these reviews to verify that the commodity codes listed in the EQDP were qualified consistent with the requirements specified in the Updated Final Safety Analysis Report (UFSAR). The inspectors also reviewed the design codes, analysis and testing methodologies, load combinations, seismic acceleration, and required input motion to verify consistency with the UFSAR requirements.

In particular, the inspectors reviewed active mechanical equipment to verify that it was analyzed in accordance with ASME QME-1-2007 and if electrical components of the valves were tested in accordance with Institute of Electrical and Electronics Engineers (IEEE) 344-1987, and the pressure boundaries of the ASME Class 1, 2, and 3 valves were analyzed to ASME Boiler and Pressure Vessel Section III Code Edition 1998 – 2000. The inspectors also reviewed the qualification using static analysis for rigid valves and testing with required input motion for in-line equipment to verify that the methodologies were consistent with the QME-1-2007 provisions. Finally, the inspectors reviewed the documents to verify that the applicable procedures required the piping analyst to verify if the piping acceleration would not exceed the safe-shutdown earthquake (SSE) level in which the valves were qualified.

b. Findings

No findings were identified.

1A06 (Unit 2) ITAAC Number 2.2.01.02a (91) / Family 06F

a. Inspection Scope

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

- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) fabrication records associated with the assembly of the lower personnel airlock (Y04) to verify conformance with the requirements of the Westinghouse Electric Company (WEC) Containment Vessel (CV) Design Specification and ASME Section III, Subsection NE. Specifically, the inspectors reviewed design drawings, ASME code data reports, and Certified Material Test Reports (CMTRs) for the airlock cylinder and penetration sleeve of the lower personnel airlock.

The inspectors reviewed two ASME Form N-2 code data reports (manufactured and certified by IHI for Chicago Bridge & Iron (CB&I) Services, now WECTEC) to determine whether the materials were traceable, fabricated to the correct dimensions and design thicknesses, hydrostatically tested at a pressure of 59 psig, and approved by an authorized nuclear inspector (ANI).

The inspectors reviewed two base material CMTRs for the airlock cylinder and penetration sleeve to determine whether the chemical compositions, mechanical properties, impact testing, heat treatments, and nondestructive examination met the applicable requirements of ASME Section II and III.

b. Findings

No findings were identified.

1A07 (Unit 2) ITAAC Number 2.2.01.03a (93) / Family 06B

a. Inspection Scope

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

- 65001.06-02.02 - Component Welding
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors reviewed IHI and CB&I Services fabrication records and welding activities associated with the assembly of the lower personnel airlock (Y04). Specifically, the inspectors observed the fit-up of the airlock cylinder to the penetration sleeve and reviewed filler material CMTRs, WPSs with supporting procedure qualification records (PQRs), and welder qualifications to verify conformance with the requirements of the design specification and the ASME Boiler and Pressure Vessel Code Section III Division I – Subsection NE, Class MC Components, 1998 Edition, 2000 addenda.

The inspectors observed in-process fit-up and tacking of the lower personnel airlock to the containment vessel sleeve with the use of the manual GTAW process to verify welding activities, conditions, and temporary rigging were consistent with good practice to result in a sound weld during assembly of nuclear components in accordance with ASME Section III, Subsection NE.

The inspectors reviewed five weld filler metal CMTRs associated with the pressure boundary weld between the airlock cylinder and penetration sleeve, as well as IHI fabricated welds forming the airlock cylinder and penetration sleeve, to determine whether the chemical compositions, mechanical properties, impact testing, heat treatments, and nondestructive examination met the applicable requirements of ASME Code Section II, Materials, 1998 Edition 2000 addenda and ASME Section III.

The inspectors reviewed four associated WPSs to verify they were available, up to date, accurate, and in conformance with the ASME Code Section IX, Welding and Brazing Qualification, requirements, specifying all applicable essential, nonessential, and supplementary essential variables. The inspectors reviewed the supporting eight PQRs to verify the specific ranges of welding variables listed in the WPS were appropriately qualified and the type and number of qualification tests that were required also received acceptable results.

The inspectors reviewed 16 welder performance qualification records to determine whether (1) the welders were assigned a unique identification number and demonstrated their skill by performing specific performance qualification tests, (2) the qualification

testing conditions and qualification limits were fully documented, and (3) the appropriate number of acceptable test results was achieved.

b. Findings

No findings were identified.

1A08 (Unit 2) ITAAC Number 2.2.01.04a.ii (96) / Family 06F

a. Inspection Scope

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

- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed IHI Corporation welding records associated with pressure boundary materials of the Unit 3 containment vessel lower personnel airlock (Y03) to verify that fracture toughness requirements were met in accordance with ASME Code Section II, Parts A and C, and Section III, Subsection NE. Specifically, the inspectors reviewed two CMTRs for the base metal and five CMTRs for the weld filler metal to verify the materials met all applicable Charpy V-Notch impact testing requirements.

b. Findings

No findings were identified.

1A09 (Unit 2) ITAAC Number 2.2.01.05.ii (99) / Family 11E
(Unit 3) ITAAC Number 2.2.01.05.ii (99) / Family 11E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.05.ii (99). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed documents, specifically EQDPs APP-PV18-VBR-002, APP-PV03-VBR-014, and APP-PV03-VBR-002 and EQSRs APP-PV03-VBR-013, APP-PV03-VBR-001 for vacuum relief valves (commodity PV18), swing check valves and nozzle check valves (PV03), and interviewed personnel to verify if:

- the licensee was using the appropriate design basis parameters for qualification and that the design basis was appropriately translated into SSCs qualification test or qualification analysis;
- limiting design basis parameters were used as input for the qualification of the SSC and that the necessary design basis documents and calculations, as appropriate, were correctly incorporated into the qualification program for the SSC;
- required qualifications of SSCs were adequately completed and controlled in accordance with regulatory requirements, applicable industry standards, design specifications, and approved procedures; and
- licensee's records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes.

The inspectors reviewed issues identified during the qualification process, including test anomalies and evaluated corrective action documents to determine the effectiveness of the licensee's corrective measures.

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

- VFS-PL-V803A, Vacuum Relief Containment Isolation Check Valve A – Issue Review Committee (IRC) (PV18)
- FPS-PL-V052, Fire Water Containment Isolation Supply Check Valve – Inside (PV03 – Swing Check)
- SFS-PL-V037, Spent Fuel Pool Cooling System (SFS) Discharge Line Containment Isolation Check Valve – IRC (PV03 – DRV-Z nozzle check)

The inspectors performed these reviews to verify that the commodity codes listed in the EQDP were qualified consistent with the requirements specified in the UFSAR. The inspectors also reviewed the design codes, analysis and testing methodologies, load combinations, seismic acceleration, and required input motion to verify consistency with the UFSAR requirements.

In particular, the inspectors reviewed active mechanical equipment to verify that it was analyzed in accordance with ASME QME-1-2007 and if electrical components of the valves were tested in accordance with IEEE 344-1987, and the pressure boundaries of the ASME Class 1, 2, and 3 valves were analyzed to ASME Boiler and Pressure Vessel Section III Code Edition 1998 – 2000. The inspectors also reviewed the qualification using static analysis for rigid valves and testing with required input motion for in-line equipment to verify that the methodologies were consistent with the QME-1-2007 provisions. Finally, the inspectors reviewed the documents to verify that the applicable procedures required the piping analyst to verify if the piping acceleration would not exceed the SSE level in which the valves were qualified.

b. Findings

No findings were identified.

1A10 (Unit 2) ITAAC Number 2.2.01.06a.i (101) / Family 08E
(Unit 3) ITAAC Number 2.2.01.06a.i (101) / Family 08E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.06a.i (101). 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, specifically EQDPs APP-EY01-VBR-004 and APP-PV10-VBR-006 and EQSRs APP-EY01-VBR-003 and APP-PV10-VBR-004 for electrical penetrations (commodity EY01) and AOV plug valves (commodity PV10), and interviewed personnel to verify if:

- the licensee was using the appropriate design basis parameters for qualification and that the design basis was appropriately translated into SSCs qualification test or qualification analysis;
- limiting design basis parameters were used as input for the qualification of the SSC and that the necessary design basis documents and calculations, as appropriate, were correctly incorporated into the qualification program for the SSC;
- required qualification of SSCs was adequately completed and controlled in accordance with the requirements in Title 10 of the Code of Federal Regulations (10 CFR) 50.49, applicable methodology in the UFSAR, regulatory guidance, and IEEE standards;
- the documented qualified life was consistent with the results of the qualification activities; and
- licensee's records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes and that 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.

The inspectors reviewed problems identified during the qualification process, including test anomalies and evaluated corrective action documents to determine the effectiveness of the licensee's corrective measures and if requirements of IEEE Std. 323-1974 were met.

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

- IDSA-EY-P12Y, Electrical Penetration P12 (EY01)
- WLS-PL-V055, Sump Discharge Containment Isolation Valve – IRC (PV10 – AOV plug) including the valve, actuator, and solenoid

The inspectors reviewed the EQSR, EQDP, and applicable test procedures and test records related to the qualification for the expected environment, to verify that qualification activities were adequately controlled and that the methodology conformed to applicable regulatory guidance and industry standards. The inspectors reviewed the

environmental profiles documented in APP-VP-GW-030, “Plant Environmental Conditions,” to verify that the tested profiles enveloped the actual worse case environmental conditions that would be expected. The inspectors reviewed test procedures and test records to verify that the qualification was in conformance with ASME QME-1 and that the valve actuator was qualified in conformance with IEEE Std. 382-1996, “IEEE Standard for Qualification of Actuators for Power-Operated Valve Assemblies With Safety-Related Functions for Nuclear Power Plants.” The inspectors reviewed the EQSR and portions of the EQDP for the Electrical Penetration Assemblies to verify that the equipment was adequately qualified in accordance with IEEE 317-1983, “IEEE Standard for Electric Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations,” Section 6, “Qualification.”

b. Findings

No findings were identified.

1A11 (Unit 2) ITAAC Number 2.2.01.06d.i (105) / Family 08E
(Unit 3) ITAAC Number 2.2.01.06d.i (105) / Family 08E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.06d.i (105). 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, specifically EQDP APP-EY01-VBR-004 and EQSR APP-EY01-VBR-003 for electrical penetrations (commodity EY02), and interviewed personnel to verify if:

- the licensee was using the appropriate design basis parameters for qualification and that the design basis was appropriately translated into SSCs qualification test or qualification analysis;
- limiting design basis parameters were used as input for the qualification of the SSC and that the necessary design basis documents and calculations, as appropriate, were correctly incorporated into the qualification program for the SSC;
- required qualification of SSCs was adequately completed and controlled in accordance with the requirements in 10 CFR 50.49, applicable methodology in the UFSAR, regulatory guidance, and IEEE standards;
- the documented qualified life was consistent with the results of the qualification activities; and
- licensee’s records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes and that 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.

The inspectors reviewed issues identified during the qualification process, including test anomalies and evaluated corrective action documents to determine the effectiveness of the licensee's corrective measures and if requirements of IEEE Std. 323-1974 were met.

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

- ECS-EY-P01X, Electrical Penetration P01, (EY02)
- ECS-EY-P19Z, Electrical Penetration P19, (EY02)

The inspectors reviewed the EQSR and portions of the EQDP for the Electrical Penetration Assemblies to verify that the equipment was adequately qualified in accordance with IEEE 317-1983, "IEEE Standard for Electric Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations," Section 6, "Qualification."

The inspectors reviewed applicable test procedures and test records related to the qualification for harsh environment to verify that qualification activities were adequately controlled and if the methodology conformed to applicable regulatory guidance and industry standards. The inspectors reviewed the environmental profiles documented in APP-VP-GW-030, "Plant Environmental Conditions," to verify that the tested profiles enveloped the actual worse case environmental conditions that would be expected.

b. Findings

No findings were identified.

1A12 (Unit 2) ITAAC Number 2.2.02.05a.ii (127) / Family 14E
(Unit 3) ITAAC Number 2.2.02.05a.ii (127) / Family 14E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.02.05a.ii (127). 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, specifically EQDPs APP-JE52-VBR-006 and APP-PV03-VBR-014 and EQSRs APP-JE52-VBR-005 and APP-PV03-VBR-013 for pressure and flow sensors (commodity JE52 – NLI) and swing check valves (PV03), and interviewed personnel to verify if:

- the licensee was using the appropriate design basis parameters for qualification and that the design basis was appropriately translated into SSCs qualification test or qualification analysis;

- limiting design basis parameters were used as input for the qualification of the SSC and that the necessary design basis documents and calculations, as appropriate, were correctly incorporated into the qualification program for the SSC;
- required qualifications of SSCs were adequately completed and controlled in accordance with regulatory requirements, applicable industry standards, design specifications, and approved procedures; and
- licensee's records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes.

The inspectors reviewed issues identified during the qualification process, including test anomalies and evaluated corrective action documents to determine the effectiveness of the licensee's corrective measures.

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

- PCS-JE-PT005, Containment Pressure Sensor (JE52 – NLI)
- PCS-JE-PT006, Containment Pressure Sensor (JE52 – NLI)
- PCS-JE-PT007, Containment Pressure Sensor (JE52 – NLI)
- PCS-JE-PT008, Containment Pressure Sensor (JE52 – NLI)
- PCS-JE-FT001, PCS Water Delivery Flow Sensor (JE52 – NLI)
- PCS-JE-FT002, PCS Water Delivery Flow Sensor (JE52 – NLI)
- PCS-JE-FT003, PCS Water Delivery Flow Sensor (JE52 – NLI)
- PCS-JE-FT004, PCS Water Delivery Flow Sensor (JE52 – NLI)
- PCS-PL-V039, PCCWST Long Term Makeup Line Check Valve (PV03 – Swing Check)

The inspectors performed these reviews to verify that the commodity codes listed in the EQDP were qualified consistent with the requirements specified in the UFSAR. Documentation for testing was evaluated to verify that the test response spectra (TRS) were accurately measured and enveloped the certified seismic design response spectra (CSDRS) defined in Section 3.7 of the UFSAR and the respective required response spectra (RRS) defined for the various equipment locations. The inspectors also reviewed the design codes, analysis and testing methodologies, load combinations, seismic acceleration, and required input motion to verify consistency with the UFSAR requirements.

In particular, the inspectors reviewed active mechanical equipment to verify that it was analyzed in accordance with ASME QME-1-2007 and verify that the pressure boundaries of the ASME Class 1, 2, and 3 valves were analyzed to ASME Boiler and Pressure Vessel Section III Code Edition 1998 – 2000. The inspectors also reviewed the qualification using static analysis for rigid valves and testing with required input motion for in-line equipment to verify that the methodologies were consistent with the QME-1-2007 provisions. Finally, the inspectors reviewed the documents to verify that the applicable procedures required the piping analyst to verify if the piping acceleration would not exceed the SSE level in which the valves were qualified. The inspectors reviewed documentation for a sample of safety-related components to verify that qualifications of items based upon similar design, manufacture, and installed configuration were adequately justified. The documentation for each affected component was reviewed to confirm that evaluations compared physical attributes,

design basis accident environments, and analyzed seismic events. Documentation to show equipment qualification based upon equivalency was evaluated for the following pressure transmitters:

- PCS-JE-PT005, Containment Pressure Sensor (JE52 – NLI)
- PCS-JE-PT006, Containment Pressure Sensor (JE52 – NLI)
- PCS-JE-PT007, Containment Pressure Sensor (JE52 – NLI)
- PCS-JE-PT008, Containment Pressure Sensor (JE52 – NLI)
- PCS-JE-FT001, PCS Water Delivery Flow Sensor (JE52 – NLI)
- PCS-JE-FT002, PCS Water Delivery Flow Sensor (JE52 – NLI)
- PCS-JE-FT003, PCS Water Delivery Flow Sensor (JE52 – NLI)
- PCS-JE-FT004, PCS Water Delivery Flow Sensor (JE52 – NLI)

b. Findings

No findings were identified.

1A13 (Unit 2) ITAAC Number 2.2.03.02b (160) / Family 03F

a. Inspection Scope

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

- 65001.03-02.02 - Storage and Handling
- 65001.03-02.08 - Problem Identification and Resolution

The inspectors reviewed documents and observed the storage of the Q223 module, which contains pipe lines, valves, and supports downstream of the core makeup tank (CMT) and in-containment refueling water storage tank (IRWST). Specifically, the inspectors observed storage activities, reviewed drawings and nonconformance and disposition reports (N&Ds), to verify the following:

- the module was being properly stored in the nuclear island in accordance with approved procedures for the proper storage classification (i.e. the module was covered and had appropriate piping end caps where needed);
- traceability of the weld numbers, materials, and parts was maintained between the drawings and fabrication records;
- issues identified during receipt inspection of the module were entered into the licensee's/constructor's corrective action program in accordance with program requirements;
- adequate disposition and technical justification, if applicable, for use-as-is, repair, rework, or reject was identified; and
- reportability screening and evaluations under 10 CFR Part 21 and 10 CFR 50.55(e) were performed.

The inspectors also inspected the licensee's vendor oversight by reviewing audits of both programmatic aspects and fabrication activities performed by the vendor that fabricated this module. Specifically, the inspectors reviewed two audits of AECON

completed by WECTEC and two surveillances of those audits performed by the licensee to verify the following:

- implementation of the audit process was in accordance with NRC approved requirements and regulations;
- audit reports included determination of effectiveness of implementation and compliance with the Quality Assurance (QA) program;
- audit reports were reviewed by management responsible for the audited areas;
- audit reports included a summary of identified deficiencies and nonconformances along with response due dates; and
- audit findings corrected during the audit were documented and verified.

b. Findings

No findings were identified.

1A14 (Unit 2) ITAAC Number 2.2.03.03a (161) / Family 06B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.03a (161). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.B - Inspection of the ITAAC-Related Welding Program
- 65001.B-02.01 - Program and Procedures Review
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.05 – Inspection

The inspectors reviewed the welding and NDE program of the contractor who will be performing any PXS component welding (WECTEC) to ensure that it complied with the applicable codes and standards. The inspectors reviewed the written practice, filler metal control procedure, welding procedure qualification procedure, and other high level procedures that govern the welding and NDE programs and are listed in the attachment. In addition, the inspectors reviewed a selection of welding procedures and qualification records to ensure that they had been written and qualified in accordance with the ASME Boiler and Pressure Vessel Code Section IX, Welding and Brazing Qualifications, and the inspectors reviewed welding procedure revisions made since the program had been taken over by WECTEC. The inspectors also reviewed the qualification records for a sample of NDE inspectors to determine if they had been trained and qualified in accordance with the written practice. The inspectors also reviewed a sample of WECTEC's NDE procedures to ensure they met the requirements of the applicable ASME Codes. The inspectors also walked down the welding filler metal rod room to determine if welding filler metal was being stored, handled, and distributed in accordance with applicable site procedures. The inspectors additionally reviewed a sample of welder qualification records to verify that the welders had been properly qualified for welding carbon and stainless steel with the shielded metal arc welding (SMAW), GTAW, and flux cored arc welding (FCAW) processes in accordance with the requirements of ASME Section IX.

b. Findings

No findings were identified.

1A15 (Unit 2) ITAAC Number 2.2.03.03b (162) / Family 03B

a. Inspection Scope

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

- 65001.B - Inspection of the ITAAC-Related Welding Program
- 65001.B-02.01 - Program and Procedures Review
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.05 - Inspection

The inspectors reviewed the welding and NDE program of the contractor who will be welding the PXS piping systems (WECTEC) to ensure that it complied with the applicable codes and standards. The inspectors reviewed the written practice, filler metal control procedure, welding procedure qualification procedure, and other high level procedures that govern the welding and NDE program which are listed in the Attachment. In addition, the inspectors reviewed a selection of welding procedures and qualification records to ensure that they had been written and qualified in accordance with the current edition of the ASME Boiler and Pressure Vessel Code Section IX, Welding and Brazing Qualifications, and the inspectors reviewed welding procedure revisions made since the program had been taken over by WECTEC. The inspectors also reviewed the qualification records for a sample of NDE inspectors to determine if they had been trained and qualified in accordance with the written practice. The inspectors reviewed a sample of WECTEC's NDE procedures to ensure they met the requirements of the ASME Code Section V, Nondestructive Examination, 1998 Edition 2000 Addenda. The inspectors also walked down the welding filler metal rod room to determine if welding filler metal was being stored, handled, and distributed in accordance with applicable site procedures. The inspectors additionally reviewed a sample of welder qualification records to verify that the welders had been properly qualified for welding carbon and stainless steel with the SMAW, GTAW, and FCAW processes in accordance with the requirements of ASME Section IX.

b. Findings

No findings were identified.

1A16 (Unit 2) ITAAC Number 2.2.03.05a.ii (166) / Family 14E
(Unit 3) ITAAC Number 2.2.03.05a.ii (166) / Family 14E

a. Inspection Scope

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

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

The inspectors reviewed documents, specifically EQDPs APP-PV14-VBR-002, APP-PV03-VBR-014, and APP-PV03-VBR-004 and EQSRs APP-PV14-VBR-003, APP-PV03-VBR-013, and APP-PV03-VBR-001 for HPNS control valves (commodity PV14 – Fisher) and swing check valves and nozzle check valves (PV03), and interviewed personnel to verify if:

- the licensee was using the appropriate design basis parameters for qualification and that the design basis was appropriately translated into SSCs qualification test or qualification analysis;
- limiting design basis parameters were used as input for the qualification of the SSC and that the necessary design basis documents and calculations, as appropriate, were correctly incorporated into the qualification program for the SSC;
- required qualifications of SSCs were adequately completed and controlled in accordance with regulatory requirements, applicable industry standards, design specifications, and approved procedures; and
- licensee's records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes.

The inspectors reviewed problems identified during the qualification process, including test anomalies and evaluated corrective action documents to determine the effectiveness of the licensee's corrective measures.

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

- PXS-PL-V042, Nitrogen Supply Containment Isolation Valve (PV14 – Fisher)
- PXS-PL-V028A, Accumulator A Discharge Check Valve (PV03 – Swing Check)
- PXS-PL-V016A, CMT A Discharge Check Valve (PV03 – ERZ Nozzle Check)

The inspectors performed these reviews to verify that the commodity codes listed in the EQDP were qualified consistent with the requirements specified in the UFSAR. The inspectors also reviewed the design codes, analysis and testing methodologies, load combinations, seismic acceleration, and required input motion to verify consistency with the UFSAR requirements.

In particular, the inspectors reviewed active mechanical equipment to verify that it was analyzed in accordance with ASME QME-1-2007 and that electrical components of the valves were tested in accordance with IEEE 344-1987, and the pressure boundaries of the ASME Class 1, 2, and 3 valves were analyzed to ASME Boiler and Pressure Vessel Section III Code Edition 1998 – 2000. The inspectors also reviewed the qualification using static analysis for rigid valves and testing with required input motion for in-line equipment to verify that the methodologies were consistent with the QME-1-2007 provisions. Finally, the inspectors reviewed the documents to determine whether the

applicable procedures required the piping analyst to verify if the piping acceleration would not exceed the SSE level in which the valves were qualified.

b. Findings

No findings were identified.

