



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

November 10, 2016

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 05200027/2016003,
05200028/2016003

Dear Mr. Jones:

On September 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection for Virgil C. Summer Nuclear Station Units 2 and 3. The enclosed inspection report documents the inspection results, which the inspectors discussed on October 18, 2016, with Thomas D. Gatlin, Vice President of Nuclear Support Services, V.C. Summer 2 & 3, along with 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.

Based on the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response (if any), will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the public without redaction.

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

Sincerely,

/RA/

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

Docket Nos: 5200027, 5200028

License Nos: NPF-93, NPF-94

Enclosure: NRC Inspection Report (IR) 05200027/2016003, 05200028/2016003
w/attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers: 5200027
5200028

License Numbers: NPF-93
NPF-94

Report Numbers: 05200027/2016003
05200028/2016003

Licensee: South Carolina Electric & Gas

Facility: Virgil C. Summer Nuclear Station Unit 2
Virgil C. Summer Nuclear Station Unit 3

Location: Jenkinsville, SC

Inspection Dates: July 1, 2016 through September 30, 2016

Inspectors: J. Christensen, Construction Inspector, DCO
P. Donnelly, Resident Inspector, DCO
B. Griman, Construction Inspector, DCO
N. Karlovich, Resident Inspector, DCO
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K. Steddenbenz, Construction Inspector, DCO
J. Vasquez, Construction Inspector, DCO

Accompanying Personnel: Malcolm Patterson, Reliability and Risk Analyst, NRO
Odunayo Ayegbusi, Reliability and Risk Analyst, NRO

Approved by: Michael Ernstes, Chief
Construction Inspection Branch 3
Division of Construction Oversight

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200027/2016003, 05200028/2016003; 07/01/2016 through 09/30/2016; Virgil C. Summer Nuclear Station Unit 2, Virgil C. Summer Nuclear Station Unit 3, routine integrated inspection report.

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. The NRC's program for overseeing the construction of commercial nuclear power reactors is described in Inspection Manual Chapter (IMC) 2506, "Construction Reactor Oversight Process General Guidance and Basis Document."

A. NRC-Identified and Self Revealed Findings

No findings were identified.

B. Licensee-Identified Violations

No findings were identified.

REPORT DETAILS

Summary of Plant Construction Status

During this reporting period in Unit 2, the reactor pressure vessel was lifted into the cavity and positioned on the reactor vessel supports. The CA03 and CA02 modules were lifted and placed into containment. The CA03 module is the rounded outer wall of the in-containment refueling water storage tank, and the CA02 module is the wall connecting CA03 to the pressurizer compartment. The CA02 module also supports the passive residual heat removal heat exchanger.

In Unit 3, the second half of the CA20 module was lifted into the nuclear island and the three connecting walls were braced for welding. The CA20 module houses the spent fuel pool, radioactive waste tanks, and components of the residual heat removal system. Work continued on the structural attachment of CA20 to the embedment plates installed in the nuclear island basemat. The shield building walls making up the rounded portion of the auxiliary building were placed up to elevation 92'6".

1. CONSTRUCTION REACTOR SAFETY

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

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

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

- 65001.11-02.05 - Nondestructive Examination
- 65001.11-02.07 - Offsite Fabrication of Assemblies
- 65001.F-02.02 - Fabrication Records Review

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

The inspectors also reviewed three base material and two weld filler metal Certified Material Test Reports (CMTRs) associated with H01 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.

1A02 (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:

- 65001.11-02.05 - Nondestructive Examination
- 65001.B-02.06 - Records
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) fabrication records associated with the assembly of the upper equipment hatch cover (H01). Specifically, the inspectors reviewed nondestructive examination (NDE) records of pressure boundary welds to verify conformance with the requirements of ASME Section III, Subsection NE

The inspectors reviewed final NDE reports to verify NDE was performed and found acceptable by the proper certification level of NDE personnel and in accordance with applicable procedures and sections of the ASME Code. Specifically, the inspectors reviewed 10 magnetic particle examination records to verify the proper method, flux type, yoke lifting power, visible light source, and surface temperature requirements were met, and there were no unacceptable defects on the surface of the weld. The inspectors also reviewed two radiography examination records to verify the density and sensitivity measurements were within the allowable ranges, and there were no rejectable indications in the welds.

b. Findings

No findings were identified.

1A03 (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

- 65001.11-02.05 - Nondestructive Examination
- 65001.B-02.06 - Records

The inspectors reviewed final radiography examination for the welds between the extension sleeves and containment vessel for penetrations P19, P20, and P22 (weld numbers VS2-RNS-MLK-001-FW-003, VS2-RNS-MLK-002-FW-002, and VS2-SFS-MLK-003-FW-002 respectively). Specifically, the inspectors reviewed the radiography examination reports and the associated film to verify (1) the density and sensitivity measurements were within the allowable ranges, (2) the examinations were performed and reviewed by qualified NDE Level II personnel, and (3) there were no rejectable indications in accordance with the acceptance criteria of ASME Section III.

b. Findings

No findings were identified.