1A17 (Unit 2) ITAAC Number 2.2.05.05a.ii (260) / Family 12E
(Unit 3) ITAAC Number 2.2.05.05a.ii (260) / Family 12E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.05.05a.ii (260). 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, specifically EQDP APP-JE52-VBR-006 and EQSR APP-JE52-VBR-005, for pressure sensors (commodity JE52 – NLI) and interviewed personnel to verify if:

- the licensee was using the appropriate design basis parameters for qualification and that the design basis was appropriately translated into SSCs qualification test or qualification analysis;
- limiting design basis parameters were used as input for the qualification of the SSC and that the necessary design basis documents and calculations, as appropriate, were correctly incorporated into the qualification program for the SSC;
- required qualifications of SSCs were adequately completed and controlled in accordance with regulatory requirements, applicable industry standards, design specifications, and approved procedures; and
- licensee's records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes.

The inspectors reviewed issues identified during the qualification process, including test anomalies and evaluated corrective action documents to determine the effectiveness of the licensee's corrective measures.

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

- VES-JE-PDT004B, MCR Differential Pressure Sensor B (JE52 – NLI)
- VES-JE-PDT004A, MCR Differential Pressure Sensor A (JE52 – NLI)

The inspectors performed these reviews to verify that the commodity codes listed in the EQDP were qualified consistent with the requirements specified in the UFSAR. Documentation for testing was evaluated to verify that the test response spectra (TRS)

were accurately measured and enveloped the certified seismic design response spectra (CSDRS) defined in Section 3.7 of the UFSAR and the respective required response spectra (RRS) defined for the various equipment locations. The inspectors also reviewed the design codes, analysis and testing methodologies, load combinations, seismic acceleration, and required input motion to verify consistency with the UFSAR requirements.

b. Findings

No findings were identified.

1A18 (Unit 2) ITAAC Number 2.5.01.03d (514) / Family 10E
(Unit 3) ITAAC Number 2.5.01.03d (514) / Family 10E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.01.03d (514). 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, specifically EQDP APP-DAS-VBR-003 and EQSR APP-DAS-VBR-002, for the Diverse Actuation System (DAS) in the area of electromagnetic compatibility (EMC) to verify that the DAS was qualified for EMC in accordance with regulatory requirements, the licensing bases, and the acceptance criteria of the ITAAC. The inspectors reviewed the qualification summary report and data package to verify that the qualification was conducted in accordance with the specification, the results met the acceptance criteria stated in the design specification and the ITAAC, and that the results stated the qualified life of the SSC.

The inspectors reviewed test reports to verify that testing was performed in conformance with Regulatory Guide (RG) 1.180, as committed to in the UFSAR and included applicable MIL-STD-461E and IEC 61000-4 series tests. The tests results were reviewed to verify that the DAS was qualified to demonstrate the capability to withstand electrical surges (SWC) and electromagnetic interference (EMI), radio frequency interference (RFI), and electrostatic discharge (ESD) conditions that exist where the DAS equipment is located in the plant.

The inspectors also reviewed test results to verify that 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 DAS to verify that quality attributes that demonstrate EMC qualification were maintained. Alternate qualification methods that were used in place of conventional testing were evaluated to verify that those alternate methods were employed while maintaining compliance with regulatory requirements and the licensing bases. The inspectors

reviewed the DAS EMC equipment qualification records to verify that they were auditable, clear, and complete in order to support the closure of the ITAAC.

In addition, the inspectors assessed the licensee's review and acceptance of APP-DAS-VBR-002 and APP-DAS-VBR-003 to verify that the principal closure document (PCD) review was completed and documented.

b. Findings

No findings were identified.

1A19 (Unit 2) ITAAC Number 2.5.02.07b (535) / Family 10E
(Unit 3) ITAAC Number 2.5.02.07b (535) / Family 10E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.07b (535). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed the design basis of the Protection and Safety Monitoring System (PMS) – Digital Data Service (DDS) isolators to determine if isolation devices prevent credible faults from propagating into the PMS when PMS process signals are provided to the DDS. The inspectors reviewed the following design basis documents to verify that the licensee was using the appropriate design basis parameters for the fiber optic cable qualification, and verify that the design basis was appropriately translated into the qualification summary report, APP-PMS-VBR-015, "Protection and Safety Monitoring System Isolation Summary Report for Use in the AP1000 Plant," Rev. 1:

- V.C. Summer Units 2 and 3 UFSAR
- WCAP-15776, "Safety Criteria for the AP1000 Instrumentation and Control Systems," Rev. 1
- IEEE 384-2008, "IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits," dated December 2008
- APP-EW31-Z0-003, "AP1000 Fiber-Optic Design Specification for Instrumentation & Control System use Outside of Containment, Class 1E Applications," Rev. 0
- APP-EW31-Z0-004, "AP1000 Fiber-Optic Design Specification for Instrumentation & Control System use Outside of Containment, Non-Class 1E Applications," Rev. 0
- APP-GW-GEE-5308, "Fault Testing Requirements for Fiber Optic Isolation Devices in WCAP-15776," Rev. 0

The inspectors noted that LDCR-2016-069, "Fault Testing Requirements For Fiber Optic Isolation Devices," Version 1, removed the FSAR commitment/requirement to install isolators on fiber optic cables in the PMS-DDS interface. The inspectors reviewed

WCAP-15776 and IEEE 384-2008 to ensure design documents incorporated the changes reflecting that qualification testing was not required for fiber optic cables as specified by engineering analysis. In addition, the inspectors reviewed Branch Technical Position 7-11, "Guidance On Application And Qualification Of Isolation Devices," Rev. 6, to verify the adequacy of using fiber optic cables as isolation devices. The inspectors reviewed the changes to the UFSAR to ensure that the scope of changes were limited to the electrical isolation qualification of fiber optic cables and that the changes were appropriately screened and implemented in accordance with the design and licensing basis.

The inspectors reviewed qualification/test report APP-PMS-VPR-002, "AP1000 Safety Systems and Hardware Engineering Class 1E/Non-Class 1E Test Report for Fault Testing of AP1000 PMS Isolation Barriers," Rev. 2, to verify that the fiber optic cables were qualified in accordance with WCAP-15776 and IEEE 384-2008 as referenced in the UFSAR.

The inspectors reviewed APP-PMS-VBR-015 to verify that the documentation included a licensee or contractor review of the ITAAC record and documentation that the ITAAC requirements had been met.

b. Findings

No findings were identified.

1A20 (Unit 2) ITAAC Number 2.5.02.07e (538) / Family 10D
(Unit 3) ITAAC Number 2.5.02.07e (538) / Family 10D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.07e (538). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.03 - Test Results Review

The inspectors reviewed APP-PMS-VBR-015, "AP1000 Protection and Safety Monitoring System Isolation Summary Report for Use in the AP1000 Plant," Rev. 1 to ensure that the licensee's summary report concluded that isolation devices prevent credible faults from propagating into the PMS.

The inspectors reviewed the following test reports to ensure that the evaluation of test result had been performed correctly:

- PMS Isolation Summary
- Common Mode Fault Test
- Traverse Mode Fault Test
- Short Circuit/Open Circuit/Grounded Circuit Test

Specifically, the inspectors reviewed the "as-run" procedures to verify that individual steps and data sheets were properly initialed, dated and completed. The inspectors also

verified that all data had been recorded where required and within acceptance tolerances. Additionally, the inspectors verified that test deficiencies and procedure changes were properly identified and that all test changes were reviewed, approved, and properly annotated. The inspectors reviewed all test anomalies and deficiencies to verify that they had been documented and resolved, including any retests.

The inspectors also reviewed the test summary and results evaluation. Specifically, the inspectors used independent technical analysis and judgement of the results to ensure that the evaluation of results had been performed correctly. 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 established administrative requirements.

b. Findings

No findings were identified.

1A21 (Unit 2) ITAAC Number 2.6.03.02.ii (598) / Family 08E
(Unit 3) ITAAC Number 2.6.03.02.ii (598) / Family 08E

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.6.03.02.ii (598). 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, specifically EQDP APP-DD01-VBR-002 and EQSR APP-DD01-VBR-001 for the 250 VDC distribution panels (commodity DD01) and interviewed personnel to verify if:

- the licensee was using the appropriate design basis parameters for qualification and that the design basis was appropriately translated into SSCs qualification test or qualification analysis;
- limiting design basis parameters were used as input for the qualification of the SSC and that the necessary design basis documents and calculations, as appropriate, were correctly incorporated into the qualification program for the SSC;
- required qualifications of SSCs were adequately completed and controlled in accordance with regulatory requirements, applicable industry standards, design specifications, and approved procedures; and
- licensee’s records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes.

The inspectors reviewed problems identified during the qualification process, including test anomalies and evaluated corrective action documents to determine the effectiveness of the licensee’s corrective measures.

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

- IDSA-DD-1, Division A 250 VDC Distribution Panel (DD01)
- IDSB-DD-1, Division B 250 VDC Distribution Panel (DD01)
- IDSC-DD-1, Division C 250 VDC Distribution Panel (DD01)
- IDSD-DD-1, Division D 250 VDC Distribution Panel (DD01)

The inspectors performed these reviews to verify that the commodity codes listed in the EQDP were qualified consistent with the requirements specified in the UFSAR. Documentation for testing was evaluated to verify that the test response spectra (TRS) were accurately measured and enveloped the certified seismic design response spectra (CSDRS) defined in Section 3.7 of the UFSAR and the respective required response spectra (RRS) defined for the various equipment locations. The inspectors also reviewed the design codes, analysis and testing methodologies, load combinations, seismic acceleration, and required input motion to verify consistency with the UFSAR requirements.

b. Findings

No findings were identified.

1A22 (Unit 2) ITAAC Number 3.2.00.01b (740) / Family 16F
(Unit 3) ITAAC Number 3.2.00.01b (740) / Family 16F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.2.00.01b (740). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.03 - Test Results Review

The inspectors reviewed APP-OCD-GER-120, “AP1000 Human Factors Engineering Design Verification Report,” Rev. 2, to ensure that the licensee’s summary report concluded that the Human Factors Engineering (HFE) Design Verification and Validation program was conducted in conformance with the implementation plan, APP-OCS-GEH-120, “AP1000 Human Factors Engineering Design Verification Plan,” Rev. 3, and included verification that the Human System Interface (HSI) design was consistent with the AP1000-specific design guidelines developed for each HSI resource as defined in the FSAR.

The inspectors independently reviewed the test results to ensure they support the conclusions made in the summary report. 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 established administrative requirements.

b. Findings

No findings were identified.

1A23 (Unit 2) ITAAC Number 3.2.00.01c.i (741) / Family 16F
(Unit 3) ITAAC Number 3.2.00.01c.i (741) / Family 16F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.2.00.01c.i (741). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.03 - Test Results Review

The inspectors reviewed APP-OCS-GER-320, "AP1000 Human Factors Engineering Integrated System Validation Report," Rev. 3, to ensure that the licensee's summary report concluded that the Human Factors Engineering Integrated System Validation (ISV) was conducted in conformance with the implementation plan, APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," Rev. 6, and that the test scenarios listed in the implementation plan for ISV were executed in conformance with the plan and FSAR and noted human deficiencies were addressed. The inspectors independently reviewed the test results to ensure they support the conclusions made in the summary report. 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 established administrative requirements.

b. Findings

No findings were identified.

1A24 (Unit 2) 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.B-02.05 - Inspection
- 65001.B-02.06 - Records
- 65001.F-02.01 - Design Document Review
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed the design, procurement, fabrication, and installation of V.C. Summer Unit 2 containment internal structures floor modules at elevation 107'-2".

The inspectors reviewed design documents and engineering and design coordination reports (E&DCRs) to verify the design was consistent with the licensing basis and applicable codes and standards and met quality assurance requirements: updated final safety analysis report (UFSAR); AISC N690-1994, “American National Standard Specification for the Design, Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities”; and 10 CFR Part 50 Appendix B, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Processing Plants”; respectively. Specifically, the inspectors reviewed design assumptions, implementation of design method, and translation of design analysis results into construction documents. The inspectors also reviewed design documentation and records to determine whether the design and design verification processes were performed and documented in accordance with applicable quality assurance requirements.

The inspectors reviewed fabrication documentation and physical attributes of submodules CA32, CA36, and CA37 to verify conformance with design and regulatory requirements. Specifically, the inspectors reviewed the configuration of the submodules; verified the sizes, location, orientation, and spacing of structural components; observed the quality of completed welds; and verified weld types, sizes, lengths, and locations.

Additionally, the inspectors reviewed shop travelers, weld maps, and nondestructive examination (NDE) reports to ensure that work was appropriately documented. The inspectors reviewed qualification records of NDE personnel to determine whether the personnel performing NDE examination activities were qualified in accordance with applicable requirements. As part of their review, inspectors also reviewed the most recent audit report for the vendor responsible for supplying the submodules.

The inspectors also reviewed a sample of inspection reports (IRs) and nonconformance and disposition reports (N&Ds) associated with the CA32, CA36, and CA37 structural modules to verify that nonconforming conditions were being appropriately identified, evaluated, and dispositioned according to approved procedures and processes meeting the requirements of 10 CFR 50, Appendix B.

b. Findings

Introduction

The NRC inspectors identified an ITAAC finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion III, “Design Control” for South Carolina Electric & Gas Company’s (SCE&G) failure through their contractor Westinghouse Electric Company (WEC) to adequately implement measures to ensure that the design basis was correctly translated into design output documents.

Description

WEC Calculation APP-1100-S3C-666, “Containment Internal Structures Design of Floor Modules CA32, CA33, CA34, CA35, CA36, CA37 and CA01 Submodules CA01-35 and CA01-38,” Rev. 0 made numerous design changes to the CIS floor modules at elevation 107’-2”, including: the horizontal embedded anchorage of the CA32 module, and beam-to-beam connection welds in module CA37. During the week of March 27, 2017, the

inspectors determined that some of the design changes documented in calculation APP-1100-S3C-666, Rev. 0 were not incorporated into the design output documents. Specifically, the modifications to the horizontal anchorage of the CA32 module were not incorporated into drawings VS2-CA32-S5-011-R1 and VS2-CA32-S5B-002-R1; and the modifications to the internal welded connections of the CA37 module were not incorporated into details 7/APP-CA37-S5-019, Rev. 2, P/APP-CA37-S5-020, Rev. 2, and BJ/APP-CA37-S5-039, Rev. 0. The inspectors also noted that these design changes were not incorporated into the fabricated CA32 and CA37 modules. As a result, the inspectors concluded that the quality of the CA32 and CA37 modules were indeterminate.

Analysis

The inspectors determined that the failure to adequately implement measures to ensure that the design basis was correctly translated into design output documents was contrary to the requirements of 10 CFR Part 50, Appendix B, Criterion III, and was a performance deficiency.

The finding was considered more than minor because the performance deficiency represented a substantive failure to adequately implement a quality assurance process that rendered the quality of an SSC indeterminate.

The inspectors determined that the finding represented an ITAAC finding because it was material to the acceptance criteria of VCSNS Unit 2 ITAAC 760, in that, if left uncorrected, the licensee may not have been able to demonstrate that the acceptance criteria of these ITAAC were met. The acceptance criteria of these ITAAC require that all deviations between the as-built structures and the approved designs be reconciled to verify that the as-built structures will withstand the design basis loads without a loss of structural integrity or other safety-related functions. The inspectors determined that the failure to adequately implement measures to ensure that the design basis was correctly translated into design output documents may have resulted in a deviation from the approved design that would not have been reconciled by the licensee.

The inspectors concluded the finding was associated with the Design / Engineering Cornerstone. The inspectors evaluated the finding in accordance with IMC 2519, “Construction Significance Determination Process,” and determined the finding was of very low safety significance because the licensee was able to demonstrate with reasonable assurance that the design function of the CIS floor at elevation 107’-2” would not be impaired.

The inspectors reviewed the finding for a possible cross-cutting aspect in accordance with IMC 0613 Appendix F, “Construction Cross-Cutting Areas and Aspects,” and determined the finding was not related to any of the cross-cutting aspects (CCA) discussed in IMC 0613.

Enforcement

10 CFR Part 50, Appendix B, Criterion III, Design Control requires, in part, that measures are established to ensure that the design basis is correctly translated into

design output documents and design changes are subject to design control measures commensurate with those applied to the original design.

Contrary to the above, on June 18, 2015, the licensee, through their contractor Westinghouse, failed to adequately implement measures to ensure that the design basis was correctly translated into design output documents. Specifically, structural calculation APP-1100-S3C-666, "Containment Internal Structures Design of Floor Modules CA32, CA33, CA34, CA35, CA36, CA37 and CA01 Submodules CA01-35 and CA01-38," Rev. 0 modified the horizontal embedded anchorage of the CA32 module, and numerous beam to beam connection welds in module CA37; however, all of these design changes were not incorporated into the applicable construction drawings and details. As a result, the fabricated components were not consistent with the design calculation. The licensee has planned corrective actions to ensure design changes to the affected floor modules are met prior to pouring the concrete.

Because this violation was of very low safety significance (Green) and was entered into the licensee's corrective action program as SCE&G Condition Report (CR) CR-17-30445 and WEC Corrective Action, Prevention, and Learning (CAPAL) System Issue ID 100460545, it is being treated as a non-cited violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy.

Since the corrective actions have not been fully implemented, this NCV will remain open until the NRC can verify that the acceptance criteria of Unit 2 ITAAC 760 is not impacted.

1A25 (Unit 2) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01 - Design Document Review

The inspectors observed installation activities for the wall sections along column line 11, between column lines L and Q and between elevations 100'-0" and 117'-6", associated with formwork, embedments, and steel reinforcement, including horizontal and vertical reinforcing steel bars, shear reinforcement, wall dowel bars extending above 117'-6", steel reinforcement extending into the floor at 117'-6" and bar splices, to determine whether:

- the installation activities met applicable quality and technical requirements established by approved procedures, specifications, and drawings included in the work packages;

- piping, penetrations, reinforcing steel, and embedments were located properly in the structure, were sized as specified in drawings and had proper clearances;
- reinforcing steel and embedments were secured and free of concrete or excessive rust; and
- forms were secure, leak tight, and free from debris or excess water.

The inspectors also performed independent inspection and measurements to determine whether the steel reinforcement, embedments, and formwork conformed to the design specifications, procedures, industry codes and standards, ITAAC requirements, and the UFSAR.

The inspectors also reviewed a sample of design specifications to determine whether the documents:

- met the requirements specified in the quality assurance program and the UFSAR, including the reconciliation of construction deviations in critical dimensions and tolerances;
- correctly translated requirements from applicable codes and standards;
- described work controls, approved work processes, and inspection requirements;
- included appropriate quantitative and/or qualitative acceptance criteria for determining that the prescribed activities were accomplished satisfactorily;
- clearly prescribed acceptable methods of quality control inspection to ensure that the as-built condition met specified design requirements, drawings and material specifications;

The inspectors reviewed a sample of nonconformances to verify:

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

b. Findings

No findings were identified.

1A26 (Unit 2) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.F-02.01 - Design Document Review

The inspectors observed installation of reinforcing steel activities for the floor sections located in Area 2 of the non-radiologically controlled portion of the auxiliary building at elevation 100'-0", between column lines L and K and between column line 11 and the shield building. These floor sections were associated with the Class 1E instrumentation and control / Division C penetration and remote shutdown rooms. The inspectors performed this inspection to determine whether in-process construction activities were performed in conformance with the approved design documents and that any deviation from design was properly identified, evaluated, and documented to provide assurance that the structural components were capable of withstanding design loads without loss of structural integrity and any safety-related functions. The observation of construction activities included the installation of embedments, conduit penetrations, anchor bolts, steel reinforcement in the north-south and east-west direction, and bar splices, to determine whether:

- the installation activities met applicable quality and technical requirements established by approved procedures, specifications, and drawings;
- piping, penetrations, reinforcing steel, and embedments were located properly in the structure, were sized as specified in drawings and had proper clearances;
- reinforcing steel and embedments were secured and free of concrete or excessive rust; and
- the composite steel floor was secured, leak tight, and free from debris or excess water.

The inspectors reviewed a sample of design calculations to determine whether:

- design outputs were properly translated into as-built drawings;
- the as-built drawings adequately defined the final design and arrangement of the steel reinforcement;
- the documents were consistent with the design commitments and requirements of the technical specifications, the UFSAR, and code requirements.

The inspectors also performed an independent inspection and measurements to determine whether the steel reinforcement, embedments, and composite steel floor panels conformed to the requirements of design specifications, procedures, industry codes, ITAAC 762, and the UFSAR. Previously, an inspection of the composite floor and steel frame support system was documented in inspection report 05200027/2016004.

b. Findings

No findings were identified.

1A27 (Unit 2) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01 - Design Document Review

The inspectors observed installation activities for the wall sections in the rad-controlled area of the auxiliary building along column line I, between column lines 2 and 4; and along column line 2 between column lines J-1 and I, between elevations 100'-0" and 117'-6". The activities were associated with formwork and reinforcement, including horizontal and vertical reinforcing steel bars, shear reinforcement, wall dowel bars extending above 117'-6", and bar splices, to determine whether:

- the installation activities met applicable quality and technical requirements established by approved procedures, specifications, and drawings included in the work packages;
- piping, penetrations, and reinforcing steel were located properly in the structure, were sized as specified in drawings and had proper clearances;
- reinforcing steel was secured and free of concrete or excessive rust; and
- forms were secure, leak tight, and free from debris or excess water.

The inspectors also reviewed design specifications to determine if they:

- met the requirements specified in the quality assurance program and the UFSAR, including the reconciliation of construction deviations in critical dimensions and tolerances;
- correctly translated requirements from applicable codes and standards;
- described work controls, approved work processes, and inspection requirements;
- included appropriate quantitative and/or qualitative acceptance criteria for determining that the prescribed activities were accomplished satisfactorily; and
- clearly prescribed acceptable methods of quality control inspection to ensure that the as-built condition met specified design requirements, drawings and material specifications.

The inspectors reviewed a sample of nonconformances to verify:

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

b. Findings

No findings were identified.

1A28 (Unit 2) 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.F - Inspection of the ITAAC-Related Design and Fabrication Requirements

The inspectors observed reinforcing steel installation activities associated with the spent fuel pool floor located at elevation 92'- 8 ½" and between column lines 2 to 4 and K-2 to L-2. The inspectors performed independent measurements of the floor foundation, embedments, horizontal reinforcing steel bars, and bar splices, to determine whether:

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

The inspectors observed concrete pre-placement activities associated with the spent fuel pool to determine whether pre-placement planning and training had been completed, including appropriate considerations for hot weather and mass concrete, and the required pre-placement inspection was performed by quality control. Prior to concrete placement, the inspectors independently evaluated whether the reinforcing steel met design drawings and specifications included in the work packages, all design deviations were adequately captured and addressed, and preparation and cleanliness of the spent fuel pool foundation had been completed. The inspectors observed concrete placement activities to determine whether:

- accepted procedures and specifications were followed throughout the concrete placement;
- the equipment used was suitable and sized for the work;
- each batch ticket was reviewed for verification of proper mix, transport time, placement location, and amount of temper water being added at the truck delivery point;
- mixing time and rotations were adequate, including after any additions were made;
- placement drop distances did not exceed specification requirements and did not result in segregation;
- vibrators were handled and operated to ensure adequate consolidation and avoid voiding or honeycombing, including vertical operation and penetration through the new concrete into the previously placed layer;
- concrete was placed in lifts in accordance with the concrete placement plan;
- inspection during placement was performed as required; and

- records were produced, reviewed, and indicated mix, location, time placed, temperature of the concrete mix, and ambient conditions.

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

- concrete temperature, slump, air content, and unit weight were determined at the proper location and frequency as required by procedures, specifications, and ASTM C94 standards;
- sample collection and testing techniques conformed to the procedures and specifications;
- concrete strength test sample cylinders were made at the required location and frequency, and were cured in accordance with specified requirements; and
- personnel performing sampling and testing were trained and qualified.

b. Findings

No findings were identified.

1A29 (Unit 2) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors observed installation of reinforcing steel activities for the pre-cast floor sections located in the radiation controlled area of the auxiliary building at elevation 82'-6", between column lines 1 and 2 and column lines I and J-2. These pre-cast floor sections are associated with the Liquid Radwaste System (WLS) and Spent Fuel Pit Cooling System (SFS) pump rooms. The inspectors performed this inspection to determine whether in-process construction activities were being performed in conformance with the approved design documents and that any deviations from the design were properly identified, evaluated, and documented without loss of structural integrity and any safety-related functions. Observation of construction activities included the installation of embedments, pipe penetrations, anchor bolts, steel reinforcement in the north-south and east-west direction, and bar splices, to determine whether:

- the installation activities met applicable quality and technical requirements established by approved procedures, specifications, and drawings;
- piping, penetrations, reinforcing steel, and embedments were located properly in the structure, were sized as specified in drawings and had proper clearances;
- reinforcing steel and embedments were secured and free of concrete or excessive rust; and
- the pre-cast slab was secured, leak tight, and free from debris or excess water.

The inspectors also reviewed a sample of design changes and nonconformances to determine whether:

- the documents met the requirements specified in the quality assurance program and the UFSAR, including the reconciliation of construction deviations in critical dimensions and tolerances;
- EDCR'S correctly implemented design changes without significantly affecting SSC stability;
- the licensee was identifying problems at an appropriate threshold and entering them into the corrective action program;
- any differences between the as-built and as-designed SSCs were documented and dispositioned in accordance with approved modification or change procedures; and
- the nonconformances were resolved and their dispositions had adequate technical bases;

The inspectors also performed independent inspection and measurements to determine whether the steel reinforcement, embedments, and formwork conformed to the requirements of design specifications, procedures, industry codes, ITAAC 763, and the UFSAR.

b. Findings

No findings were identified.

1A30 (Unit 2) ITAAC Number 3.3.00.02a.ii.c (766) / Family 01A

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors reviewed records from survey reports for wall 7.3, in the non-radiologically controlled area of the auxiliary building, from column lines I to the shield building from elevation 82'6" – 100'0". This inspection was to verify the as-built thickness of the auxiliary building concrete wall was in conformance with the requirements of Table 3.3-1 of Appendix C of the V.C. Summer Unit 2 Combined License (COL). The inspectors also verified that these records were properly reviewed and approved in the responsible organization.

b. Findings

No findings were identified.

1A31 (Unit 2) ITAAC Number 3.3.00.03a (777) / Family 01A

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors reviewed records from survey reports to verify the as-built thickness of concrete walls of the east steam generator compartment (south, east, and north walls) were in conformance with the requirements of Table 3.3-1 of Appendix C of the V.C. Summer Unit 2 COL. The inspectors also reviewed concrete testing reports to determine if the UFSAR density requirements (12.3.2.2 – General Shielding Design) for general shielding design were met. Additionally, the inspectors reviewed these records to verify whether they were properly reviewed and approved by the responsible organization.

b. Findings

No findings were identified.

1A32 (Unit 3) ITAAC Number 2.1.02.02b (14) / Family 03F

a. Inspection Scope

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

- 65001.03-02.01 - Purchase and Receipt of Materials
- 65001.03-02.02 - Storage and Handling
- 65001.03-02.07 - Review of Records
- 65001.03-02.08 - Problem Identification and Resolution
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed procurement and fabrication records associated with the Unit 3 reactor coolant system (RCS) loop piping to verify that materials met the applicable requirements of design documents and the ASME Section III Code. The inspectors reviewed records for hot leg line number L001B, serial number L0903400; cold leg line numbers L002A and L002C, serial numbers L1201046 and L1201044, respectively; and pressurizer surge line number L003, serial number L0901859. Specifically, the inspectors reviewed quality assurance data packages, certificates of conformance, certified material test reports, nonconformance reports, and visual and dimensional analysis reports to verify the materials' chemical composition, mechanical properties, and fabrication requirements were met.

The inspectors reviewed a sample of nonconforming reports related to out of tolerance dimensional measurements on the RCS piping legs. The inspectors reviewed these reports to determine whether the conditions were properly evaluated against ASME code requirements and design specifications and received the appropriate amount of review.

The inspectors reviewed the receipt inspection records to verify the receipt activity checklist was completed and the quality assurance inspection report received satisfied conditions. The inspectors performed an independent visual inspection and took key dimensional measurements of the hot leg, cold legs, and surge line to verify there were no surface defects and the diameters and thicknesses of the pipe spools conformed to design requirements. The inspectors also checked storage conditions to verify that the material met storage and handling requirements.

b. Findings

No findings were identified.

1A33 (Unit 3) ITAAC Number 2.1.02.03a (15) / Family 06B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.03a (15). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.B-02.01 - Program and Procedures Review
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.05 - Inspection

The inspectors reviewed CES' welding and NDE programs to verify compliance with the requirements of the 1998 Edition including 2000 Addenda of the ASME Section III, Division 1, Subsection NB, for Class 1 Components. Specifically, the inspectors reviewed CES' NPT/NA ASME Quality Assurance Manual, Welding Procedure Manual, two welding procedure specifications, and a liquid dye penetrant examination procedure. In addition, the inspectors reviewed two welding procedure specifications (WPSs), and a welding operator qualification record and continuity log for stamp number CES0674 to determine whether WPSs and performance qualifications were qualified in accordance with the requirements of the current edition of the ASME Code Section IX, Welding and Brazing Qualifications.

b. Findings

No findings were identified.

1A34 (Unit 3) ITAAC Number 2.1.02.03b (16) / Family 03B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.03b (16). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.B - Inspection of the ITAAC-Related Welding Program
- 65001.B-02.01 - Program and Procedures Review
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.05 - Inspection

The inspectors reviewed the CES' welding and NDE programs with respect to the assembly of the RCS piping system to verify compliance with the requirements of the 1998 Edition including 2000 Addenda of the ASME Section III, Division 1, Subsection NB, for Class 1 Components. Specifically, the inspectors reviewed CES' NPT/NA ASME Quality Assurance Manual, Welding Procedure Manual, two welding procedure specifications, and a liquid dye penetrant examination procedure. In addition, the inspectors reviewed two WPSs, and a welding operator qualification record and continuity log for stamp number CES0674 to determine whether WPSs and performance qualifications were qualified in accordance with the requirements of the current edition of the ASME Code Section IX, Welding and Brazing Qualifications.

b. Findings

No findings were identified.

1A35 (Unit 3) ITAAC Number 2.2.03.03a (161) / Family 06B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.03a (161). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.B-02.01 - Program and Procedures Review
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.05 - Inspection

The inspectors reviewed the welding and NDE program of the contractor (WECTEC) who will be performing any PXS component welding to ensure that it complied with the applicable codes and standards. The inspectors reviewed the written practice, filler metal control procedure, welding procedure qualification procedure, and other high level procedures that govern the welding and NDE program which are listed in the Attachment. In addition the inspectors reviewed a selection of welding procedures and qualification records to ensure that they had been written and qualified in accordance with the current edition of the ASME Boiler and Pressure Vessel code Section IX,

Welding and Brazing Qualifications, and the inspectors reviewed welding procedure revisions made since the program had been taken over by WECTEC. The inspectors also reviewed the qualification records for a sample of NDE inspectors to determine if they had been trained and qualified in accordance with the written practice. The inspectors also reviewed a sample of WECTEC's NDE procedures to ensure they met the requirements of the ASME Code Section V, Nondestructive Examination, 1998 Edition 2000 Addenda. The inspectors also walked down the welding filler metal rod room to determine if welding filler metal was being stored, handled, and distributed in accordance with applicable site procedures. The inspectors additionally reviewed a sample of welder qualification records to verify that they had been properly qualified for welding carbon and stainless steel with the SMAW, GTAW, and FCAW processes in accordance with the requirements of ASME Section IX.

b. Findings

No findings were identified.

1A36 (Unit 3) ITAAC Number 2.2.03.03b (162) / Family 03B

a. Inspection Scope

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

- 65001.B - Inspection of the ITAAC-Related Welding Program
- 65001.B-02.01 - Program and Procedures Review
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.05 - Inspection

The inspectors reviewed the welding and NDE program of the contractor (WECTEC) who will be welding the PXS piping systems to ensure that it complied with the applicable codes and standards. The inspectors reviewed the written practice, filler metal control procedure, welding procedure qualification procedure, and other high level procedures that govern the welding and NDE program listed in the attachment. In addition, the inspectors reviewed a selection of welding procedures and qualification records to ensure that they had been written and qualified in accordance with the current edition of the ASME Boiler and Pressure Vessel code Section IX, Welding and Brazing Qualifications, and the inspectors reviewed welding procedure revisions made since the program had been taken over by WECTEC. The inspectors also reviewed the qualification records for a sample of NDE inspectors to determine if they had been trained and qualified in accordance with the written practice. The inspectors also reviewed a sample of WECTEC's NDE procedures to ensure they met the requirements of the ASME Code Section V, Nondestructive Examination, 1998 Edition 2000 Addenda. The inspectors also walked down welding filler metal rod room to determine if welding filler metal was being stored, handled, and distributed in accordance with applicable site procedures. The inspectors additionally reviewed a sample of welder qualification records to verify they were properly qualified for welding carbon and stainless steel with

the SMAW, GTAW, and FCAW processes in accordance with the requirements of ASME Section IX.

b. Findings

No findings were identified.

1A37 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.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 performed a receipt inspection of submodule CA03-13 of Unit 3. Seventeen CA03 submodules are welded together to form the curved wall of the In-containment Refueling Water Storage Tank. Inspectors reviewed documents to verify that the components procured to assemble the submodule were in accordance with procurement documents and design specifications. The inspectors measured a sample of dimensions and welds of the submodule to determine whether they were in accordance with approved design drawings. The inspectors also reviewed the receipt inspection packages and performed measurements of the steel components including the face plates, stiffeners, and other supporting steel to ensure the member size, shape, and grade was in accordance with the design drawings and design specifications. The inspectors observed welding activities to determine if they were conducted in accordance with the relevant welding procedure specification (WPS). Additionally, inspectors reviewed the weld traveler to verify that the correct sequencing and hold points were established and maintained.

The inspectors reviewed the disposition of nonconformances associated with the submodule. For those nonconformances that required repair, inspectors measured the submodule and reviewed documents to determine if the repairs met applicable quality and technical requirements. For those nonconformances that were determined to be used without repair, inspectors reviewed documents to verify that the condition was adequately evaluated and complied with the design basis.

b. Findings

No findings were identified.

1A38 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed a sample of nonconformances and design changes as dispositioned in Nonconformance and Disposition Reports (N&Ds) and Engineering Design Change Request (EDCRs) associated with assembly of CA01 and CA03 submodules. The inspection of CA01 focused on the assembly of submodules CA01-30 and CA01-31, which make up the west wall of the Pressurizer Compartment. The inspection of CA03 modules focused on the fabrication of submodules CA03-02 and CA03-17, which are pieces of the west wall of the In-Containment Refueling Water Storage Tank (IRWST). The inspectors reviewed these reports to determine if the accepted dispositions resulted in any differences from the as-designed conditions, and if so, the differences were properly documented. To determine if the changes were properly documented, the inspectors reviewed the reports to verify whether the condition was properly evaluated and that a licensing basis review was conducted.

The inspectors reviewed assembly records for the fabrication of steel structures making up the submodules for the west wall of the IRWST. Specifically, the inspectors reviewed records associated with submodule CA03-02, a portion of the west wall of the IRWST. The inspectors reviewed CMTRs to verify the materials used were in conformance with the required material specifications. The inspectors reviewed weld travelers to verify that identification of welds and welders were maintained for each weld and nondestructive examination (NDE) methods and acceptance criteria are as specified in the associated procedures. The inspectors also reviewed receipt inspection records to verify that a general receipt inspection was performed (e.g. shipping damage, cleanliness, presence of contractor documentation). Additionally, the inspectors reviewed the receipt inspection documentation to determine if the submodule was examined for conformance with requirements specified in the procurement documents.

b. Findings

No findings were identified.

1A39 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family 01F

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.B-02.04 - Production Controls

- 65001.F-02.04 - General QA Review

The inspectors observed the in process welding of Unit 3 CA03 submodules. Specifically the inspectors observed the welding of seam weld #5 between submodules CA03-05 and CA03-06, and a portion of a fill-pass of welding for seam weld #12 between modules CA03-12 and CA03-13. The CA03 module is a stainless steel curved wall of the In-Containment Refueling Water Storage Tank. The welding process observed for seam #5 was gas tungsten arc welding (GTAW). The welding process observed for seam #12 was flux cored arc welding (FCAW). For seam weld #5 and weld FW-12-VP-002 of seam weld #12 the inspectors observed in process welding to verify whether shielding gas flow, gas composition, and filler metal were in accordance with the applicable welding procedure specification (WPS). For seam #12, the inspectors also observed the in process welding to verify whether wire speed, travel speed, amperage and voltage were in accordance with the applicable WPS. Additionally, for seam #5:

- The inspectors reviewed the Weld Record to determine if the work was conducted in accordance with the established procedural requirements.
- The inspectors observed the as-welded surfaces to determine if cleanliness was maintained prior to welding and between passes.
- The inspectors reviewed material issue records (MIR) and CMTR for the filler material to determine if the material was produced and controlled in accordance with codes, standards, and site procedures.

For seam #5 and seam #12, the inspectors reviewed the qualification records of the welders to verify whether they were qualified to perform the weld using the applicable welding process. For seam #12 the inspectors observed the final UT to verify whether:

- the equipment used was calibrated;
- QC was performing a calibration check and tracking calibration times; and
- QC was using a couplant and that the couplant was cleaned after the testing was completed.

For Seam #12 the inspectors reviewed the qualifications of the QC inspector performing the UT to verify that they were adequate. For seam #5, the inspectors reviewed the root liquid penetrant testing (PT), final PT, and final ultrasonic testing (UT) records to verify whether the weld was considered acceptable for the lower portions of the seam (welds VS3-CA03-VWK-800020-FW-05-VP-002A and VS3-CA03-VWK-800020-FW-05VP-002). The inspectors also performed an independent visual inspection of the lower portions of the seam #5 and #12 welds to verify whether the welds met the inspection criteria of AWS D1.6-1999. Specifically, the inspectors inspected VS3-CA03-VWK-800020-FW-05-VP-002A and VS3-CA03-VWK-800020-FW-05VP-002, which are associated with seam #5, and VS3-CA03-800027-FW-12-VP-002 and VS3-CA03-800027-FW-12-VP-002A, which are associated with seam #12.

b. Findings

No findings were identified.

1A40 (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:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.06 - Record Review
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors observed activities associated with Unit 3 Layer F2 and Course 1. Layer F2 which extends from elevation 96'6" to 100'0" is made of reinforced concrete. Course 1 is made of steel-reinforced panels that are connected to the top of Layer F2. Course 1 extends from elevation 100'0" to 103'6" and both layers are located between azimuths 181.98° and 341.94°. The inspectors observed concrete pre-placement activities to determine whether pre-placement planning and training had been completed and the pre-placement inspection was performed by QC. Prior to concrete placement, the inspectors independently evaluated whether deviations were adequately captured and addressed and preparation and cleanliness of the formwork and rebar had been completed. The inspectors observed concrete placement activities to determine whether:

- accepted procedures and specifications were followed throughout the concrete placement;
- the equipment used was suitable and sized for the work;
- placement drop distances did not exceed specification requirements and did not result in segregation;
- concrete was placed in lifts in accordance with the concrete placement plan;
- the use of vibrators was appropriate; and
- inspection and oversight during placement was performed as required.

The inspectors observed concrete delivery operations and reviewed batch plant records to determine whether:

- batch records were generated, controlled, and indicated placement location, mix, volume, date, time, and special instructions;
- the time limit between mixing and placement was not exceeded;
- temperature limits were not exceeded; and
- water was adjusted to account for moisture content of aggregates.

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

- concrete temperature, slump flow, air content, and unit weight were determined at the proper location and frequency;
- sample collection and testing techniques conformed to the procedures, specifications, and ASTM standards; and

- concrete strength test sample cylinders were made at the required location and frequency.

The inspectors interviewed licensee and contractor personnel to determine whether:

- contractors performing safety-related work followed approved implementing procedures that describe administrative and procedural controls, approved work processes, and inspection requirements;
- personnel conducting work and quality assurance roles were qualified and knowledgeable; and
- effective oversight in accordance with specifications and program requirements was implemented for the installation activities observed.

b. Findings

No findings were identified.

1A41 (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:

- 65001.02-02.06 - Record Review
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.03 - Observation of Fabrication Activities
- 65001.F-02.04 - General QA Review

The inspectors performed a field inspection of construction activities associated with the Unit 3 shield building. The inspectors conducted field measurements, reviewed documents, and observed work activities to determine the quality of the reinforced concrete (RC) to steel concrete composite (SC) wall transition at elevation 100'. The inspectors reviewed concrete reinforcement drawings and design change documents to verify:

- fabrication of structural modules was completed in accordance with applicable specifications, drawings, and approved procedures;
- key building critical dimensions, materials, and weld sizes satisfied design specifications, requirements, and relevant ITAAC;
- deviations and design changes were addressed in accordance with procedure requirements; and

- nonconforming conditions identified by the licensee were being appropriately resolved.

The inspectors performed independent measurements of SC structural sub-module panel 01P, which was placed above the RC portion of the shield building at elevation 100', from Az. 325.6875° to Az. 341.94°. Inspectors measured the size, spacing, and number of horizontal support plates and vertical gusset plates in the panel to determine if the panel met the design requirements to connect to the RC portion. The inspectors observed installation of rebar couplers at elevation 97' and the rebar that is embedded in the RC and passes through the first course of SC transition panels through the horizontal support plates. The inspectors observed the torqueing of the couplers and rebar that were installed through the horizontal support plates. The inspectors observed installation of the hex nuts which anchor the SC transition panels to the RC portion of the shield building.

b. Findings

No findings were identified.

1A42 (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:

- 65001.02-02.06 - Record Review
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.B-02.05 - Inspection

Inspectors reviewed completed welds associated with the Unit 3 shield building steel composite concrete panels from azimuth 182 to azimuth 342 from elevation 100'-0" to 103'-6". Inspectors performed a visual inspection of vertical seam welds between panels 01J, 01K, 01L, 01M, 01N, and 01P to confirm compliance with AWS D1.1-2000 and site welding procedures. Inspectors also reviewed radiographic reports for the 01J to 01K and 01L to 01M seams. For those seams, inspectors reviewed the radiographic film and observed densitometer checks on the film to verify conformance with approved nondestructive testing methods and acceptance criteria. The inspectors also reviewed weld records associated with those seams to verify that the recorded information met project requirements. The inspectors reviewed the CMTR for the filler metal used in the welds. Additionally, the inspectors compared these weld records to the as-built configurations of the welded panels to verify that the final facility documents reflected the as-built condition.

b. Findings

No findings were identified.

1A43 (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:

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.F-02.02 - Fabrication Records Review

Inspectors performed a direct inspection of the mechanical connections between the Unit 3 shield building reinforced concrete (RC) wall horizontal reinforcement and the vertical RC to steel composite (SC) transition panels. These transitions occur between elevations 100'-0" and 146'-10". Panel 01H transitions at azimuth 183 and panel 01Q transitions at azimuth 341. Inspectors independently measured the as-built 01H and 01Q panels to determine if the panels complied with design drawings and included the requisite holes for the upset rebar. Inspectors observed the rebar extending into the RC portion of the Shield Building and passing into the 01H and 01Q panels. Inspectors observed the as-built attachment of the upset rebar to the nut and heavy hex nuts to determine if:

- Nuts were installed to provide 100 percent thread engagement on the upset bars;
- Nuts were snug tightened; and
- Plies of the connected components were in full contact.

Inspectors reviewed fabrication records and certified material test reports for the heavy hex nuts and washers to confirm if the materials complied with design, procurement, and technical requirements and maintained traceability through installation. Inspectors observed markings and measured the hex nuts to determine if they matched the procurement documents.

Inspectors reviewed design changes as a result of previously identified issues with transition panels to determine the applicability of those changes to the 01Q and 01H panels and to determine if the as-built conditions reflected the design changes. Inspectors reviewed the as-built inspection records to determine if the as-built structure conformed to the final design, construction documents, and the records reviewed.

b. Findings

No findings were identified.

1A44 (Unit 3) ITAAC Number 3.3.00.02a.i.b (761) / Family 01F

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 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-02.03 - Observation of Fabrication Activities

The inspectors reviewed in process welding and weld data records associated with the Unit 3 shield building steel concrete composite (SC) cylindrical wall panels to determine whether construction activities were conducted in accordance with approved procedures and specifications and met the requirements of the UFSAR; 10 CFR Part 50 Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants"; ANSI/AISC N690-94, "American National Standard Specification for the Design Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities"; and, as applicable, AWS D1.1-2000 “Structural Welding Code – Steel.” Specifically, weld data records for the following welds were reviewed:

- exterior horizontal seam welds joining SC panels 02H and 01K (FW-HS-016) which is located in the southwest quadrant of the shield building at elevation 103'-6"
- exterior horizontal backing bar installation for SC panels 01J and 01H (FW-HS-BB08) which is located in the southwest quadrant of the shield building at elevation 103’-6”

The inspectors reviewed the associated work package, welding procedure qualification record (PQR), welding procedure specification (WPS), and weld data sheets (WDS) to verify work was being performed in accordance with the applicable codes and standards. The inspectors also reviewed welder performance qualification records (WPQRs) for the individuals performing submerged arc welding to verify traceability of welder to each field weld, and to determine whether the limitations of essential variables and results of testing were appropriate for the welding process being performed. Finally, inspectors verified that the correct filler material and flux were being used and that preheat and heat input were being monitored and adjusted to ensure that they maintained temperatures within acceptable ranges identified in the WPS.

b. Findings

No findings were identified.

1A45 (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:

- 65001.02-02.01 - Inspection of Concrete Placement

- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F-02.02 - Fabrication Records Review

Inspectors reviewed fabrication and receipt documents and performed measurements of Unit 3 shield building steel composite (SC) wall panels. The SC wall panels are anchored to the reinforced concrete portion of the shield building at 100'-0" from Az. 182 to 342 and at 146'10" from Az. 341 to 183. Inspectors measured Panels 01D and 01E, which attach at elevation 146'10" from Az. 92 to 122 and from Az. 182 to 342, respectively. Inspectors reviewed Certified Material Test Reports (CMTR) and Certificates of Compliance (CoC) for the steel plates to determine if the materials met procurement and quality requirements. Inspectors reviewed the CMTRs and CoCs to determine if they were reviewed and approved by the site and if they were appropriately stored and maintained. Inspectors independently measured critical dimensions of the panels including weld sizes to determine if the modules met design requirements. Inspectors observed reinforcing bars and the steel liner plates to determine if the modules were constructed in accordance with approved drawings. Inspectors reviewed a sample of design changes and nonconformances associated with the panels to determine if the as-built panels were constructed in accordance with the approved design and issues were appropriately corrected or analyzed.

b. Findings

No findings were identified.

1A46 (Unit 3) ITAAC Number 3.3.00.02a.ii.a (764) / Family 01A

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors reviewed records from survey reports for the concrete shield wall, inside containment, between the reactor vessel and reactor coolant drain tank (RCDT). This inspection was to verify the as-built thickness of this shield wall was in conformance with the requirements of Table 3.3-1 of Appendix C of the V.C. Summer Unit 3 COL. The inspectors also reviewed these records to verify whether they were properly reviewed and approved in the responsible organization.

b. Findings

No findings were identified.

1A47 (Unit 3) ITAAC Number 3.3.00.02a.ii.c (766) / Family 01A

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors reviewed records from survey reports for wall K, in the non-radiologically controlled area of the auxiliary building, from column lines 7.3 to 11 from elevation 82'6" - 100'0". This inspection was to verify the as-built thickness of the auxiliary building concrete wall was in conformance with the requirements of Table 3.3-1 of Appendix C of the V.C. Summer Unit 3 COL. The inspectors also reviewed these records to verify whether they were properly reviewed and approved by the responsible organization.

b. Findings

No findings were identified.

1A48 (Unit 3) ITAAC Number 3.3.00.03a (777) / Family 01A

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors reviewed records from survey reports for the concrete shield wall, inside containment, between the reactor vessel and reactor coolant drain tank (RCDT). This inspection was to verify the as-built thickness of the shield wall was in conformance with the requirements of Table 3.3-1 of Appendix C of the V.C. Summer Unit 3 COL. The inspectors also reviewed concrete testing reports to determine if the UFSAR density requirements (12.3.2.2 – General Shielding Design) for general shielding design were met. Additionally, the inspectors reviewed these records to verify whether they were properly reviewed and approved by the responsible organization.

b. Findings

No findings were identified.

1A49 (Unit 3) ITAAC Number 3.3.00.03d (780) / Family 01A

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors reviewed records from survey reports for wall 4 and wall J-1, in the radiologically controlled area of the auxiliary building, from column lines I to J-1 and from 4 to the shield building. This inspection was to verify the as-built thickness of the auxiliary building wall was in conformance with the requirements of Table 3.3-1 of Appendix C of the V.C. Summer Unit 3 COL. The inspectors also reviewed concrete testing reports to determine if the UFSAR density requirements (12.3.2.2 – General Shielding Design) for general shielding design were met. Additionally, the inspectors reviewed these records to verify whether they were properly reviewed and approved in the responsible organization.

b. Findings

No findings were identified.

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

1P01 Construction QA Criterion 13

a. Inspection Scope

An inspection was completed on the V.C. Summer Metro storage facility in Cayce, SC. The intent of the inspection was for the inspectors to verify the licensee's implementation of its quality assurance procedures for handling, shipping, and receiving of any safety-related and/or risk-significant non-safety related items at this storage facility, and to verify that selected items for inspection were being stored in accordance with ASME NQA-1 1994 requirements.

The inspectors ensured that the appropriate implementing documents are developed to address the Quality Assurance Program Document (QAPD) and NQA-1 1994 requirements. The inspection ensured the documents described the controls for the designation of graded storage levels and the criteria for environmental conditions. The inspection also verified the following:

- Storage conditions (environment); environmentally controlled atmosphere and provisions to prevent animals (especially rodents) and birds from entering (adequate class A conditions);
- Control of access to storage area;
- Proper Identification of stored items;

- Special storage requirements were specified in applicable documents and implemented accordingly;
- There was adequate control of the items prior to use;
- Adequate protection from damage during storage was evident;
- The storage documents identified the type of storage and inspections required for each item;
- Records of storage conditions were being maintained and were current.

The items inspected included:

Description	Commodity Code	Safety Class	Storage Level
IIS DAS MI Cable Assembly (EW25)	VS2-EW25-V2-071-G01	C	B
Reactor Trip Switchgear Cabinet 1	VS2-PMS-JD-RTS01	C	B
Reactor Trip Switchgear Breakers - Cabinet 1	VS2-PMS-JD-RTSA01	C	B
Class 1E DC Distribution Panels (DD01) (double bay)	VS3-IDSA-DD-1	C	B
Reactor Coolant Pump Switchgear - Div. B Cabinet	VS3-ECS-ES-32	C	B
Reactor Coolant Pump Switchgear - Div. C Cabinet	VS3-ECS-ES-51	C	B

b. Findings

No findings were identified.

1P02 Construction QA Criterion 16

a. Inspection Scope

Daily Corrective Action Program Review

As part of the various inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during inspection activities and plant status reviews to verify they were being entered into the licensee's corrective action program at an appropriate threshold. The inspectors verified that adequate attention was being given to timely corrective actions and any adverse trends were identified and addressed. Attributes reviewed included:

- classification, prioritization, and evaluation for reportability (i.e., 10 CFR 50.55(e)) of conditions adverse to quality;
- complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery;
- consideration of extent of condition, generic implications, common cause, and previous occurrences;

- classification and prioritization of the resolution of the problem commensurate with its safety significance;
- identification of root and contributing causes, as well as actions to preclude recurrence for significant conditions adverse to quality; and
- completion of corrective actions in a timely manner commensurate with the safety significance of the issue.

Routine Review of Items Entered into the Corrective Action Program

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

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

Selected Issues for Follow-Up Inspection

Based on the inspectors' routine screening of corrective action records, the inspectors selected a sample of issues entered in the corrective action programs to determine if the handling of these issues was consistent with the applicable quality assurance program requirements and 10 CFR Part 50, Appendix B. Specifically, the inspectors reviewed the corrective action records listed in the documents reviewed section of this report. The inspectors reviewed these corrective action documents to determine if:

- conditions adverse to quality were promptly identified and corrected;
- classification and prioritization of the resolution of the problem was commensurate with its safety significance;
- for significant conditions adverse to quality: the cause was determined, corrective actions were taken to prevent recurrence, and the cause and corrective actions taken were documented and reported to appropriate levels of management;
- conditions were appropriately screened;
- the licensee and their contractors properly evaluated and reported the condition in accordance with 10 CFR 50.55(e) and 10 CFR 21;
- the identification and correction of design deficiencies were being adequately addressed;
- extent of condition was being adequately addressed; and
- appropriate corrective actions were developed and implemented.

In addition, the inspectors performed a focused review of discrete issue (DI) 100448039. The DI was generated as a result of significance evaluations for two hardware nonconformance and disposition (N&D) reports that were performed incorrectly. The

significance evaluations for the two N&Ds should have screened out as conditions adverse to quality (CAQ); however, no further evaluation was performed to consider whether a deviation from engineering drawings, specifications, or procedures existed. After the issue was self-identified by the licensee and its contractors, the issue was entered into the corrective action program as DI 100448039.

Corrective actions identified in the DI included re-performance of the significance evaluations which resulted in two additional DIs (DI 100445776 and DI 100447943), an extent of condition to include significant evaluations completed within the last 60 days, discussions with quality engineers on the performance of significance evaluations, and peer reviews of all significance evaluations.

The inspectors reviewed the associated DIs and significance evaluations forms; and interviewed knowledgeable personnel to determine whether corrective actions were adequate.

b. Findings

No findings were identified.

1P03 Construction QA Criterion 5

a. Inspection Scope

The inspectors observed in-process work activities, reviewed documentation, and interviewed personnel associated with the fabrication of electrical penetration assemblies in building 18 onsite. The inspectors reviewed work package VS3-1208-C0W-800013, “Fabricate Unit 3 Shield Building Electrical Penetration Assemblies for RC Placements,” to determine if it met the requirements of procedure NCSP 02-19, “Work Package Planning, Development, Approval and Closure.” Specifically, the inspectors reviewed the work package to determine if the following were appropriately controlled:

- Identification of appropriate equipment to use.
- Inspection hold points with quantitative or qualitative acceptance criteria for determining if activities had been satisfactorily accomplished.
- Identification of records required to be generated.

b. Findings

Introduction

NRC inspectors identified a construction finding of very low safety significance (GREEN) and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to provide adequate instructions and procedures to the site machine shop fabricating safety-related parts for the Unit 3 shield building electrical penetration assemblies (EPAs).

Description

Prior to March 1, 2017, the licensee was fabricating the Unit 3 EPAs in a machining and fabrication building onsite. The EPAs are a Seismic Category I component of the shield

building structure. A function of the EPA is to provide a pass through for electrical penetrations through the shield wall. Part of the EPA is a 4" x 4", one inch thick, rebar connection plate that is used as an anchor point for #11 rebar. The drawing requirement is to cut a 1¾" hole +/- 1/16" in the middle of the plate and to add a chamfer per the weld procedure specification requirements. Rebar is then inserted in the hole flush with the back of the plate and welded. The plate is then welded to the EPA.

During an inspection of the fabrication process at the machine shop, the inspectors measured some of the holes' diameters after the plates had been cut using a water jet. The inspectors noted varying diameters with all being slightly outside of the design drawing requirements. Through evaluation of the work procedures and questioning of the fabrication staff, the inspectors found that the work package did not have a work step that directed the fabrication of the rebar connection plates, a hold point to perform a dimensional inspection of the finished product, or an inspection plan to determine if the plate met drawing requirements prior to use.

Analysis

The inspectors determined that the failure to provide adequate instructions to the site machine shop to ensure proper fabrication of safety-related parts for the shield building EPAs, as required by 10 CFR Part 50, Appendix B, Criterion V, was a performance deficiency. The performance deficiency was more than minor because there was a substantive failure to establish an adequate procedure or quality oversight function to ensure safety-related parts were being fabricated in accordance with design requirements.

The finding was associated with the procurement / fabrication cornerstone. The inspectors evaluated the finding in accordance with Appendix A, of IMC 2519, "AP1000 Construction Significance Determination Process." The inspectors determined the finding was of very low safety significance (GREEN) because at the time of discovery, the installation of the rebar connection plate to the electrical penetration assembly had not yet been completed, nor had any EPAs been installed into the shield building wall.

This finding was assigned a cross-cutting aspect in accordance with IMC 0613, Appendix F, in the area of Human Performance, Work Management [H.5]. The inspectors determined that the most significant causal factor of the performance deficiency was due to a lack of work controls established in the machine shop. The work was being performed outside of a process with no documented independent inspection of the finished machined parts to demonstrate acceptance with the design requirements resulting in plates of unknown quality that were intended to be installed on the EPAs.

Enforcement

Title 10 of the Code of Federal Regulations, Part 50, Appendix B, Criterion V, states, in part, that "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

Contrary to the above, prior to March 1, 2017, the licensee failed to provide adequate instructions and procedures to the site machine shop fabricating and verifying safety-

related parts for the shield building electrical penetration assemblies (EPAs), leaving the quality of the parts indeterminate. The licensee stopped work in the machine shop until the work package was updated with steps to define the scope of work, including inspection hold points. In addition, an inspection plan was developed by QC to define the inspection attributes. All parts fabricated for the EPAs were inspected for compliance before being installed.

This violation is being treated as an NCV, consistent with Section 2.3.2.a of the Enforcement Policy. The violation was entered into the licensee' corrective action program as CR-17-30375, and into WECs corrective action program as DI 100455172.

1P04 Construction QA Criterion 9

a. Inspection Scope

WECTEC

The inspectors reviewed the WECTEC welding and NDE programs to ensure that they complied with the applicable codes and standards. The inspectors reviewed the NDE written practice, filler metal control procedure, welding procedure qualification procedure, and other high level procedures that govern the welding and NDE program. The inspectors reviewed a selection of welding procedures and qualification records to ensure that they were written and qualified in accordance with the ASME code and reviewed welding procedure revisions made since the program had been taken over by WECTEC. The inspectors reviewed the qualification records for a sample of nine welders and a sample of NDE inspectors to determine if they had been trained and qualified in accordance with the applicable code and written practice. The inspectors also reviewed a sample of WECTEC's NDE procedures to ensure they met the requirements of the ASME Code. The inspectors also walked down the #6 welding filler metal rod room to determine if welding filler metal was being stored, handled, distributed, and returned in accordance with applicable site procedures.

MISTRAS

The inspectors reviewed MISTRAS' NDE program to determine if it met the applicable code requirements. Specifically, the inspectors reviewed the written practice to determine if it met the required recommendations of SNT-TC-1A 1992 Edition; a sample of NDE procedures to determine if they met the applicable requirements of the ASME code; and a sample of NDE examiner training, qualification, and examination records to determine if they had been qualified in accordance with the written practice.

Chicago Bridge & Iron (CB&I) Services

The inspectors reviewed the latest revisions of the following CB&I Services' documents to verify the welding and NDE programs met the applicable requirements of ASME Section III, Division 1:

- NDE written practice for personnel qualifications and certifications;
- Certified qualification records for three welders and welding operators;
- Certified qualification records for three NDE examination personnel;

- Two SMAW stainless steel welding procedures;
- Three carbon steel welding procedures for the SMAW, FCAW, and SAW processes; and
- Nuclear procedures and selected records for:
    - Preparation and use of the traveler,
    - Welding material care, storage, and distribution,
    - Liquid penetrant examination,
    - Magnetic particle examination,
    - Qualification of welders and welding operators, and
    - Vacuum Box Testing.

The inspectors observed in-process fit-up and tack welding of the lower personnel airlock to the containment vessel sleeve with the use of the manual GTAW process to verify welding activities, conditions, and temporary rigging were consistent with good practices to result in a sound weld during assembly of nuclear components in accordance with ASME Section III, Subsection NE.

Carolina Energy Services (CES)

The inspectors reviewed CES' welding and NDE programs with respect to the assembly of the RCS piping system to verify compliance with the requirements of the 1998 Edition including 2000 Addenda of the ASME Section III, Division 1, Subsection NB, for Class 1 Components.

Specifically, the inspectors reviewed CES' NPT/NA ASME Quality Assurance Manual, Welding Procedure Manual, two welding procedure specifications, and a liquid dye penetrant examination procedure. In addition, the inspectors reviewed two welding procedure specifications (WPSs), and a welding operator qualification record and continuity log for stamp number CES0674 to determine whether WPSs and performance qualifications were qualified in accordance with the requirements of ASME Section IX. The inspectors reviewed weld repair documents associated with the removal of two indications at separate locations identified during the second stage of informational radiography for field weld FW-BCL03 that joins the reactor coolant system piping cold leg RCS-L002C to the reactor coolant pump RCP-2A nozzle to determine whether weld metal defects were removed in accordance with the requirements of ASME Section III, NB-4450, "Repair of Weld Metal Defects." Lastly, the inspectors observed narrow-groove welding of the butt joint between the Unit #2 RCS hot leg and the nozzle of SG-B to determine if it was being done in accordance with the ASME Code, the applicable welding procedure, and the applicable portions of CES' welding program.

TEAM

The inspectors reviewed two TEAM ultrasonic examination procedures to verify NDE procedures were in accordance with the requirements of ASME Section III, Subsection NF, "Supports." In addition, the inspectors reviewed NDE personnel qualification and certification records for three individuals to determine whether these individuals met the guidelines of ASNT SNT-TC-1A, including annual visual acuity, color contrast, and brightness discrimination.

b. Findings

No findings were identified.

3. OPERATIONAL READINESS

Cornerstones: Operational Programs

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

3P01 Environmental Qualification

a. Inspection Scope

The inspectors reviewed documents for the following commodity codes, EY01, EY02, and PV10, and interviewed personnel to verify if:

- the licensee was using the appropriate design basis parameters for qualification and that the design basis was appropriately translated into SSCs qualification test or qualification analysis;
- limiting design basis parameters were used as input for the qualification of the SSC and that the necessary design basis documents and calculations, as appropriate, were correctly incorporated into the qualification program for the SSC;
- required qualification of SSCs was adequately completed and controlled in accordance with the requirements in 10 CFR 50.49, applicable methodology in the UFSAR, regulatory guidance, and IEEE standards.;
- the documented qualified life was consistent with the results of the qualification activities; and
- licensee's records established an adequate basis for acceptance of the ITAAC with qualification criteria attributes and that 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.

The inspectors reviewed problems identified during the qualification process, including test anomalies and evaluated corrective action documents to determine the effectiveness of the licensee's corrective measures and if requirements of IEEE Std. 323-1974 were met.

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

- IDSA-EY-P12Y, Electrical Penetration P12 (EY01)
- WLS-PL-V055, Sump Discharge Containment Isolation Valve – IRC (PV10 – AOV plug) including the valve, actuator, and solenoid
- ECS-EY-P01X, Electrical Penetration P01 (EY02)
- ECS-EY-P19Z, Electrical Penetration P19 (EY02)

The inspectors reviewed the EQSR, EQDP, and applicable test procedures and test records related to the qualification for the expected environment to verify if qualification activities were adequately controlled and if the methodology conformed to applicable regulatory guidance and industry standards. The inspectors reviewed the environmental profiles documented in APP-VP-GW-030, "Plant Environmental Conditions," to verify if the environmental conditions enveloped the harsh environment.

The inspectors reviewed test procedures and test records to determine if the qualification was in conformance with ASME QME-1 and if the valve actuator was qualified in conformance with IEEE Std. 382-1996, "IEEE Standard for Qualification of Actuators for Power-Operated Valve Assemblies With Safety-Related Functions for Nuclear Power Plants." The inspectors reviewed the EQSR and portions of the EQDP for the Electrical Penetration Assemblies to verify that the equipment was adequately qualified in accordance with IEEE 317-1983, "IEEE Standard for Electric Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations," Section 6, "Qualification."

b. Findings

No findings were identified.

3P02 Non Licensed Plant Staff Training Program

a. Inspection Scope

Inspection Procedure 41501 – Review of Training and Qualification Programs. Section 02.02.a.6 and 02.02b.

The inspectors reviewed the qualification program for Radiation Protection (RP) personnel and training records for current staff (One RP Manager, multiple RP Supervisors, and multiple RP Technicians). The inspectors reviewed training program procedures for RP technicians and leadership training expectations for RP management personnel. The inspectors also discussed training of radiation workers with licensee staff. The inspectors noted that the licensee's RP training program elements are the same as those used at Summer Unit 1.

The licensee's activities and programs were evaluated against 10 CFR 19 and UFSAR Appendix 12AA. The inspectors completed line item 02.02.a.6. of this inspection procedure.

b. Findings

No findings were identified.

3P03 Preservice Inspection

a. Inspection Scope

The inspectors conducted an onsite review of the implementation of the licensee's preservice inspection (PSI) program for Unit 2 and 3. The PSI program is designed to provide the baseline examination data for which future inservice inspection (ISI) results can be compared to monitor degradation of pressure retaining components in vital system boundaries. The scope of this program includes components within the reactor coolant system boundary, risk-significant piping boundaries, and containment system boundaries.

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

- Observation: Penetrant Examination (PT) of VS2-RPVH-729-1.1, ID Surface of Closure Head Penetrations 12, 18, & 19, ASME Code Case N-729
- Observation: Visual Examination (VT) of VS2-RPVH-729-1.5, Under Closure Head, ASME Code Case N-729
- Observation: Ultrasonic Examination (UT) of VS2-PRZ-CW-004, Lower Shell-to-Lower Head Circumferential Weld, ASME Class 1
- Report Review: UT of VS2-PRZ-CW-004, Lower Shell-to-Lower Head Circumferential Weld, ASME Class 1

b. Findings

No findings were identified.

3P04 Radiation Protection

a. Inspection Scope

The inspectors evaluated implementation of the Radiation Protection (RP) operational program elements required to be in place prior to the initial receipt of radioactive sources (Milestone 1), as identified in Appendix 12AA of the UFSAR.

Inspection Procedure 83535 – Part 52, Control of Radioactive Material and Contamination, Surveys, and Monitoring. Sections 02.01.a. and 02.02.b.1. through 02.02.b.5.

The inspectors discussed RP controls for the upcoming initial receipt of radioactive material with licensee staff. The inspectors also performed a walkdown of the building where radiation monitors containing radioactive sources will be stored prior to installation and noted that Unit 1 portable survey meters were available for use. In addition, the inspectors evaluated RP program procedures that have been issued for the following tasks:

- Receipt and control of radioactive material
- Frequency and performance of radiological surveys
- Posting of radiologically controlled areas and labeling of radioactive material

The licensee's activities and programs were evaluated against 10 CFR 20 and UFSAR Appendix 12AA. The inspectors completed line items 02.01.a. and 02.02.b.1. through 02.02.b.5. of this inspection procedure.

Inspection Procedure 83536 – Part 52, Facilities and Equipment. Section 02.02.g.

The inspectors reviewed RP program procedures related to the identification, storage, and control of discrete radioactive sources. Controls for Special Nuclear Materials were not reviewed during this inspection and will be evaluated at a later date.

The licensee's activities and programs were evaluated against 10 CFR 20 and UFSAR Appendix 12AA. The inspectors completed line item 02.02.g. of this inspection procedure.

b. Findings

No findings were identified.

3P05 Preservice Inspection

a. Inspection Scope

The inspectors conducted an onsite review of the implementation of the licensee's preservice inspection (PSI) program for Unit 2 and 3. The PSI program is designed to provide the baseline examination data for which future inservice inspection (ISI) results can be compared to monitor degradation of pressure retaining components in vital system boundaries. The scope of this program includes components within the reactor coolant system boundary, risk-significant piping boundaries, and containment system boundaries.

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

- Observation: Visual Examination (VT) of VS3-RPVH-729-1.5, Under Closure Head, ASME Code Case N-729

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4OA6 Meetings, Including Exit

On April 19, 2017, the inspectors presented the inspection results to R. Jones, V.C. Summer 2 & 3 Vice President, Nuclear Construction and Startup, along with other licensee and WECTEC staff members. The inspectors stated that no proprietary information would be included in the inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensees and Contractor Personnel

J. Weathersby, SCE&G Licensing Engineer - ITAAC
D. Muetzel, WEC Principal Engineer Safety Systems AP1000 Hardware Engineering
M. Pitre, Program Welding Manager
W. Brown, Construction Support Manager
C. Baucom, Licensing and Regulatory Compliance
D. Gibson, CES Project Manager
B. Driscoll, CB&I Services QA/QC Manager
N. Bailey, WEC Principal Engineer
G. Cesare, WEC Engineer
S. Channarasappa, WEC EQ Fellow Engineer
A. Doinisi, WEC Design Engineer
L. Jesso, WEC Principal Engineer
D. Martin, WEC EQ Engineer
J. Mears, WEC Principal Engineer - Equipment Qualification
C. Perego, WEC Senior Engineer
N. Roll, WEC Engineer – Equipment Qualification
R. Wessell, WEC Principal Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
05200027/2017001-01	Non Cited Violation	Open	Failure to translate CIS modules CA32 and CA37 design basis into design output documents (Section 1A24)
05200028/2017001-02	Non Cited Violation	Closed	Lack of Work Control in V.C. Summer Machine Shop (Section 1P03)

LIST OF DOCUMENTS REVIEWED

Section 1A01

ASME Code, Section III, Subsection NF, 1998 Edition, 2000 Addenda
VS2-MB01-VEH-800000, "Installation of Unit 2 Steam Generators," Revision 02.01
VS2-SS30-P5-001, "RCS Primary Equipment Supports Fabrication," Revision 2
QAT-4403001-BHL02, "Installation of FW# BHL02," Revision 0
ASTM A588-97a, "Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 KSI Minimum Yield Point, with Atmospheric Corrosion Resistance"
Case N-71-18, "Additional Materials for Subsection NF, Class 1, 2, 3, and MC Supports Fabricated by Welding Section III, Division I," 2010
VS2-RCS-VE-001, "AP1000 Primary Coolant Loop Outline Equipment Placement Layout", Revision 0
VS2-RCS-VE-003, "AP1000 Primary Coolant Loop Outline Equipment Placement Layout", Revision 0
VS2-PH01-V2-003, "AP1000 Steam Generator Upper Lateral Support Assembly & Details", Revision 1
VS2-PH01-V1-006, "AP1000 Steam Generator Upper Lateral Support Assembly & Details", Revision 1
VS2-PH01-V1-005, "AP1000 Steam Generator Intermediate Lateral Support Assembly & Details", Revision 1
VS2-PH01-V2-002, "AP1000 Steam Generator Intermediate Lateral Support Assembly & Details", Revision 1
VS2-PH01-V2-001, "AP1000 Steam Generator Lower Lateral Support Assembly & Details", Revision 1
VS2-PH01-V1-004, "AP1000 Steam Generator Lower Lateral Support Assembly & Details", Revision 1
VS2-PH01-V1-001, "AP1000 Steam Generator Support System Assembly Views", Revision 1
VS2-PH01-V1-002, "AP1000 Steam Generator Vertical Column Support Assembly & Details", Revision 1
VS2-PH01-V1-003, "AP1000 Steam Generator Vertical Column Support Details", Revision 1
VS2-PH01-V8-009, "AP1000 Steam Generator Lateral Supports Field Welding Options To Meet ASME NF-4441", Revision 0
VS2-PH01-GNR-000010, "CA01 Northeast SG UL Support", Revision 0
APP-PH01-GEF-014, "Steam Generator B Lower and Intermediate Lateral Supports Inlay/Overlay Work Point As-Built", Revision 0
VS2-SS30-VQQ-010, "Steam Generator Wall Brackets", Revision 1
VS2-SS30-VQQ-011, "Steam Generator Wall Brackets", Revision 1
WO QAT-4403361-2A-02, VCS2 Alpha SG Alpha Intermediate Lateral Installation
Weld traveler WT-4403361-2A-05, Weld # FW-05 associated with Intermediate Alpha Lateral Support.
Qualification records for CES QC with the SAP No. 76088
Qualification records for CES welder CES0918
CGQP-9.2, High temperature Liquid Penetrant Examination and acceptance standard for welds
FC 4403361-027 in response to PT-4403361-017
WM-4403361-2A-003, Weld map of the Bravo Intermediate Lateral support for the Alpha SG
WO QAT-4403361-2A-03 VCS2 Alpha SG Bravo Intermediate Lateral Installation.

Section 1A02

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QR-12-963, “Quality Release & Certificate of Conformance,” AP1000 Reactor Coolant Loop, Surge Lines, dated June 9, 2012
QDP1200001, “Final Quality Assurance Data Package and Final Report,” Revision 01
CMTR No. CMTR1200060, Heat No. 05452, Revision 00
Visual and Dimensional Report No. VDR1200006 Revision 0
NCR No. S000001029, “Non Conformity Report for Surge Line 18.00” OD x 14.44” ID x 1.78” THK ASME SA312 TP316LN,” Revision 00
PAR No. 4500269783-140-0, “Deviation – SL91 – 1 Minor Dimensional Variation in the As-Built Measurements,” dated March 7, 2012
VS2-PL01-GNR-015, “Tioga Deviation Notice TPS 12-05 for SCANA Unit 2 Reactor Coolant Loop, Surge Line – Item 05 – Out of Tolerance As Built Dimensions,” Revision 0
VS2-PL01-ZRT-003, “PL01 Receipt Activity Checklist for VS2-PL01-VQQ-003,” Revision 0
CBI IR No. Q445-15-10572, “CBI Nuclear Quality Assurance Inspection report – Type ‘A’,” dated May 12, 2015

Section 1A03
Welding Procedure Manual (General Welding Procedures CES-01 through CES-08), Rev. 17, dated 07/20/16
WPS CWPS-8-8-T-A01, Rev. 1 dated 6/2/16 with four supporting PQRs: 062 (PCI) Rev. 3 dated 12/11/96, 600 (PCI) Rev. 6 dated 11/21/2013, 864 (PCI) Rev. 2 dated 3/24/10, and 899 (PCI) Rev. 4 dated 8/25/15
WPS CWPS-8-8-TS-A01, Rev.2 dated 6/2/16 with three supporting PQRs: 063 (PCI) Rev. 6 dated 4/16/2014, 600 (PCI) Rev. 6 dated 11/21/2013, and 899 (PCI) Rev. 4 dated 8/25/15
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WEC Carolina Energy Solutions, LLC, NPT/NA ASME Quality Assurance Manual, Rev. 5, dated 04/28/16
CGQP 9.7, Solvent Removable Liquid Penetrant Examination and Acceptance Standards for Welds, Base Materials, and Cladding, Rev. 2, dated 02-03-16
Welder Performance Qualification (WPQ) record number 011116-01 of Stamp Number CES0674 with ID-Number NC-XX-4240 for machine and manual GTAW, test date 1/18/2016

Section 1A04
Welding Procedure Manual (General Welding Procedures CES-01 through CES-08), Rev. 17, dated 07/20/16
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Welder Maintenance Log (WML) for welding operator CES0674 with expiration date of 3/28/2017
WEC Carolina Energy Solutions, LLC, NPT/NA ASME Quality Assurance Manual, Rev. 5, dated 04/28/16
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Weld Repair Traveler, WT-4403001-BCL03 Repair, 01/31/2017
Report of Nondestructive Examination, Visible, Solvent Removable Liquid Penetrant Examination, PT-4403001-030, for BCL03 Repair, dated 02-01-2017
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WT-4403001ACL04, Weld Traveler for Weld ACL04, Cold leg RCS L002B, Rev. 0
CWPS-8-8-T-A01, Welding Procedure, Rev. 4
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WM-4403001-2-01, RSC Component Installation RCL Piping Weld Map, Rev. 0
Qualification records for CES welder CES00932

Section 1A05
APP-GW-G1-002, "AP1000 Equipment Qualification Methodology", Revision 5
APP-GW-VP-010, "Equipment Qualification Methodology and Documentation Requirements for AP1000 Safety-Related Valves and Valve Appurtenances", Revision 3
APP-GW-VP-010, "Equipment Qualification Methodology and Documentation Requirements for AP1000 Safety-Related Valves and Valve Appurtenances", Revision 3
APP-1000-S2C-181, "AP1000 Nuclear Island Seismic Floor Response Spectra Envelopes", Revision 0
APP-GW-PVR-002, "Piping and Valve Interface Requirements Document", Revision 3
APP-PV18-Z0-001, "Design Specification Vacuum Breaker Valves ASME Boiler and Pressure Vessel Code Section Ill Class 3", Revision 3
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APP-PV18-Z0D-200, "PV18 Datasheet 200", Revision 1
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T-161259, "Test Procedure", Revision 2
EC-2914, "Design Report", Revision 1
EC-2915, "Design Report", Revision 1
TR-5629, "ASME QME-1 Functional Qualification Test Report for Active Valve Assemblies", Revision 4
TR-5717, "ASME QME-1 Functional Qualification Test Report for Active Valve Assemblies", Revision 2
EC-3024, "Design Report", Revision 0
APP-PV18-VBR-001, "Equipment Qualification Summary Report for Vacuum Relief Valves and Vacuum Breaker Valves for Use in the AP1000 Plant", Revision 0

Section 1A06
Design Specifications
APP-MV50-Z0-003, “AP1000 Personnel Airlocks,” Revision 5

Drawings
Drawing No. 164621-024-01, “Lower Personnel Hatch H03 – Field Details,” Revision 1
Drawing No. 164621-013-02, “Field Edge Preps & Weld Details Misc,” Revision 3
Drawing No. 224B010, “Detail Drawing of Lower E1 2/3-1 Personnel Airlock Insert Plate Assembly,” Revision 4
Drawing 224B012, “Detail Drawing of Upper and Lower Personnel Airlocks Inner Cylinder Assembly,” Revision 1

Code Data Reports
Form N-2 Certificate Holders’ Data Report for Identical Nuclear Parts and Appurtenances, Serial Nos. IN-4790 and IN-4792, dated November 22, 2012 (Airlock Cylinder)*
Form N-2 Certificate Holders’ Data Report for Identical Nuclear Parts and Appurtenances, Serial No. IN-4791, dated November 22, 2012 (Penetration Sleeve)*
**Manufactured and certified by IHI Corporation Nuclear Power Operations for CBI Services, Inc. to be installed at the V.C. Summer Site*

Base Metal Certified Material Test Reports
CMTR No. 6135-4, Heat No. 6-1392, Plate No. BK356 A, dated May 31, 2011 (Penetration Sleeve)
CMTR No. 5999-1, Heat/Lot 4-4804/FF021A, Aug. 27, 2010 (Airlock Cylinder)

Section 1A07
Design Specifications
APP-MV50-Z0-003, “AP1000 Personnel Airlocks,” Revision 5

Drawings
Drawing No. 164621-024-01, “Lower Personnel Hatch H03 – Field Details,” Revision 1
Drawing No. 164621-013-02, “Field Edge Preps & Weld Details Misc,” Revision 3
Drawing No. 224B010, “Detail Drawing of Lower E1 2/3-1 Personnel Airlock Insert Plate Assembly,” Revision 4
Drawing 224B012, “Detail Drawing of Upper and Lower Personnel Airlocks Inner Cylinder Assembly,” Revision 1

Filler Metal Certified Material Test Reports
CMTR No. 8410217, Lot No. 14799969, 1/8x36 Lincoln ER80S-D2 10TB(30ct), dated January 12, 2017
CMTR No. 8410217, Lot No. 14870671, 1/8x36 Lincoln ER80S-D2 10TB(30ct), dated January 12, 2017
CMTR No. 7036633, Lot No. 1253Z, 1.2mm Outershield 91K2-HSR 33# SP, dated November 5, 2015
CMTR No. RINJQ-229-2-5, Heat No. 0P7521(1), dated May 31, 2012
CMTR No. RINJQ-232-1-1, Heat No. M21672(126), May 31, 2012

Welding Procedure Specifications and Supporting Procedure Qualification Records
WPS E91TG-H4, Contract 164621, Revision 14
PQR 12690, dated December 17, 2009
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PQR 12723, dated March 8, 2010
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PQR 13741, dated December 20, 2016
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63024003, Welder or Welding Operator Performance Qualification No. GTA 6G-2.5D, dated December 12, 2016
63080603, Welder or Welding Operator Performance Qualification No. GTA 6G-2.5D, dated December 29, 2016
Manufacturer's Record of Welder Performance Qualification Test for Welder ID's 1925, 2431, 2565, 2001, 2556, 2006, 2595, 1964, 2567, 2535, 1820, 1999, 2553, and 0397, dated various.

Section 1A08
Base Metal Certified Material Test Reports
CMTR No. 6135-4, Heat No. 6-1392, Plate No. BK356 A, dated May 31, 2011 (Penetration Sleeve)
CMTR No. 5999-1, Heat/Lot 4-4804/FF021A, Aug. 27, 2010 (Airlock Cylinder)

Filler Metal Certified Material Test Reports
CMTR No. 8410217, Lot No. 14799969, 1/8x36 Lincoln ER80S-D2 10TB(30ct), dated January 12, 2017
CMTR No. 8410217, Lot No. 14870671, 1/8x36 Lincoln ER80S-D2 10TB(30ct), dated January 12, 2017
CMTR No. 7036633, Lot No. 1253Z, 1.2mm Outershield 91K2-HSR 33# SP, dated November 5, 2015
CMTR No. RINJQ-229-2-5, Heat No. 0P7521(1), dated May 31, 2012
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Section 1A09
APP-GW-G1-002, "AP1000 Equipment Qualification Methodology", Revision 5
APP-GW-VP-010, "Equipment Qualification Methodology and Documentation Requirements for AP1000 Safety-Related Valves and Valve Appurtenances", Revision 3
APP-GW-VP-010, "Equipment Qualification Methodology and Documentation Requirements for AP1000 Safety-Related Valves and Valve Appurtenances", Revision 3
APP-1000-S2C-181, "AP1000 Nuclear Island Seismic Floor Response Spectra Envelopes", Revision 0
APP-PV03-VBR-002, "Equipment Qualification Data Package for DRV-Z Nozzle Check Valves for Use in the AP1000 Plant", Revision 1
VSG-PV03-VDR-181, "Compilation of Design Reports for PV03 Datasheet 181", Revision 0
APP-PV03-Z0D-181, "PV03 Datasheet 181", Revision 2
APP-PV03-Z0-001, "Design Specification for 3-inch and Larger Manually Operated Gate Stop Check and Check Valves ASME Boiler and Pressure Vessel Code Section III Class 1,2, and 3 for Various Systems", Revision 9
APP-PV03-Z0R-001, "3-inch or Larger Manually Operated Gate Stop Check and Check Valves ASME Boiler and Pressure Vessel Code Section III Class 1,2, and 3 Valve Datasheet Report", Revision 7
APP-PV03-Z0D-175, "PV03 Datasheet 175", Revision 3
APP-PV03-Z0D-183, "PV03 Datasheet 183", Revision 4
APP-PV03-Z0D-192, "PV03 Datasheet 192", Revision 3

RAL-20746, "Design and Seismic Analysis Report Westinghouse Electric Company LLC AP1000 PV03 Valve Group V.C. Summer Units 2 & 3 Size 4 Class 150 Swing Check Valve, Valve Data Sheet APP-PV03-Z0D-175", Revision 3
APP-PV03-VBR-013, "Equipment Qualification Summary Report for Flowserve Self-Actuated Swing Check Valves for Use in the AP1000 Plant", Revision 1
RAL-20748, "Design and Seismic Analysis Report Westinghouse Electric Company LLC AP1000 PV03 Valve Group V.C. Summer Units 2 & 3 Size 6 Class 150 Swing Check Valve, Valve Data Sheet APP-PV03-Z0D-192", Revision 4
RAL-20752, "Design and Seismic Analysis Report Westinghouse Electric Company LLC AP1000 PV03 Valve Group V.C. Summer Units 2 & 3 Size 8 Class 1530 Swing Check Valve, Valve Data Sheets APP-PV03-Z0D-183 APP-PV03-Z0D-185", Revision 3
APP-PV03-VPP-181, "Equipment Qualification Procedure for Enertech 4" - Class 150 DRV-Z Nozzle Check Valve", Revision 0
APP-PV03-VBR-001, "Equipment Qualification Summary Report for DRV-Z Nozzle Check Valves for Use in the AP1000 Plant", Revision 1

Section 1A10

APP-GW-GEF-424, “Temperature and Pressure Envelopes for use in Equipment”, Revision 0
APP-GW-VPC-011, “AP1000 Equipment Qualification DBA/Post DBA Temperature and Pressure Envelopes”, Revision 3
APP-GW-VP-030, “AP1000 Environmental Condition”, Revision 6
APP-GW-VP-040, “Environmental Clarification/Corrections”, Revision 0
APP-PV10-VBR-004, “Equipment Qualification Summary Report for Air-Operated Plug Valve for Use in the AP1000 Plant”, Revision 0
APP-PV10-VBR-006, “Equipment Qualification Data Package for Air-Operated Plug Valve for Use in the AP1000 Plant”, Revision 2
APP-PV10-VPR-003, “Environmental and Seismic Qualification Evaluation Report”, Revision 1
APP-PV10-VPR-003, “Environmental and Seismic Qualification Evaluation Report”, Revision D
APP-EY01-VBR-003, “Equipment Qualification Summary Report for Low Voltage Power Control and I&C Electrical Penetration Assemblies for the Use in the AP1000 Plant”, Revision 3
APP-EY01-VBR-004, “Equipment Qualification Data Package for Low Voltage Power Control and I&C Electrical Penetration Assemblies for the Use in the AP1000 Plant”, Revision 3

Section 1A11

APP-GW-GEF-424, “Temperature and Pressure Envelopes for use in Equipment”, Revision 0
APP-GW-VPC-011, “AP1000 Equipment Qualification DBA/Post DBA Temperature and Pressure Envelopes”, Revision 3
APP-GW-VP-030, “AP1000 Environmental Condition”, Revision 6
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APP-EY01-VBR-003, “Equipment Qualification Summary Report for Low Voltage Power Control and I&C Electrical Penetration Assemblies for the Use in the AP1000 Plant”, Revision 3
APP-EY01-VBR-004, “Equipment Qualification Data Package for Low Voltage Power Control and I&C Electrical Penetration Assemblies for the Use in the AP1000 Plant”, Revision 3
APP-GW-GEE-4626, “Adding Metal Armor to NIS Source Range In-Containment Triaxial Cables”, Revision 0
APP-EY01-VPR-006, “Steris Part 21 Radiation Analysis for AP1000 Electric Penetration Assemblies”, Revision 0
APP-EY01-VPR-002, “Environmental Qualification Test Report for the Low Voltage Power Control and I&C Electrical Penetration Assembly for the Use in the AP1000 Plant Appendix H Anomalies”, Revision 0

Section 1A12

APP-1000-S2C-181, “AP1000 Nuclear Island Seismic Floor Response Spectra Envelopes”, Revision 0
APP-GW-G1-002, “AP1000 Equipment Qualification Methodology”, Revision 5
APP-GW-VP-040, “AP1000 Safety-Related Field Sensors Equipment Qualification Specification”, Revision 2
APP-JE52-VBR-005, “Equipment Qualification Summary Report for NLI Differential Pressure Transmitters for Use in the AP1000 Plant”, Revision 1
APP-JE52-Z0-001, “General Design Equipment Specification for Class 1E Pressure and Differential Pressure Transmitters”, Revision 4
APP-JE52-Z0R-001, “AP1000 Class 1E Pressure and Differential Pressure Transmitters Data Sheet Report”, Revision 3
WNA-AR-00547-WAPP, “JE52 Equivalency Report for Ametek Statham Transmitters (ERC-2174062-1)-NLI”, Revision 0
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APP-PV03-VBR-013, "Equipment Qualification Summary Report for Flowserve Self-Actuated Swing Check Valves for Use in the AP1000 Plant", Revision 1

Section 1A13

N&D No. VS2-Q223-GNR-000001, “Unit 2 Bare Steel or damaged coatings on mechanical module Q223,” Revision 0
VS2-Q223-Q2W-800000, “Task Authorization / Completion Form – Steel (Inside Containment),” dated February 8, 2017

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Section 1A14

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WPS1-8.8T01 Rev. 9 with PQRs: PQ574 Rev. 1, PQ589 Rev. 1, PQ595 Rev. 0
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WPS2-1.1S02 Rev. 2
WPS2-1.1F03 Rev. 3
WPS2-1.1T31 Rev. 2
QS 09.41, Nondestructive Examination Program, Rev. 02.01
CWP-1, Construction Welding Program, Rev. 4
WCP-1, Welding Control Procedure, Rev. 11
FMC-1, Filler Metal Control, Rev. 8
GWS-1, General Welding Specification, Rev. 5
WQ-1, Qualification of Welders and Welding Operators, Rev. 5

PQ-1, Welding Procedure Qualification, Rev. 8
QAD 02.14, Qualification and Certification of Nondestructive Examination Personnel. Rev. 05.00
QAD 09.62, Magnetic Particle Examination Yoke Method, Rev. 02.02
Eight selected NDE personnel qualification records
QAD 09.31, Liquid Penetrant Examination Requirements for the Solvent Removable, Color Contrast Technique. Rev 03.03
Welder Qualification Records: AIM9550 (2), CWD2319 (4), DJB2358 (2) DLS7274 (4), PBH4782 (4), RJD0028 (3), RML3906 (4), SMP1170 (4) and STH7589 (5)
Complete Package of NDE PT/MT Procedures Demonstrated to the HSBC ANI at V.C. Summer Units 2 & 3, 2/29/12
CR-17-30081, created 2/1/17
CR-17-30136, created 2/9/17
Discreet Issues: 100449264, 100447896

Section 1A15
WPS1-8.10HGT-NF-6, Rev. 1 with PQR SP551 Rev. 2
WPS1-8.8T01 Rev. 9 with PQRs: PQ574 Rev. 1, PQ589 Rev. 1, PQ595 Rev. 0
WPS2-1.1M01 Rev. 2
WPS2-1.1S02 Rev. 2
WPS2-1.1F03 Rev. 3
WPS2-1.1T31 Rev. 2
QS 09.41, Nondestructive Examination Program, Rev. 02.01
CWP-1, Construction Welding Program, Rev. 4
WCP-1, Welding Control Procedure, Rev. 11
FMC-1, Filler Metal Control, Rev. 8
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Eight selected NDE personnel qualification records
QAD 09.31, Liquid Penetrant Examination Requirements for the Solvent Removable, Color Contrast Technique. Rev 03.03
Welder Qualification Records: AIM9550 (2), CWD2319 (4), DJB2358 (2) DLS7274 (4), PBH4782 (4), RJD0028 (3), RML3906 (4), SMP1170 (4) and STH7589 (5)
Complete Package of NDE PT/MT Procedures Demonstrated to the HSBC ANI at V.C. Summer Units 2 & 3, 2/29/12
CR-17-30081, created 2/1/17
CR-17-30136, created 2/9/17
Discreet Issues: 100449264, 100447896

Section 1A16
APP-GW-G1-002, “AP1000 Equipment Qualification Methodology”, Revision 5
APP-GW-VP-010, “Equipment Qualification Methodology and Documentation Requirements for AP1000 Safety-Related Valves and Valve Appurtenances”, Revision 3
APP-GW-VP-010, “Equipment Qualification Methodology and Documentation Requirements for AP1000 Safety-Related Valves and Valve Appurtenances”, Revision 3
APP-1000-S2C-181, “AP1000 Nuclear Island Seismic Floor Response Spectra Envelopes”, Revision 0
APP-PV03-VBR-004, “Equipment Qualification Data Package for ERV-Z Nozzle Check Valves for Use in the AP1000 Plant”, Revision 1

APP-PV03-Z0D-186, “PV03 Datasheet 186”, Revision 4
Curtiss Wright Design and Seismic Analysis Report for Enertech 8 Inch – ANSI 1707 Type ERV-Z Nozzle Check Valve, Revision K
APP-PV14-Z0-001, "Air Operated Globe and Stop Check Valves ASME Boiler and Pressure Vessel Code Section III Class 1, 2, and 3", Revision 8
APP-PV14-Z0R-001, "Air Operated Globe and Stop Check Valves ASME Boiler and Pressure Vessel Code Section III Class 1, 2, and 3 Valve Data Sheet Report", Revision 7
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APP-PV20-VPR-003, "Fisher Controls ASCO Test Report ATR 35115 Revision C Equipment Qualification of ACSO Class 1E Solenoid Pilot Valve Series NT-8316 (Valve Appurtenance) for Westinghouse AP1000 Safety-Related Applications", Revision 0
APP-PV14-Z0D-100, "PV14 Datasheet 100", Revision 2
11QN09-SA-01, "Seismic Qualification Report for Sliding Stem Valve Assemblies", Revision A
11QN09-QR-02, "Fisher Qualification Report 87 - QME-1 Functional Qualification Report for Active Spring-Return Air-to-Diaphragm NS2 Actuators per ASME QME-1-2007", Revision B
ATR-35115, "Equipment Qualification of ASCO Class 1E Solenoid Pilot Valve Series NT-8316", Revision C
APP-PV14-VBR-001, "Equipment Qualification Summary Report for Fisher HPNS Control Valves for Use in the AP1000 Plant", Revision 1
CPP-PV14-VPR-011, "Fisher Qualification Report 84 - QME-1 Functional Qualification Report for Air Operated Globe Style HPNS Valves per ASME QME-1-2007", Revision 0
11QN10-QR-01, "Fisher Qualification Report 84 - QME-1 Functional Qualification Report for Air Operated Globe Style HPNS Valves per ASME QME-1-2007", Revision A

Section 1A17
APP-1000-S2C-181, “AP1000 Nuclear Island Seismic Floor Response Spectra Envelopes”, Revision 0
APP-GW-G1-002, “AP1000 Equipment Qualification Methodology”, Revision 5
APP-GW-VP-040, “AP1000 Safety-Related Field Sensors Equipment Qualification Specification”, Revision 2
APP-JE52-VBR-005, “Equipment Qualification Summary Report for NLI Differential Pressure Transmitters for Use in the AP1000 Plant”, Revision 1
APP-JE52-Z0-001, “General Design Equipment Specification for Class 1E Pressure and Differential Pressure Transmitters”, Revision 4
APP-JE52-Z0R-001, “AP1000 Class 1E Pressure and Differential Pressure Transmitters Data Sheet Report”, Revision 3
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Section 1A18
APP-DAS-VBR-002, “AP1000 Equipment Qualification Summary Report for the Diverse Actuation System for Use in the AP1000 Plant", Revision 4
APP-DAS-VBR-003, “AP1000 Equipment Qualification Data Package for the Diverse Actuation System for Use in the AP1000 Plant", Revision 3
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APP-DAS-VPR-002, “AP1000 Plant Diverse Actuation System Electromagnetic Compatibility Qualification Report", Revision 0
APP-DAS-VPR-006, “AP1000 Supplemental Electromagnetic Compatibility Qualification Report for the Diverse Actuation System", Revision 0
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Section 1A19

APP-PMS-VBR-015, “Protection and Safety Monitoring System Isolation Summary Report for Use in the AP1000 Plant,” Rev. 1, dated September 2016
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Section 1A20

APP-PMS-VBR-015, AP1000 Protection and Safety Monitoring System Isolation Summary Report for Use in the AP1000 Plant, Rev. 1
APP-PMS-VPR-002, Class 1E/Non-Class 1E Test Report for Fault Testing of AP1000 PMS Isolation Barriers, Rev. 2
APP-PMS-VPR-018, AP1000 PMS Isolation Barrier Maximum Credible Fault Test Report, Rev. 1
APP-PMS-VPR-019, AP1000 PMS Isolation Barrier Short Circuit/Open Circuit/Grounded Circuit Test Report, Rev. 1

Section 1A21

APP-1000-S2C-181, “AP1000 Nuclear Island Seismic Floor Response Spectra Envelopes”, Revision 0
APP-GW-G1-002, “AP1000 Equipment Qualification Methodology”, Revision 5
APP-DD01-VBR-002, “Equipment Qualification Data Package for the 250 VDC Distribution Panel for Use in the AP1000 Plant”, Revision ?
APP-DD01-VBR-001, “Equipment Qualification Summary Report for the 250 VDC Distribution Panel for Use in the AP1000 Plant”, Revision 3
APP-DD01-VPP-001, “Environmental and Seismic Test Procedure for the AP1000 250V DC Distribution Panels”, Revision 0
APP-DD01-VPR-001, “Seismic and Environmental Test Report for the AP1000 250 VDC Distribution Panel”, Revision 0
APP-DD01-Z0-010, “Design Specification for Class 1E 250 VDC Distribution Panels for System IDS”, Revision 4
APP-IDS-VPC-001, “Seismic Qualification of the 250 VDC Distribution Panel (DD01) and the 250 VDC Motor Control Center (DK01) for Use in the AP1000 Plant”, Revision 0
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E&DCR No. APP-EP10-GEF-011, “Change Maximum equalization voltage for IDS from 280 VDC to 275 VDC”, Revision 0

Section 1A22
APP-OCS-GEH-120, AP1000 Human Factors Engineering Design Verification Plan, Revision 3
APP-OCS-GER-120, AP1000 Human Factors Engineering Design Verification Report, Revision 2
NND-AP-0032, Implementation of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC), Revision 6

Section 1A23
APP-OCS-GEH-320, AP1000 Human Factors Engineering Integrated System Validation Plan, Revision 6
APP-OCS-GER-320, AP1000 Human Factors Engineering Integrated System Validation Report, Revision 3
NND-AP-0032, Implementation of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC), Revision 6

Section 1A24
Calculations
APP-CA00-S3C-019, “CIS Module Floor Supplemental Evaluations at Connections,” Revision 0
APP-1100-S3C-666, “Containment Internal Structures Design of Floor Modules CA32, CA33, CA34, CA35, CA36, CA37 and CA01 Submodules CA01-35 and CA01-38,” Revision 0
APP-1100-S2C-034, “Finite Element Analysis of Containment Internal Structures,” Revision 3

Drawings
VS2-GW-S9-100-R3, “AP1000 Structural Modules General Notes I”
VS2-GW-S9-101-R2, “AP1000 Structural Modules General Notes II”
VS2-GW-S9-102-R3, “AP1000 Structural Modules General Notes III”
VS2-GW-S9-103-R3, “AP1000 Structural Modules General Notes IV”
VS2-GW-S9-104-R2, “AP1000 Structural Modules General Notes V”
VS2-GW-S9-105-R4, “AP1000 Structural Modules General Notes VI”
VS2-GW-S9-106-R3, “AP1000 Structural Modules General Notes VII”
VS2-CA32-S5-001-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Isometric View”

VS2-CA32-S5-002-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Fabrication Sequence”
VS2-CA32-S5-003-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Plate Detail I”
VS2-CA32-S5-004-R0, “Containment Building Area 2 CA32 Floor El. 107’-2” Plate Detail II”
VS2-CA32-S5-005-R0, “Containment Building Area 2 CA32 Floor El. 107’-2” Plate Detail III”
VS2-CA32-S5-006-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Plan View I”
VS2-CA32-S5-007-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Plan View II”
VS2-CA32-S5-008-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Sections and Details I”
VS2-CA32-S5-009-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Sections and Details II”
VS2-CA32-S5-010-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Support Details”
VS2-CA32-S5-011-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Overlay Plate Details”
VS2-CA32-S5-012-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Opening Details”
VS2-CA32-S5-013-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Pipe Chase Details”
VS2-CA32-S5-014-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Module Installation”
VS2-CA32-S5-015-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Module Installation”
VS2-CA32-S5-016-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Installation Interfaces”
VS2-CA32-S5-017-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Installation Details”
VS2-CA32-S5-018-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Stud Layout”
VS2-CA32-S5B-001-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Bill of Materials I”
VS2-CA32-S5B-002-R1, “Containment Building Area 2 CA32 Floor El. 107’-2” Bill of Materials II”
VS2-CA36-S5-001-R1, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Isometric Views”
VS2-CA36-S5-002-R1, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Fabrication Sequence”
VS2-CA36-S5-003-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Plate Detail I”
VS2-CA36-S5-004-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Plate Detail II”
VS2-CA36-S5-005-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Plate Detail III”
VS2-CA36-S5-006-R1, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Framing Plan I”
VS2-CA36-S5-007-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Framing Plan II”
VS2-CA36-S5-008-R1, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Plan View I”
VS2-CA36-S5-009-R1, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Plan View II”
VS2-CA36-S5-010-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Sections and Details I”
VS2-CA36-S5-011-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Sections and Details II”
VS2-CA36-S5-012-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Opening Details”
VS2-CA36-S5-013-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” HVAC Details”
VS2-CA36-S5-014-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Overlay Plate Details”

VS2-CA36-S5-015-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Penetration Attachment Details I”
VS2-CA36-S5-016-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Penetration Attachment Details II”
VS2-CA36-S5-017-R1, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Module Installation”
VS2-CA36-S5-018-R1, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Module Location”
VS2-CA36-S5-019-R1, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Module Interfaces”
VS2-CA36-S5-020-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Installation Details”
VS2-CA36-S5-021-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Stud Layout Bottom Liner MK#01”
VS2-CA36-S5-022-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Stud Layout Bottom Liner MK#02”
VS2-CA36-S5-023-R1, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Stud Layout Bottom Liner MK#03”
VS2-CA36-S5B-001-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Bill of Materials I”
VS2-CA36-S5B-002-R0, “Containment Building Area 3 & 4 CA36 Floor El. 107’-2” Bill of Materials II”
VS2-CA37-S5-003-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Plate Detail I”
VS2-CA37-S5-004-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Plate Detail II”
VS2-CA37-S5-005-R0, “Containment Building Area 4 CA37 Floor El. 107’-2” Plate Detail III”
VS2-CA37-S5-006-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Plate Detail IV”
VS2-CA37-S5-007-R0, “Containment Building Area 4 CA37 Floor El. 107’-2” Plate Detail V”
VS2-CA37-S5-008-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Plate Detail VI”
VS2-CA37-S5-009-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Plate Detail VII”
VS2-CA37-S5-010-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Plate Detail VIII”
VS2-CA37-S5-011-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Plate Detail IX”
VS2-CA37-S5-012-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Framing Plan I”
VS2-CA37-S5-013-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Framing Plan II”
VS2-CA37-S5-014-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Framing Plan III”
VS2-CA37-S5-015-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Framing Plan IV”
VS2-CA37-S5-016-R0, “Containment Building Area 4 CA37 Floor El. 107’-2” Framing Plan V”
VS2-CA37-S5-017-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Plan View I”
VS2-CA37-S5-018-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Sections and Details I”
APP-CA37-S5-019, “Containment Building Area 4 CA37 Floor El. 107’-2” Sections and Details II,” Revision 2
APP-CA37-S5-020, “Containment Building Area 4 CA37 Floor El. 107’-2” Sections and Details III,” Revision 2
VS2-CA37-S5-021-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Sections and Details IV”
VS2-CA37-S5-022-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Opening Details I”
VS2-CA37-S5-023-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Opening Details II”
VS2-CA37-S5-024-R0, “Containment Building Area 4 CA37 Floor El. 107’-2” Opening Details III”
VS2-CA37-S5-025-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” HVAC Details”
APP-CA37-S5-026, “Containment Building Area 4 CA37 Floor El. 107’-2” Overlay Plate Details,” Revision 2

VS2-CA37-S5-027-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Penetration Attachment Details I”
VS2-CA37-S5-028-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Penetration Attachment Details II”
VS2-CA37-S5-029-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Penetration Attachment Details III”
VS2-CA37-S5-030-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Penetration Attachment Details IV”
VS2-CA37-S5-031-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Penetration Attachment Details V”
VS2-CA37-S5-032-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Penetration Attachment Details VI”
VS2-CA37-S5-033-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Penetration Attachment Details VII”
VS2-CA37-S5-034-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Module Installation”
VS2-CA37-S5-035-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Module Location”
VS2-CA37-S5-037-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Installation Details I”
VS2-CA37-S5-038-R1, “Containment Building Area 4 CA37 Floor El. 107’-2” Installation Details II”
APP-CA37-S5-039, “Containment Building Area 4 CA37 Floor El. 107’-2” Installation Details III,” Revision 0
APP-CA37-S5-040, “Containment Building Area 4 CA37 Floor El. 107’-2” Installation Details IV,” Revision 0
APP-CA37-S5B-001, “Containment Building Area 4 CA37 Floor El. 107’-2” Bill of Materials I,” Revision 2
APP-CA37-S5B-002, “Containment Building Area 4 CA37 Floor El. 107’-2” Bill of Materials II,” Revision 2
APP-CA37-S5B-003, “Containment Building Area 4 CA37 Floor El. 107’-2” Bill of Materials III,” Revision 2
APP-CA37-S5B-004, “Containment Building Area 4 CA37 Floor El. 107’-2” Bill of Materials IV,” Revision 2
APP-CA37-S5B-005, “Containment Building Area 4 CA37 Floor El. 107’-2” Bill of Materials IV,” Revision 1

Engineering and Design Coordination Reports (E&DCRs)
APP-CA00-GEF-188, “Clarification of CA30 Module Connection Details, Rev. 0
APP-CA00-GEF-195, “Supplemental Simplified Analysis of CA3X Floor as Simply-Support Composite Beam Sections,” Rev. 0
APP-CA00-GEF-230, “CA32, CA33, CA35, CA36 and CA37 Clip Angle Connections,” Rev. 0
APP-CA01-GEF-561, “CA01_38 External Connection Plates,” Rev. 0

Inspection Reports
IR No. Q445-16-10023
IR No. Q445-16-11925
IR No. Q445-17-00299

Procedures and Specifications
VS2-SS01-Z0-001, “Shop Fabrication of Structural Steel Westinghouse Safety Class C, Seismic Category I, ‘Nuclear Safety Related’,” Revision 5

VS2-SS01-Z0-002, “Erection of Structural Steel Westinghouse Safety Class C, Seismic Category I, ‘Nuclear Safety Related’,” Revision 5

Nonconformance and Disposition (N&D) Reports
VS2-CA36-GNR-000001, “U2 CA36 Overlay Plate CA36.15 Base Metal,” Revision 0
VS2-CA36-GNR-000002, “U2 CA36 Direct Weld Plate CA36.30,” Revision 0
APP-CA36-GNR-850001, “GBI Corvallis 229-NCR-148 REV 0-CA36-GM3-2 E&DCR 188,” Revision 0

Corrective Action Documents
SCE&G Condition Report (CR) CR-17-30445
WEC Corrective Action, Prevention, and Learning (CAPAL) System Issue ID 100460545

Miscellaneous
APP-GW-SUP-001, “Design Methodology for Structural Modules,” Revision 4
Final Document Package for VS2 CA37, PO#132177-D100.CA005-404-012-00017
Final Document Package for VS2 CA36, PO#132177-D100.CA005-404-012-00008
Final Document Package for VS2 CA32, PO#132177-D100.CA005-404-012-00004
CBI Power Quality Assurance Audit Report, Audit No: V2015-56, Report Date: 9/26/2015

Section 1A25
Drawings
VS2-0000-C9-001, AP1000 Concrete General Notes, Rev. 10
VS2-0000-C9-002, AP1000 Concrete General Notes, Rev. 7
VS2-0000-C9-014, AP1000 Concrete General Notes, Rev. 2
VS2-1200-CR-992, Auxiliary Building Concrete Reinforcement Typical Detail Opening (Sheet 2) Rev. 9
VS2-1200-CR-910, Auxiliary Building Areas 1 & 2 Concrete Wall 11 Elevation, Rev. 15
VS2-1230-CR-910, Auxiliary Building Areas 1 & 2 Concrete Reinforcement Wall 11, Sections and Details EL. 100’-0” EL. 109’-0” and EL. 117’-6”, Rev. 9
VS2-1240-CR-980, Auxiliary Building Wall 11 Penetration Area Concrete Reinforcement Sections & Details, Rev. 2

N&D’s
VS2-CR01-GNR-000580, Rev. 0
VS2-ML05-GNR-000028, Rev. 0

EDCR’s
VS2-CE01-GEF-850086, Rev. 6

Work Package
VS2-1230-C0W-003-ITAAC, Rev. 0

Design Specification
VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I and II, Safety Class C “Nuclear Safety”, Westinghouse Seismic Category III, Safety Class E, Rev. 8

Inspection Plan
F-C112-003, Concrete Pre-Placement Inspection, Rev. 13.01

Section 1A26

Drawings

VS2-1232-CR-203, Auxiliary Building Area 2 Concrete Reinforcement Floor EL 100'-0" Plan, Rev, 2
VS2-1220-CR-913, Auxiliary Building Areas 1 & 2 Concrete Reinforcement Walls L & M Sections and Details, Rev. 8
VS2-1220-CR-918, Auxiliary Building Area 2 Concrete Reinforcement Wall K Sections and Details El 82'-6", Rev. 5
VS2-1232-CE-005, Auxiliary Building Area 2, 2 Hour Fire Rated Metal Studded Wall Anchor Bolt Locations – RM 12303 Plan @ EL. 100'-0", Rev. 0
VS2-1030-CR-100, Auxiliary Building Concrete Reinforcement Slab Joint Rebar To Connect with Shield Building EL. 100'-0" (Sheet 1), Rev. 4
VS2-1030-CR-101, Auxiliary Building Concrete Reinforcement Slab Joint Rebar To Connect with Shield Building EL. 100'-0" (Sheet 2), Rev. 3

Calculations

APP-1208CCC-001, Auxiliary Building Slab Joint Rebar to connect with Shield Building Wall, Rev. 0
APP-1230-CCC-001, Auxiliary Building Steel framing Design El. 100'-0" Areas 1 & 2, Rev. 0
APP-1208-S3C-029, Auxiliary Building Slab Joint Rebar to Connect with Shield Building at EL. 100'-0", 105'-0" and 107'-2", Rev. 0

Section 1A27

Drawings

VS2-0000-C9-001, AP1000 Concrete General Notes, Rev. 10
VS2-0000-C9-002, AP1000 Concrete General Notes, Rev. 7
VS2-0000-C9-014, AP1000 Concrete General Notes, Rev. 2
VS2-1200-CR-954, Auxiliary Building Area 5 Concrete Reinforcement Wall I Elevation, Rev. 15
VS2-1220-CR-964, Auxiliary Building Concrete Reinforcement Wall I Sections & Details EL. 100'-0", Rev. 4
VSG-1230-CR-954, Auxiliary Building Area 5 Concrete Reinforcement Wall I Sections & Details EL. 100'-0", Rev. 0
VS2-1200-CR-951, Auxiliary Building Area 5 Concrete Reinforcement Wall 2 Elevation. Rev. 5
VS2-1230-CR-951, Auxiliary Building Area 5 Concrete Reinforcement Wall 2 Sections and Details El. 100, Rev. 6
VS2-1235-CE-951, Auxiliary Building Area 5 Embedments Wall 2 Elevation 100'-0" South View, Rev. 3

N&D's

VS2-CR01-GNR-000254, Rev. 0
VS2-CR01-GNR-000392, Rev. 0
VS2-1235-GNR-000001, Rev. 0
VS2-CR01-GNR-000392, Rev. 0

Calculations

APP-1200-CCC-104, Auxiliary Building Wall 2 Reinforcement Design, Rev. 1
APP-1230-CCC-004, Structural Acceptance of Auxiliary Building Reinforced Concrete Wall Construction Joints Planned for Concrete Pouring from EL. 100'-0" to 117'-6", Rev. 0

Work Package

VS2-1230-C0W-004-ITAAC, Rev. 0

Design Specification
VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I and II, Safety Class C “Nuclear Safety”, Westinghouse Seismic Category III, Safety Class E, Rev. 8

Section 1A28
Drawings
VS2-0000-C9-001, AP1000 Concrete General Notes, Rev. 10
VS2-0000-C9-002, AP1000 Concrete General Notes, Rev. 7
VS2-0000-C9-014, AP1000 Concrete General Notes, Rev. 2
VS2-CA20-S8-253, Auxiliary Building Areas 5 & 6 CA20 Module Floor EL. 92’-8 ½” Spent Fuel Pool Reinforcement Section, Rev. 1
VS2-CA20-S8-207, Auxiliary Building Areas 5 & 6 CA20 Module Floor EL. 92’-8 ½” Spent Fuel Pool Top Reinforcement Plan View, Rev. 1
VS2-CA20-S8-206, Auxiliary Building Areas 5 & 6 CA20 Module Floor EL. 92’-8 ½” Spent Fuel Pool Top Reinforcement Top View, Rev. 1
VS2-CA20-S4-03008, Auxiliary Building Areas 5 & 6 CA20 Module Subassembly 3 Liner and Leak Chase System, Rev. 2
VS2-CA20-S4-03009, Auxiliary Building Areas 5 & 6 CA20 Module Subassembly Liner and Leak Chase System Details, Rev. 3

N&D’s
VS2-WRS-GNR-000048, Rev. 0
VS2-CA20-GNR-000680, Rev. 0
VS2-CA20-GNR-000704, Rev. 0

Work Package
VS2-CA20-C0W-002-ITAAC, Rev. 0

Design Specification
VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I and II, Safety Class C “Nuclear Safety”, Westinghouse Seismic Category III, Safety Class E, Rev. 8
VS2-CC01-Z0-026, Safety Related Mixing and Delivering Concrete, Westinghouse Safety Class C “Nuclear Safety Related”, Rev. 7

Concrete Placement Field Test Reports
C-17-00061

Batch Ticket
53425

Section 1A29
Drawings
VS2-1220-CR-562, Auxiliary Building Areas 5 & 6 Concrete Reinforcement Floor EL. 82’-6” Plan View, Rev. 8
VS2-1220-CR-592, Auxiliary Building Areas 5 & 6 Concrete Reinforcement Floor EL. 82’-6” Plan View, Rev. 5
VS2-1225-CE-004, Auxiliary Building Area 5, 1225-R2-16-WLS Valve Module Embedment Plate Locations Room 12271-Plan AT EL. 82’-6”, Rev. 1

VS2-1225-CE-005, Auxiliary building Area 5 Embed Plates AT EL. 82'-6", Rev. 2

Design Specifications
VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I and II, Safety Class C "Nuclear Safety" Westinghouse Seismic Category III, Safety Class E, Rev. 8

EDCR's
VSG-1225-GEF-000012, Rev. 0
APP-CR01-GEF-850282, Rev. 0

N&D's
VS2-1220-GNR-000015, Rev. 0
VS2-1225-GNR-000005, Rev. 0
VS2-CR01-GNR-000570, Rev.0
VS2-CR01-GNR-000597, Rev. 0
VS2-1225-GNR-000006, Rev. 0

Procedures
APP-GW-GAP-420, Engineering and Design Coordination Report, Rev. 12
APP-GW-GAP-428, Nonconformance and Disposition Report, Rev. 11

Section 1A30
VS2-1200-CCK-084, "Unit 2 Aux. Bldg. Column Line 7.3 Wall Thickness as-built from I to Shield Building from Elevations 66'-6" to 100'-0"," Rev. B

Section 1A31
VS2-CA01-CCK-800000, "Unit 2 Containment Bldg South Wall of East Steam Generator Compartment Wall Thickness as-built from El. 87'-6" to 153'-0"," Rev. 0
VS2-CA01-CCK-800001, "Unit 2 Containment Bldg East Wall of East Steam Generator Compartment Wall Thickness as-built from El. 94'-0" to 153'-0"," Rev. 0
VS2-CA01-CCK-800002, "Unit 2 Containment Bldg North Wall of East Steam Generator Compartment Wall Thickness as-built from El. 87'-6" to 153'-0"," Rev. 0
C-16-00551, "Self Consolidating Concrete Field Testing & Compression Data Record," Rev. 0

Section 1A32
VS3-PL01-VQQ-001P1P2, Quality Data Package for Summer Unit 3 Hot and Cold Legs, Revision 0
VS3-PL01-VQQ-002P1P2, Quality Data Package for Summer Unit 3 Surge Line, Revision 0
QR-14-227, "Quality Release & Certificate of Conformance," AP1000 Reactor Coolant Loop, Surge Lines, dated December 12, 2014
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CBI IR No. Q445-16-10867, "CBI Nuclear Quality Assurance Inspection report – Type 'A'," dated April 14, 2016

Hot Leg (SN L0903400-RCS-PL-L001B)
QDP1300012, "Final Quality Assurance Data Package and Final Report," Revision 00
Certificate of Conformance from Tioga Pipe Supply Company, Hot Leg-Group 05, 31 BTA L001B, 37.50" OD x 31.00" ID Seamless Pipe, Heat No. 05575, dated November 7, 2014

CMTR No. CMTR1300031, Heat No. 05575, Rev. 00
Visual and Dimensional Report No. VDR1300664, Rev. 01
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Certificate of Conformance from Tioga Pipe Supply Company, Cold Leg Group 04, Loop 1A, 22BTA L002A, 27.12” OD x 22.00” ID Seamless Pipe, Heat No. 06778, dated December 10, 2014
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Visual and Dimensional Report No. VDR1400812, Revision 01

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Certificate of Conformance from Tioga Pipe Supply Company, Cold Leg - Group 01, Loop 2A, 22BTA L002C, 27.12” OD x 22.00” ID Seamless Pipe, Heat No. 06198, dated December 4, 2014
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Visual and Dimensional Report No. VDR1400776, Revision 01
NCR S000002059, “Non Conformity Report for Cold Leg Pipe 27.12” OD x 22.00” ID x 2.56” THK ASME SA376 TP316LN - ODL L1201044,” Revision 01
PAR No. 4500269783-199-0, “SS3 CL10 - ID Out of Tolerance. Attach: NCR S000002059 (VDR 1400776),” dated December 8, 2014
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Certificate of Conformance from Tioga Pipe Supply Company, Surge Line, Spool Piece - 01, 18" NPS Schedule 160 Seamless Pipe, Heat No. 05169, dated December 4, 2014
CMTR No. CMTR1300018, Heat No. 05169, Revision 00
Visual and Dimensional Report No. VDR1300657, Revision 00
NCR S000000905, “Non Conformity Report for Surge Line 18.00” OD x 14.44” ID x 1.78” THK ASME SA312 TP316LN,” Revision 01
PAR No. 4500269783-194-0, “SS3 SL70 – 6 Attachments to Repair DN 13-06 (U130002793, U130002794, NCR 095 r.1, MTR 1300065, HTR47 2010 r.1),” dated October 15, 2014

Section 1A33
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CGQP 9.7, Solvent Removable Liquid Penetrant Examination and Acceptance Standards for Welds, Base Materials, and Cladding, Rev. 2, dated 02-03-16
Welder Performance Qualification (WPQ) record number 011116-01 of Stamp Number CES0674 with ID-Number NC-XX-4240 for machine and manual GTAW, test date 1/18/2016

Section 1A34
Welding Procedure Manual (General Welding Procedures CES-01 through CES-08), Rev. 17, dated 07/20/16
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WPS CWPS-8-8-TS-A01, Rev.2 dated 6/2/16 with three supporting PQRs: 063 (PCI) Rev. 6 dated 4/16/2014, 600 (PCI) Rev. 6 dated 11/21/2013, and 899 (PCI) Rev. 4 dated 8/25/15
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Section 1A35
WPS1-8.10HGT-NF-6, Rev. 1 with PQR SP551 Rev. 2
WPS1-8.8T01 Rev. 9 with PQRs: PQ574 Rev. 1, PQ589 Rev. 1, PQ595 Rev. 0
WPS2-1.1M01 Rev. 2
WPS2-1.1S02 Rev. 2
WPS2-1.1F03 Rev. 3
WPS2-1.1T31 Rev. 2
QS 09.41, Nondestructive Examination Program, Rev. 02.01
CWP-1, Construction Welding Program, Rev. 4
WCP-1, Welding Control Procedure, Rev. 11
FMC-1, Filler Metal Control, Rev. 8
GWS-1, General Welding Specification, Rev. 5
WQ-1, Qualification of Welders and Welding Operators, Rev. 5
PQ-1, Welding Procedure Qualification, Rev. 8
QAD 02.14, Qualification and Certification of Nondestructive Examination Personnel. Rev. 05.00
QAD 09.62, Magnetic Particle Examination Yoke Method, Rev. 02.02
Eight selected NDE personnel qualification records
QAD 09.31, Liquid Penetrant Examination Requirements for the Solvent Removable, Color Contrast Technique. Rev 03.03
Welder Qualification Records: AIM9550 (2), CWD2319 (4), DJB2358 (2) DLS7274 (4), PBH4782 (4), RJD0028 (3), RML3906 (4), SMP1170 (4) and STH7589 (5)
Complete Package of NDE PT/MT Procedures Demonstrated to the HSBC ANI at V.C. Summer Units 2 & 3, 2/29/12
CR-17-30081, created 2/1/17
CR-17-30136, created 2/9/17

Discreet Issues: 100449264, 100447896

Section 1A36
WPS1-8.10HGT-NF-6, Rev. 1 with PQR SP551 Rev. 2
WPS1-8.8T01 Rev. 9 with PQRs: PQ574 Rev. 1, PQ589 Rev. 1, PQ595 Rev. 0
WPS2-1.1M01 Rev. 2
WPS2-1.1S02 Rev. 2
WPS2-1.1F03 Rev. 3
WPS2-1.1T31 Rev. 2
QS 09.41, Nondestructive Examination Program, Rev. 02.01
CWP-1, Construction Welding Program, Rev. 4
WCP-1, Welding Control Procedure, Rev. 11
FMC-1, Filler Metal Control, Rev. 8
GWS-1, General Welding Specification, Rev. 5
WQ-1, Qualification of Welders and Welding Operators, Rev. 5
PQ-1, Welding Procedure Qualification, Rev. 8
QAD 02.14, Qualification and Certification of Nondestructive Examination Personnel. Rev. 05.00
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CR-17-30081, created 2/1/17
CR-17-30136, created 2/9/17
Discreet Issues: 100449264, 100447896

Section 1A37
VS3-CA03-GNR-000017, “Unit 3 CA03_13 UnSat Weld Inspection (16-527365-LC-LA-0334),” Rev. 0
VS3-CA03-GNR-000018, “Unit 3 CA03_13 UnSat Weld Inspection (16-527365-LC-LA-0336),” Rev. 0
Certificate of Compliance for PO No. 527365, “VS3 CA03-13-001 Submodule,” dated 11/17/2016
Certificate of Conformance for PO No. 527365, “VS3 CA03-13-001 Submodule,” dated 11/17/2016
Final QA Records checklist & Turnover Package Release, ““VS3 CA03-13-001 Submodule,” dated 11/17/16
S511-16-11598, “Mechanical Tapered Threaded Rebar Splicing,” dated 11/20/2016
Q445-16-13624, “Receipt Inspection,” dated 12/3/2016
APP-CA03-GEF-011, “CA03 Dimensional Clarifications,” Rev. 0
APP-CA00-GEF-066, “Shear Stud Material Unavailability,” Rev. 0
VS3-CA03-S5-13001, “Containment Building Module CA03 – Submodule CA03_13 Isometric Views,” Rev. 0
VS3-CA03-S5B-13001, “Containment Building Module CA03 – Submodule CA03_13 Bill of Materials,” Rev. 0
VS3-CA03-S5-13002, “Containment Building Module CA03 – Submodule CA03_13 Structural Outline Horizontal Sections / Views,” Rev. 0

VS3-CA03-S5-13003, “Containment Building Module CA03 – Submodule CA03_13 Structural Outline Vertical Sections / Views,” Rev. 0
VS3-CA03-S5-13004, “Containment Building Module CA03 – Submodule CA03_13 Structural Outline Horizontal Sections / Views,” Rev. 0
VS3-CA03-S5-13005, “Containment Building Module CA03 – Submodule CA03_13 Structural Outline Specific Details II,” Rev. 0
VS3-CA03-S5-13006, “Containment Building Module CA03 – Submodule CA03_13 Structural Outline Specific Details II,” Rev. 0
VS3-CA03-S5-13007, “Containment Building Module CA03 Submodule CA03_13 Breakdown II,” Rev. 0
VSG-CA03-GEF-000044, “Additional Studs to Reduce Bearing Area,” Rev. 0
APP-CA03-GEF-850014, "CA03 Shear Stud Material Note," Rev. 0
APP-VW01-Z0-001, "Structural Module Shear Stud Welding Specification," Rev. 3
GWS-6, "General Welding Specification," Rev. 05
WPS No. WPS6-8.8SWPQ1
WPS No. WPS6-1.10HSW01
PQR Number: SP201
PQR Number: SP202
PQR Number: SP203

Section 1A38

CA01

APP-1100-S3C-777, “Containment Internal Structures Design Calculation – CA01, CA02, and CA05 Walls and Connections,” Rev. 1
APP-SS30-Z0R-004, “AP1000 Steam Generator Lower Lateral Support Qualification,” Rev. 0
APP-CA01-S3C-013, “CA01 Backup Structures Design Calculation for the Primary Equipment Support,” Rev. 0
VS3-GW-S9-103, “Structural Modules General Notes – IV,” Rev. 5
APP-CA00-GEF-850096, “SWD-1 Truss Weld Clarification,” Rev. 0
VSG-CA03-GEF-000040, “CA03 Pipe to Stud Interferences,” Rev. 0
APP-CA01-GEF-273, “CA01-31 SG Lower Lateral Support Plate Thickness Change,” Rev. 0
APP-CA01-GEF-372, “CA01 SSD-133 Shear Reinforcement Modification,” Rev. 0
APP-CA01-GEF-850051, “CA01-31 Material Substitution,” Rev. 0
APP-CA01-GEF-850156, “Rebar Material Substitution,” Rev. 0
APP-CH59-GEF-850013, “Thermal Cutting Maximum Hardness,” Rev. 0
APP-CA01-GEF-850590, “Additional Welds on CA01-31,” Rev. 0
APP-CA01-GEF-850551, “CA01-31 Additional Gussets,” Rev. 0
VS3-CA01-GNR-000030, “CA01_28/29 Seam 2829 Excessive Root Gap Opening,” Rev. 0
APP-GW-GNR-85272, “Thermal Cutting Procedure Addendum,” Rev. 0
APP-GW-GEF-1507, “GTAW Process for Rebar Welding,” Rev. 0
APP-CA01-GNR-851064, “TANE-IHI_VNNR-16-092 Rev. 0_Weld length not met on CA01-31 VS3,” Rev. 0
APP-CA01-GNR-850561, “TANE-IHI_VNNR-15-102 Rev. 0 Unacceptable yield strength on CA01 VS3,” Rev. 0

CA03

APP-CA01-GNR-850493, “TANE-Toshiba-NNRK1519445-A rev. 1-Stud Spacing >1" (CA01_11-VS3),” Rev. 0
VSG-CA00-GEF-000047, “Leak Chase Splicing NDE,” Rev. 0
APP-CA01-GNR-850370, “TANE-TOSHIBA-NNRK-1418385A-TP ATTACH WELD TO WET SURF W/O APP (CA01-47) VG4, VS-3,” Rev. 0

APP-CA01-GNR-850893, “TANE_TOSHIBA_NNRK1621675_A_WELDING IN PROHIBITED AREA (VS3_CA01_22),” Rev. 0
VSG-CA00-GEF-000052, “Arc Strike Removal Requirements,” Rev. 0
VS2-CA00-GEF-000001, “Alternate AWS PQR Material,” Rev. 0
APP-CA03-GNR-850214, “VS3 CA03-02 NCR 16-555 Components out of tolerance,” Rev. 0
APP-CA03-GNR-850034, “Pegasus Angle Coped Ends NCR #00470-NCR-13-0031 Rev.2,” Rev. 0
APP-CA03-GEF-850014, “CA03 Shear Stud Material Note,” Rev. 0
APP-CA03-GEF-050, “Weld End Terminations for CA03 Submodules,” Rev. 0
APP-CA03-GEF-034, “CA03 Debt Reconciliation Modifications and CA03_17 Rebar Modifications,” Rev. 0
APP-CA00-GEF-074, “Shear Stud Material Unavailability,” Rev. 0

CMTRs
430000-CMTR-15-000245
430000-MTR-12-000077
430000-MTR-13-000399

RIRs
430000-RIR-15-002656
430000-RIR-12-000558
4300-RIR-13-001771

Procedures
QP-QC-315, “General Inspection,” Rev. 3
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QP-NDT-UT-302, “Ultrasonic Testing (AWS D1.6/D1.1, Annex K),” Rev. 2a
QP-NDT-PT-301, “Penetrant Testing (Type II, Method C),” Rev. 4a

Travelers
132178-WF-3075915
132178-WF-3075915

Section 1A39
WO VS3-CA03-S4W-853012, Work Order for seam 12
Weld doc 168226, Weld Doc for Seam 12
WPS5-10H.10HF20, FCAW A240 UNS S32101 to A240 UNS S32101 AWS D1.6 Welding Procedure, Rev. 4
MRR 168226-007, Material report for Seam 12 weld wire
VS3-CA03-VWK-800027, VS3-CA03-S4W-853012 CA03 Assembly Seam 12 Weld Map Sheet 2, Rev. 0
V3-17-W-P-00224, Record of Liquid Penetrant Examination for final inspection of Seam 5, dated 3/8/2017
V3-17-W-P-00162, Record of Liquid Penetrant Examination for root inspection of Seam 5, dated 2/28/2017,
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MIR 167469-012, dated 2/28/2017
Weld Record VS3-CA03-VWK-800020-FW-05-VP-002, Rev. 0
Weld Record VS3-CA03-VWK-800020-FW-05-VP-002A, Rev. 0
Weld Record VS3-CA03-VWK-800020-FW-05-VP-003, Rev. 0

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Qualification Records for Welders VRT0542 and CBB8126
Certification number 17148 for Mistras NDE QC

Section 1A40
Pour Card 4182-12-2016, dated 1/10/2017
C-17-00012, "Conventional Concrete Field Testing & compression Data Record," Rev. 0
VS3-CR01-GNR-0000220, “F2: Significant Overspray Found on Rebar Outside of Containment Vessel,” Rev. 0
VS3-CC01-GNR-000284, “Unit 3 F2 High Air Content,” Rev. 0
Surveillance 20170109-CSR-850018, “”Surface Preparation for Removal of Zinc Coating from Rebar,” dated 1/9/2017

Section 1A41
APP-1208-GEF-027, “Shield Building – Panel Connection Components – Corrections & Clarifications,” Rev. 0
APP-1208-GEF-315, “Shield Building – Oversized Holes in Support Plates,” Rev. 0
F-C155-007, “Field Erection of the SC Panels for the AP1000 Shield Building,” Rev. 2
VS3-CR01-GNR-000219, “F2: Nut and Washer Do Not Meet Full Bearing Requirements,” Rev. 0
VS3-1000-CR-005, “Nuclear Island Basemat Reinforcement Development View,” Rev. 4
VS3-1208-SC-100, “Shield Building Steel Wall Panels EL 100’-0” to EL 248’-6 1/2” General Notes,” Rev. 2
VS3-1208-SC-107, “Shield Building Steel Wall Panels EL. 100’-0” to EL. 248’-6½” Construction & Erection General Notes,” Rev. 0
VS3-1208-SC-271, “Shield Building Steel Wall Panels EL. 100’-0” to EL. 248’-6½” Connection Panel Group 27,” Rev. 5
VS3-1208-SC-272, “Shield Building Steel Wall Panels EL. 100’-0” to EL. 248’-6½” Connection Panel Group 27 Details 1,” Rev. 3
VS3-1208-SC-273, “Shield Building Steel Wall Panels EL. 100’-0” to EL. 248’-6½” Connection Panel Group 27 Details 2,” Rev. 2
VS3-1208-SC-903, “Shield Building Steel Wall Panels EL. 100’-0” to EL. 248’-6½” Typical Details (Sheet 3),” Rev. 2
VS3-1238-CR-903, “Reinforcement Locations Interface Drawing Basemat and Shield Building Elevation 100’-0” Sections and Details,” Rev. 2

Section 1A42
Certified Material Test Report 132177F000894-REL01 for Lot 1240M, dated 3/27/2015
Radiography Examination Report V3-16-W-R-10002
VS3-1208-SC-906, “Shield Building Steel Wall Panels EL. 100’-0” to EL. 248’-61/2” Typical Details (Sheet 6),” Rev. 5
Weld Record for VS3-1238-VWK-001-FW-JK-001, dated 12/5/2016
Weld Record for VS3-1238-VWK-001-FW-LM-001, dated 12/5/2016

Section 1A43
APP-1208-GEF-027, “Shield Building – Panel Connection Components – Corrections & Clarifications,” Rev. 0
APP-1208-GEF-315, “Shield Building – Oversized Holes in Support Plates,” Rev. 0
Certificate of Compliance for PO 4503132902, dated 5/5/2015
Certificate of Conformances and Certified Material Test Reports for PO 4503132902, dated 1/19/2015, 2/9/2015, 2/20/2015, 3/3/2015, and 3/12/2015

Dedication Plan for Commercial Grade Fasteners 14-2125-02N, dated 3/12/2015
F-C155-007, Field Erection of the SC Panels for the AP1000 Shield Building," Rev. 2
VS3-1208-SC-100, "Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 1/2" General Notes," Rev. 2
Material Issue Report 132178-MIR-04321, "U3 NI #11 Upsize Bars," dated 2/14/2017
Material Receiving Report 132178-MRR-03881, dated 4/2/2015
VS3-1208-SC-281, "Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 1/2" Connection Panel Group 28," Rev. 2
VS3-1208-SC-964, "Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 1/2" Connection Panel Details 4," Rev. 1
VS3-1208-SC-966, "Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 1/2" Connection Panel Details 6," Rev. 1

Section 1A44

Drawings

VS3-1238-VWK-002, VS3-1238-SCW-022, "Course 02 Assembly Weld Map", Rev. A
VS3-1228-VWK-800002, VS3-1238-SCW-022, "Course 02 Backing Bar Weld Map", Rev. A

Misc.

VS3-1238-SCW-022, U3 Shield Building/SC Portion assembly, fit-up, and welding, Elevation 103'-6" to 113'-6"
Weld Doc 1611383
Weld Data Sheet VS3-1238-VWK-002-FW-HS-016
WPS1-1.1S03-SB, Welding Procedure for the fabrication and field erection of the SC panels for the AP1000 Shield Building SMAW manual process, Rev. 1
WPS1-1.1SA30-SB, Fabrication and Field Erection of the SC Panels for the shield building SAW machine process, Rev. 1
Test 1CS-06, Qualification Record for Welder DHB6381
Test 1CS-14-Operator, Welder ID: DSB8239
PQR 13408
PQR 13416

Section 1A45

APP-1208-GEF-231, "Shield Building – Gusset Plate Tolerance at EL. 146'-10"," Rev. 0
APP-1208-GEF-404, "Alternate Weld for 1 IN Gusset to 2 IN Support Plate," Rev. 0
APP-1208-GNR-850657, "NNI NCR 2350A, (VS3-1208-SC-01D) Critical Measurement Out of Tolerance," Rev. 0
VS3-1208-SC-100, "Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 1/2" General Notes," Rev. 2
VS3-1208-SC-201, "Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 1/2" Connection Panel Group 20," Rev. 2
VS3-1208-SC-321, "Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 1/2" Connection Panel Group 32," Rev. 2
VS3-1208-SC-904, "Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 1/2" Typical Details (Sheet 4)," Rev. 2
VS3-1208-SC-907, "Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 1/2" Typical Details (Sheet 7)," Rev. 2
VS3-1208-SC-918, "Shield Building Steel Wall Panels EL. 100'-0" to EL. 248'-6 ½ Small Wall Connection Details Wall SW-D," Rev. 4
VS3-1208-SC-920, "Shield Building Steel Wall Panels EL. 100'-0" to EL. 248'-6 ½ Wall Connection Typical Details I," Rev. 3

VS3-1208-SC-928, “Shield Building Steel Wall Panels EL. 100’-0” to EL. 248’-6 ½ Small Wall Connection Details Wall SW-C,” Rev. 3
VS3-1208-SC-933, “Shield Building Steel Wall Panels EL. 100’-0” to EL. 248’-6 ½ Wall 5 Connection Details,” Rev. 3
VS3-1208-SC-938, “Shield Building Steel Wall Panels EL. 100’-0” to EL. 248’-6 ½ Small Wall Connection Details Wall SW-A,” Rev. 4

Certified Material Test Reports (CMTR) and Certificates of Compliance (CoC) from Newport News Industrial:
2505469 dated 2/26/2014
2504975 dated 3/1/2014
2506068 dated 6/5/2014
3508534 dated 7/1/2014
3508602 dated 7/2/2014

Section 1A46
VS3-1110-CCK-002, “Unit 3 As-built Wall Thickness for Shield Wall between Reactor Vessel Cavity and RCDT Room from Elev. 71’-6” to 83’-0",” Rev. C

Section 1A47
VS3-1200-CCK-089, “Unit 3 Aux. Bldg. Column Line K Wall Thickness as-built from 7.3 to 11 from Elevations 66’-6” to 135’-3”,” Rev. B

Section 1A48
VS3-1110-CCK-002, “Unit 3 As-built Wall Thickness for Shield Wall between Reactor Vessel Cavity and RCDT Room from Elev. 71’-6” to 83’-0,” Rev. C
C-15-00461, “Conventional Concrete Field Testing & Compression Data Record,” Rev. 0
C-15-00158, “Conventional Concrete Field Testing & Compression Data Record,” Rev. 1

Section 1A49
C-16-00432, “Self Consolidating Concrete Field Testing & Compression Data Record,” Rev. 0
C114-16-10283, “Concrete Post Placement Inspection,” Rev. N/A
VS2-1200-CCK-021, “Unit 2 Auxiliary Building Column Line 4 Wall Thickness As-Built I to J-1 from Elevations 66’-6” to 135’-3”,” Rev. B

Section 1P01
IP Subsections
35007-A13.04.01 – Inspection of QA Implementing Documents
35007-A13.04.02 – Inspection of QA Program Implementation
35747-B – Section II.1, Program Review
35065.02.03 – Storage

Documents
NPP 10-01 – Material, Receipt, Storage, and Control, Revision 06.00
NCSP03-16 – Preventative Maintenance (PM) Program
QS 08.12 – Material Identification and Control, Revision 01.05
QS 13.11 – Material, Equipment Storage, Revision 04.00
QS 13.13 – Material and Equipment Handling, Revision 01.02
J132177 – Inventory Report 12 December 2016
J132178 – Inventory Report 12 December 2016
Equipment Preservation Check Record (EPCR), MRR No. 132177-MRR-31353

[Metro Facility Environment] Data Graph, Week Ending 20 January
[Metro Facility Environment] Data Graph, Week Ending 27 January
Quality Assurance Program Description, Revision 5

Section 1P02
QAD 16.02, Significance Evaluation Screening, Rev: 02.00, Effective Date: 01/03/2017
W2-5.1-101, Westinghouse Corrective Action Program, Revision 3.0, 03/01/2017
W2-5.1-102, Issue Review Committee, Revision 3.0, 03/01/2017
DI 100445776
DI 100447943
DI 100448039
DI 100448035
DI 100442406
DI 100448195
DI 100451552
DI 100452026
DI 100452650
DI 100451700
DI 100453523
DI 100453467

Section 1P03
VS3-1208-C0W-800013, “Fabricate Unit 3 Shield Building Electrical Penetration Assemblies for RC Placements", Revision 0
NCSP 02-19, "Work Package Planning, Development, Approval and Closure", Revision 08.01
VS3-1208-CR-907, “Auxiliary Building Cylindrical Wall Concrete Reinforcement Connection to Electrical Penetrations Section and Details (Sheet 1)”, Revision 2
F-U700-003, "Fabrication of Miscellaneous Steel (Non-ASME)", Revision 00.00

Section 1P04
WPS1-8.10HGT-NF-6, Rev. 1 with PQR SP551 Rev. 2
WPS1-8.8T01 Rev. 9 with PQRs: PQ574 Rev. 1, PQ589 Rev. 1, PQ595 Rev. 0
WPS2-1.1M01 Rev. 2
WPS2-1.1S02 Rev. 2
WPS2-1.1F03 Rev. 3
WPS2-1.1T31 Rev. 2
QS 09.41, Nondestructive Examination Program, Rev. 02.01
CWP-1, Construction Welding Program, Rev. 4
WCP-1, Welding Control Procedure, Rev. 11
FMC-1, Filler Metal Control, Rev. 8
GWS-1, General Welding Specification, Rev. 5
WQ-1, Qualification of Welders and Welding Operators, Rev. 5
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QAD 09.62, Magnetic Particle Examination Yoke Method, Rev. 02.02
Eight selected NDE personnel qualification records
QAD 09.31, Liquid Penetrant Examination Requirements for the Solvent Removable, Color Contrast Technique. Rev 03.03
Welder Qualification Records: AIM9550 (2), CWD2319 (4), DJB2358 (2) DLS7274 (4), PBH4782 (4), RJD0028 (3), RML3906 (4), SMP1170 (4) and STH7589 (5)

Complete Package of NDE PT/MT Procedures Demonstrated to the HSBC ANI at V.C. Summer Units 2 & 3, 2/29/12
CR-17-30081, created 2/1/17
CR-17-30136, created 2/9/17
Discreet Issues: 100449264, 100447896

CB&I Services
QAD 02.14, Qualification and Certification of Nondestructive Examination Personnel, Rev. 05.00
Welder or Welding Operator Performance qualification (WPQ) for Stamp IDs: 1715921 (9 total), 63023629 (8 total), and 63070433 (6 total)
WPS E309L-15, Rev. 1, dated 10/17/2013
WPS E309L-15 (fillet), Rev. 0, dated 10/13/2015
WPS E9018M H4 R, Rev. 9
WPS E91TG-H4, Rev. 12
WPS ENi4 / OK 10.72, Rev. 8
CMS-720-03-PR-07101, Preparation and Use of the Traveler, Rev. 4, dated 28 May 2015
CMS-720-03-PR-09151, Site Welding Material Distribution, Rev. 8, dated 09 Sep 2016
CMS-720-03-PR-09301, Care, Storage and Conditioning of Welding Material, Rev. 8, dated 10 Nov 2016
CMS-720-03-PR-09401, Qualification of Welders and Welding Operators, Rev. 8, dated 04 Aug 2016
CMS-830-15-PR-45164, Solution Film Testing, Vacuum Box Technique, ASME Section III, Division 1 – Subsection NE, Rev. 1, 20 Jan 2012
VCS-U3-2017-SFT-004, Report of Leak Test – Nuclear, Inaccessible CV TH4 from outside butt weld seams L,M,N,P,R,S,T,U,V, W, and X (inside) from TH4 to S11(Traveler C2-CVTH-SFT-Seq. 1B)
CB&I, CMS-830-15-PR-45162, Liquid Penetrant Examination Color Contrast, Solvent Removable, ASME Section III, Division 1 – Subsection NE, 05/05/11
CB&I, CMS-830-15-PR-45160, Magnetic Particle Examination, Color Contrast, Dry Yoke, ASME Section III, Division 1 – Subsection NE, 05/09/11
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Training and certification records for three NDE inspection personnel

CES
WEC Carolina Energy Solutions, LLC, NPT/NA ASME Quality Assurance Manual, Rev. 5, dated 04/28/16
Welding Procedure Manual (General Welding Procedures CES-01 through CES-08), Rev. 17, dated 07/20/16
WPS CWPS-8-8-T-A01, Rev. 1 dated 6/2/16 with four supporting PQRs: 062 (PCI) Rev. 3 dated 12/11/96, 600 (PCI) Rev. 6 dated 11/21/2013, 864 (PCI) Rev. 2 dated 3/24/10, and 899 (PCI) Rev. 4 dated 8/25/15
WPS CWPS-8-8-TS-A01, Rev.2 dated 6/2/16 with three supporting PQRs: 063 (PCI) Rev. 6 dated 4/16/2014, 600 (PCI) Rev. 6 dated 11/21/2013, and 899 (PCI) Rev. 4 dated 8/25/15 CGQP 9.7, Solvent Removable Liquid Penetrant Examination and Acceptance Standards for Welds, Base Materials, and Cladding, Rev. 2, dated 02-03-16

Welder Performance Qualification (WPQ) record number 011116-01 of Stamp Number CES0674 with ID-Number NC-XX-4240 for machine and manual GTAW, test date 1/18/2016
Welder Maintenance Log (WML) for welding operator CES0674 with expiration date of 3/28/2017
NCR No. VCS-17-011, dated 31 Jan. 17 that included Evaluation of Cause, BCL03 Bead Log Sheets, and Personnel Training and Indoctrination Records for day/night shifts
Weld Repair Traveler, WT-4403001-BCL03 Repair, 01/31/2017
Report of Nondestructive Examination, Visible, Solvent Removable Liquid Penetrant Examination, PT-4403001-030, for BCL03 Repair, dated 02-01-2017
Inspection Report IR-4403001-01, Sketch of Both Examination Areas and Location for BCL03 Repair, Dated 02-01-2017
MISTRAS, Computed Radiography Examination Report V2-17-A-R-10030 for informational RT linked with Weld Document WT4403001-BCL03 at Views 0-1, 5-6, and 6-0, dated 2/2/2017
MISTRAS, Computed Radiography Examination Report V2-17-A-R-10048 for acceptable final RT of completed weld linked with Weld Document WT4403001-BCL03, dated 2/19/2017

TEAM
UT.ASME.N1.1998-00a, Ultrasonic Examination of Welds Other Than Pipe (ASME III), Rev. 0, dated 04/29/13
UT.ASME.N1, Straight Beam Ultrasonic Examination of Steel Plates, Rev. 1, dated 03/31/08
UT.ASME.N1 Supplement 1234-16001, “Supplemental Calibration Technique for Scanning of Base Metal and Weld Inlay/Overlay to Be Used in Conjunction for UT.ASME.N1, Rev. 1, (SA578) 1998”, Rev. 4, dated 12-6-16
NDE examiner qualification records: Employee ID# 655401, NDE Level III, NDE-VT/PT/MT/RT/UT and AWS QC-1 CWI; Employee ID# 902853, NDE Level II, NDE-PT/MT/RT/UT and AWS QC-1 CWI; Employee ID# 906447, NDE Level II, NDE-VT/PT/MT/UT

MISTRAS
MISTRAS Services, 100-QC-005.2, Qualification and Certification of Nondestructive Test Personnel, Revision 4, 09/03/13
MISTRAS Services, 100-QC-005.2G, Qualification and Certification of Nondestructive Test Personnel in Accordance with ASNT SNT-TC-1A, 1992 Edition and Shaw Power Group, Nuclear Division Requirements, Revision 3, 4/26/13
Training and certification records for five MISTRAS NDE inspection personnel

Section 3P01
APP-GW-GEF-424, “Temperature and Pressure Envelopes for use in Equipment”, Revision 0
APP-GW-VPC-011, “AP1000 Equipment Qualification DBA/Post DBA Temperature and Pressure Envelopes”, Revision 3
APP-GW-VP-030, “AP1000 Environmental Condition”, Revision 6
APP-GW-VP-040, “Environmental Clarification/Corrections”, Revision 0
APP-PV10-VBR-004, “Equipment Qualification Summary Report for Air-Operated Plug Valve for Use in the AP1000 Plant”, Revision 0
APP-PV10-VBR-006, “Equipment Qualification Data Package for Air-Operated Plug Valve for Use in the AP1000 Plant”, Revision 2
APP-PV10-VPR-003, “Environmental and Seismic Qualification Evaluation Report”, Revision 1
APP-PV10-VPR-003, “Environmental and Seismic Qualification Evaluation Report”, Revision D
APP-EY01-VBR-003, “Equipment Qualification Summary Report for Low Voltage Power Control and I&C Electrical Penetration Assemblies for the Use in the AP1000 Plant”, Revision 3
APP-EY01-VBR-004, “Equipment Qualification Data Package for Low Voltage Power Control and I&C Electrical Penetration Assemblies for the Use in the AP1000 Plant”, Revision 3

APP-GW-GEE-4626, “Adding Metal Armor to NIS Source Range In-Containment Triaxial Cables”, Revision 0
APP-EY01-VPR-006, “Steris Part 21 Radiation Analysis for AP1000 Electric Penetration Assemblies”, Revision 0
APP-EY01-VPR-002, “Environmental Qualification Test Report for the Low Voltage Power Control and I&C Electrical Penetration Assembly for the Use in the AP1000 Plant Appendix H Anomalies”, Revision 0

Section 3P02
Procedures and Guidance
VCS-TQP-0705, Health Physics Training Program, Rev. 0, Change B
VCS-TQP-0916 VCSNS Leadership Development Training Program
User Qualification Status Report for HP Personnel Assigned to V.C. Summer Units 2&3 [Task qualification for radioactive material receipt, survey performance, instrument use, etc.], 1/25/2017

Records and Documents
Just In Time Training (JITT), HP Response to Building 338 [Training for Unit 1 HP staff for backshift and weekend response to Building 338], 1/11/2017
FLUOR Training Attendance Report, “Hazardous Materials Awareness”, 11/21/2016 and 12/8/2016
FLUOR Training Attendance Report, “General Radiation Safety”, 11/21/2016 and 12/8/2016
FLUOR Training Course Materials, “Hazardous Materials Awareness”, 2012
FLUOR Training Course Materials, “General Radiation Safety”, 2014

Section 3P03
WO: VS2-ISI-WRP-010, Rev 0
Wesdyne: WDI-STD-1309, "Visual Examination for Pre-service Inspections at AP1000", Rev. 1
Wesdyne: WDI-STD-1086, "Liquid Penetrant Examination for Pre-Service Inspections", Rev. 4
Wesdyne: WDI-STD-1138, "Manual Ultrasonic Examination of Vessel Welds >2" in Thickness in Accordance With Section XI, Supplement 1 (Non-Appendix VIII)", Rev. 4
SSI Certificate of Qualification: II/MT, II/PT, II-PDI/UT, II/VT-1, II/VT-2, II/VT-3, Steinbauer, dated 01/06/17
Wesdyne Certificate of Qualification: IIL/PT, II/MT, II-PDI/UT, II/VT-1, II/VT-2, II/VT-3, Williams, dated 01/26/17
WEC Vision Acuity Record: Williams, dated 01/23/17
17-000560, "Lower Shell-to-Lower Head Circumferential Weld", 3/9/17
17-000561, "Lower Shell-to-Lower Head Circumferential Weld", 3/9/17
17-000562, "Lower Shell-to-Lower Head Circumferential Weld", 3/9/17
17-000563, "Lower Shell-to-Lower Head Circumferential Weld", 3/9/17
17-000564, "Lower Shell-to-Lower Head Circumferential Weld", 3/9/17
17-000565, "Lower Shell-to-Lower Head Circumferential Weld", 3/9/17

Section 3P04
Procedures and Guidance
NND-HP-0002, Control of Radioactive Material during Construction, Rev. 0
NND-HP-0003, Use of Calibration Sources during Construction, Rev. 1
VCS-HPP-0160.001, Control and Posting of Radiation Control Zones, Rev.0, Change D
VCS-HPP-0152, Radiation Control Area Access Control, Rev. 0, Change A
VCS-HPP-0203, HP Technical Work Records, Rev. 0
VCS-HPP-0302, Radiation and Contamination Survey Techniques, Rev. 1, Change C

VCS-HPP-0401.001, Planning and Maintaining RWPs, Rev. 0
VCS-HPP-0702, Receipt of Radioactive Material, Rev. 1, Change B
VCS-HPP-0704, Radioactive Source Inventory and Accountability, Rev.0, Change A

Records and Documents
Health Physics Technical Work Record (TWR) # 12.0-17-001, Evaluation of Exposure to Construction Workers from Radioactive Sources during Construction, 1/18/2017

Procedures and Guidance
V.C. Summer Nuclear Station Functional Area Transition Plan, Health Physics and Safety Services, undated
Excel Spreadsheet, Comparison of RMS Sources to the 10CFR 20 App. C Limit, undated
Excel Spreadsheet, SCEG List of Byproduct Sources [RMS Sources], undated
V.C. Summer Nuclear Station Functional Area Transition Plan, Health Physics and Safety Services, Draft Revision

Section 3P05
WO: VS3-ISI-WRP-011, Rev 0
Wesdyne: WDI-STD-1309, "Visual Examination for Pre-service Inspections at AP1000", Rev. 1
SSI Certificate of Qualification: II/MT, II/PT, II-PDI/UT, II/VT-1, II/VT-2, II/VT-3, Steinbauer, dated 01/06/17
SSI Vision Accuity Record: Steinbauer, dated 06/19/16

LIST OF ACRONYMS

10 CFR	Title 10 of the Code of Federal Regulations
ADAMS	Agency Wide Documents Access & Management System
ADS	Automatic Depressurization System
ANI	Authorized Nuclear Inspector
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CAP	Corrective Action Program
CAPAL	Corrective Action, Prevention, and Learning
CB&I	Chicago Bridge and Iron
CES	Carolina Energy Services
CMT	Core Makeup Tank
CMTR	Certified Material Test Report
COL	Combined License
CR	Condition Report
CSDRS	Certified Seismic Design Response Spectra
CV	Containment Vessel
DAS	Diverse Actuation System
DI	Discrete Issue
E&DCR	Engineering and Design Coordination Report
EMC	Electromagnetic Compatibility
EPA	Electrical Penetration Assemblies
EQDP	Equipment Qualification Data Package
EQSR	Equipment Qualification Summary Report
FCAW	Flux Cored Arc Welding
FSAR	Final Safety Analysis Report
GMAW	Gas Metal Arc Welding
GTAW	Gas Tungsten Arc Welding
HFE	Human Factors Engineering
HSI	Human System Interface
IEEE	Institute of Electrical and Electronics Engineers
IHI	Ishikawajima-Harima Heavy Industries Co, Ltd
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
IRC	Issue Review Committee
IRWST	In-containment Refueling Water Storage Tank
ISI	Inservice Inspection
ISV	Integrated System Validation
ITAAC	Inspections, Tests, Analyses, and Acceptance Criteria
NCV	Non-cited Violation
N&D	Nonconformance and Disposition Reports
NDE	Nondestructive Examination
NPF	Nuclear Power Facility
NRC	Nuclear Regulatory Commission
NUREG	NRC Technical Report Designation
PARS	Publically Available Records
PCD	Principal Closure Document

PMS	Protection and Safety Monitoring System
PQR	Procedure Qualification Records
PT	Penetrant Testing
PXS	Passive Core Cooling System
QA	Quality Assurance
QAPD	Quality Assurance Program Document
QC	Quality Control
RCS	Reactor Coolant System
Rev.	Revision
RG	Regulatory Guide
RP	Radiation Protection
RRS	Required Response Spectra
RV	Reactor Vessel
SCE&G	South Carolina Electric and Gas
SG	Steam Generator
SMAW	Shielded Metal Arc Welding
SSC	Structures, Systems, and Components
SSE	Safe-Shutdown Earthquake
TRS	Test Response Spectra
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing/Examination
VT	Visual Examination
WEC	Westinghouse Electric Company
WPS	Welding Procedure Specification

ITAAC INSPECTED

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.	Inspection will be conducted of the as-built components as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built components identified in Table 2.1.2□1 as ASME Code Section III.
14	2.1.02.02b	2.b) The piping identified in Table 2.1.2-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.	Inspection will be conducted of the as-built piping as documented in the ASME design reports.	The ASME code Section III design reports exist for the as-built piping identified in Table 2.1.2-2 as ASME Code Section III.
15	2.1.02.03a	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.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for nondestructive examination of pressure boundary welds.
16	2.1.02.03b	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.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for nondestructive examination of pressure boundary welds.
20	2.1.02.05a.ii	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.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
91	2.2.01.02a	2.a) The components identified in Table 2.2.1-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements.	Inspection will be conducted of the as-built components as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built components identified in Table 2.2.1-1 as ASME Code Section III.
93	2.2.01.03a	3.a) Pressure boundary welds in components identified in Table 2.2.1-1 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for non□destructive examination of pressure boundary welds.
96	2.2.01.04a.ii	4.a) The components identified in Table 2.2.1-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	ii) Impact testing will be performed on the containment and pressure-retaining penetration materials in accordance with the ASME Code Section III, Subsection NE, to confirm the fracture toughness of the materials.	ii) A report exists and concludes that the containment and pressure-retaining penetration materials conform with fracture toughness requirements of the ASME Code Section III.
99	2.2.01.05.ii	5. The seismic Category I equipment identified in Table 2.2.1□1 can withstand seismic design basis loads without loss of structural integrity and safety function.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of structural integrity and safety function.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
101	2.2.01.06a.i	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.	i) Type tests, analyses, or a combination of type tests and analyses will be performed on Class 1E equipment located in a harsh environment.	i) A report exists and concludes that the Class 1E equipment identified in Table 2.2.1-1 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.
105	2.2.01.06d.i	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) Type tests, analyses, or a combination of type tests and analyses will be performed on non□Class 1E electrical penetrations located in a harsh environment.	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.
127	2.2.02.05a.ii	5.a) The seismic Category I components identified in Table 2.2.2□1 can withstand seismic design basis loads without loss of safety function.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I components will be performed.	ii) A report exists and concludes that the seismic Category I components can withstand seismic design basis loads without loss of safety function.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
160	2.2.03.02b	2.b) The piping identified in Table 2.2.3-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.	Inspection will be conducted of the as-built piping as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as□built piping identified in Table 2.2.3-2 as ASME Code Section III.
161	2.2.03.03a	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.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for nondestructive examination of pressure boundary welds.
162	2.2.03.03b	3.b) Pressure boundary welds in piping identified in Table 2.2.3-2 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for nondestructive examination of pressure boundary welds.
166	2.2.03.05a.ii	5.a) The seismic Category I equipment identified in Table 2.2.3□1 can withstand seismic design basis loads without loss of safety function.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis dynamic loads without loss of safety function. For the PXS containment recirculation and IRWST screens, a report exists and concludes that the screens can withstand seismic dynamic loads and also post-accident operating loads, including head loss and debris weights.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
260	2.2.05.05a.ii	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.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function.
514	2.5.01.03d	3.d) The DAS has electrical surge withstand capability (SWC), and can withstand the electromagnetic interference (EMI), radio frequency (RFI), and electrostatic discharge (ESD) conditions that exist where the DAS equipment is located in the plant.	Type tests, analyses, or a combination of type tests and analyses will be performed on the equipment.	A report exists and concludes that the DAS equipment can withstand the SWC, EMI, RFI and ESD conditions that exist where the DAS equipment is located in the plant.
535	2.5.02.07b	7.b) The PMS provides process signals to the DDS through isolation devices.	Type tests, analyses, or a combination of type tests and analyses of the isolation devices will be performed.	A report exists and concludes that the isolation devices prevent credible faults from propagating into the PMS.
538	2.5.02.07e	7.e) The PMS receives signals from non-safety equipment that provides interlocks for PMS test functions through isolation devices.	Type tests, analyses, or a combination of type tests and analyses of the isolation devices will be performed.	A report exists and concludes that the isolation devices prevent credible faults from propagating into the PMS.
598	2.6.03.02.ii	2. The seismic Category I equipment identified in Table 2.6.3□1 can withstand seismic design basis loads without loss of safety function.	ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed.	ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
740	3.2.00.01b	1. The HFE verification and validation program is performed in accordance with the HFE verification and validation implementation plan and includes the following activities: b) HFE design verification	b) An evaluation of the implementation of the HFE design verification will be performed.	b) A report exists and concludes that: HFE design verification was conducted in conformance with the implementation plan and includes verification that the HSI design is consistent with the AP1000 specific design guidelines (compiled as specified in the third acceptance criteria of design commitment 3) developed for each HSI resource.
741	3.2.00.01c.i	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) (i) An evaluation of the implementation of the integrated system validation will be performed.	c) (i) A report exists and concludes that: The test scenarios listed in the implementation plan for integrated system validation were executed in conformance with the plan and noted human deficiencies were addressed.
760	3.3.00.02a.i.a	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.a) A report exists which reconciles deviations during construction and concludes that the as-built containment internal structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
761	3.3.00.02a.i.b	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.b) A report exists which reconciles deviations during construction and concludes that the as-built shield building structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.
762	3.3.00.02a.i.c	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.c) A report exists which reconciles deviations during construction and concludes that the as-built structures in the non-radiologically controlled area of the auxiliary building, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
763	3.3.00.02a.i.d	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.d) A report exists which reconciles deviations during construction and concludes that the as-built structures in the radiologically controlled area of the auxiliary building, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.
764	3.3.00.02a.ii.a	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	ii) An inspection of the as□built concrete thickness will be performed.	ii.a) A report exists that concludes that the containment internal structures as-built concrete thicknesses conform to the building sections defined in Table 3.3-1.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
766	3.3.00.02a.ii.c	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	ii) An inspection of the as□built concrete thickness will be performed.	ii.c) A report exists that concludes that as-built concrete thicknesses of the non-radiologically controlled area of the auxiliary building sections conform to the building sections defined in Table 3.3-1.
777	3.3.00.03a	3. Walls and floors of the nuclear island structures as defined on Table 3.3□1 except for designed openings or penetrations provide shielding during normal operations.	Inspection of the as-built nuclear island structures wall and floor thicknesses will be performed.	a) A report exists and concludes that the shield walls and floors of the containment internal structures as defined in Table 3.3-1, except for designed openings or penetrations, are consistent with the concrete wall thicknesses provided in Table 3.3-1.
780	3.3.00.03d	3. Walls and floors of the nuclear island structures as defined on Table 3.3□1 except for designed openings or penetrations provide shielding during normal operations.	Inspection of the as-built nuclear island structures wall and floor thicknesses will be performed.	d) A report exists and concludes that the shield walls and floors of the radiologically controlled area of the auxiliary building as defined in Table 3.3-1 except for designed openings or penetrations are consistent with the concrete wall thicknesses provided in Table 3.3-1.