1A04 (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 2 containment vessel upper equipment hatch cover (H01) to verify that fracture toughness requirements were met in accordance with ASME Code Section II, Part A, SA 738 and Part C, SFA 5.28, as well as Section III, Division 1, Subsection NE. Specifically, the inspectors reviewed three CMTRs for the base metal and two 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.

1A05 (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:

- 65001.03-02.03 - Installation and Welding
- 65001.03-02.06 - Nondestructive Examination (NDE)
- 65001.03-02.07 - Review of Records

- 65001.03-02.08 - Problem Identification and Resolution
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.B-02.05 - Inspection
- 65001.B-02.06 - Records
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors performed direct inspection of fit-up, in-process welding and non-destructive testing of passive core cooling (PXS) system piping. The inspectors reviewed field weld VS2-PXS-PLW-029-2 associated with pipe PXS-L112B, which is part of the in-containment refueling water storage tank (IRWST) injection line B to Direct Vessel Injection (DVI) line B as listed in Table 2.2.3-2 of Appendix C of the V.C. Summer Unit 2 COL. The inspectors observed the quality control (QC) fit-up inspection to determine if the attributes of inspection plan F-S562-001, "Piping - Weld Joint Inspection - ASME Section III Code, Classes 1, 2 & 3," were properly measured and the as-fit joint met design and code requirements. The inspectors then observed in-process welding on the pipe to determine if the requirements of weld procedure WPS-1-8.8T01 were met including purge gas, preheat and interpass temperatures, voltage, amperage, and confirmed that in-process welding was protected from the elements. The inspectors reviewed records to determine if:

- the welder was qualified to perform the weld;
- the weld filler material met ASME Section II and design specification requirements; and
- the pipe material met ASME Section III and design specification requirements.

The inspectors then observed QC administer a visual inspection and a liquid penetrant test on the weld and independently assessed the results to determine if the requirements of ASME Section III, Subsection ND were met. The inspectors reviewed QC inspection reports S562-16-10191 and V2-16-A-P-0095 to determine if the records generated by QC met the requirements of ASME Section V. Finally, the inspectors reviewed NonConformance and Disposition Report (N&D) VS2-PXS-GNR-000078 to determine if the engineering disposition met code requirements.

b. Findings

No findings were identified.

1A06 (Unit 2) ITAAC Number 2.5.02.11 (550) / Family 10F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.11 (550). The inspectors used the following NRC IPs/sections to perform this inspection:

- 35007-A13.04.02 - Inspection of Quality Assurance (QA) Program Implementation
- 35007-A7 - Appendix 7, Inspection of Criterion VII – Control of Purchased Material, Equipment, and Service

The inspectors witnessed preventative maintenance performed on Protection and Safety Monitoring System (PMS) cabinets in long term storage. The inspectors observed the maintenance to verify that preventative maintenance was performed in accordance with an approved test procedure and that the procedure followed manufacturer recommendations. The inspectors observed the maintenance to verify that the maintenance was performed in a controlled environment using calibrated equipment. The inspectors observed the storage to confirm that items were controlled and preserved appropriately for long-term storage. The specific cabinets observed were:

- VS2-PMS-JD-MTCA01
- VS2-PMS-JD-MTCB01
- VS2-PMS-JD-MTCC01
- VS2-PMS-JD-MTCD01

The inspectors measured dimensions of one of the cabinets, VS2-PMS-JD-MTCB01 to verify that they were in accordance with vendor documentation. The inspectors reviewed receipt documentation, including corrective action documents, for the four cabinets tested to verify that the receipt record matched what was received.

b. Findings

No findings were identified.

1A07 (Unit 2) 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.F-02.02 - Fabrication Records Review

The inspectors reviewed the receipt inspection packages and associated CMTRs for vertical panels 1D and 1E of the shield building wall (located between azimuths 92.5 degrees and 152.5 degrees at elevations from 146'10" to 149'6") to verify whether the materials met the chemical and mechanical testing requirements contained in site specifications and American Society for Testing and Materials (ASTM) and American Welding Society (AWS) standards. Engineering and Design Coordination Reports (EDCRs) were reviewed to verify whether the dispositions were in accordance with codes and standards. The specific CMTRs reviewed were:

- 12NNI129, 1" plate material A572 Grade 50, heat number 2505469, dated 2/27/2014
- 12NNI143, 3/4" plate material A572 Grade 50, heat number 2506065, dated 2/27/2014
- 14NNI009, Lenton couplers size #7, Lot L7904, dated 5/19/2015
- 15NNI029, welding material E81T1-NiIM-JH4, 0.045", heat 14164424, dated 12/17/2015

- 15NNI001, welding material E91T1-GM-H4, 0.045", heat 10053269, dated 5/19/2015
- 13NNI145, deformed wire 3/4 ", heat 20246890, dated 3/1/2014
- 13NNI175, welding material ER70S-3 H4, heat 082T125277, dated 3/1/ 2014
- 13NNI099, welding material F8A4-ENi4-Ni4, heat/Lot 09326096282/ME044032, dated 3/1/2014
- 15NNI003, Lenton couplers size #11, Lots L8089/L8112, dated 5/18/2015
- 14NNI004, 1"/1.5"/2" plate material A572 Grade 50, heat number 3508534, dated 8/23/2014
- 14NNI005, 2" plate material A572 Grade 50, heat number 3508602, dated 8/23/2014

The inspectors reviewed weld travelers in the package to verify traceability, and Nonconformance and Disposition Reports (N&Ds) in the package to verify that disposition was in accordance with applicable codes and standards. The inspectors also performed independent measurements on a sample of dimensions on panels 1D and 1E.

b. Findings

No findings were identified.

1A08 (Unit 2) ITAAC Number 3.3.00.02a.ii.a (764) / Family 01A and 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 3.3.00.02a.ii.a (764). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.A.02.02 - Installation Records Review

The inspectors reviewed survey records of the as-built distance between the reactor vessel cavity module (CA04) and the adjacent walls of the CA01 module from elevation 83'-0" to 98'-0". Specifically, the inspectors looked at the results of the north and west reactor vessel cavity walls to determine if they met the requirements of Appendix C of the V.C. Summer Unit 2 Combined License (COL), Table 3.3-1, as modified by license Amendment 29 [ML15216A258]. The inspectors also reviewed concrete wet density test results from the 6A concrete placement from elevation 87'-0" to 98'-0", which encompassed the area between the CA04 and CA01 modules for the reactor vessel cavity. These records were reviewed to determine if the UFSAR density requirements for general shielding design were met. Finally, the inspectors reviewed nuclear construction and startup procedure (NCSP) 03-24, "Field Surveying," to determine if the survey program method and controls used to verify the as-built dimensions were adequate to determine if the as-built condition conformed to the licensing basis.

b. Findings

No findings were identified.

1A09 (Unit 2) ITAAC Number 3.3.00.03b (778) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03b (778). 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.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed survey records and concrete density records associated with the shield building cylinder. Specifically, the inspectors reviewed survey results of the as-built steel composite shield building panels from elevation 100'-0" to 123'-6" from column line N to Q to determine if they met the requirements of Appendix C of V.C. Summer Unit 2 COL, Table 3.3-1. In addition, the inspectors reviewed the concrete wet and equilibrium density results for the concrete placed in the shield building from elevation 96'-6" to 111'-6" from column line N to Q to determine if the UFSAR density requirements for general shielding design were met. Finally, the inspectors reviewed procedure APP-GW-IT-001, "Guidelines for Concrete Wall and Slab Thickness Measurements," to determine if the survey data reviewed met the frequency and location of measurements required to show conformance with the ITAAC.

b. Findings

No findings were identified.

1A10 (Unit 2 and Unit 3) ITAAC Number 3.7.00.01 (841) / Family 16F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.7.00.01 (841). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.16-02.01 - Design Procedures
- 65001.16-02.02 - Design Input
- 65001.16-02.03 - Design Documents
- 65001.16-02.04 - Design Analysis
- 65001.F-02.01 - Design Document Review
- 65001.F-02.04 - General QA Review

The inspection team reviewed the principal closure document for the D-RAP ITAAC to confirm that all components from the AP1000 Design Control Document, Tier 1, Table 3.7–1 had been included in its scope. To maximize the extent of the review, the team designed a stratified sample of documents. Procurement documents and installation drawings relevant to various disciplines were selected. Both safety-related and non-

safety related structures, systems and components (SSC's) were selected, based in part on risk importance measures.

For each of the components in the sample, the staff reviewed the design documents to confirm that the appropriate programs had been used in their preparation. The inspectors reviewed the signatures of the design documents and installation drawings to verify that they were made by qualified personnel. The inspectors also reviewed the qualification process to verify that each person was adequately qualified to sign the documents.

The team also examined procedures used for design review, design document verification, document control, and qualification of personnel to verify thoroughness and completion. The inspectors selected a sample of design disciplines and reviewed specific competencies required for qualification to verify that the personnel were adequate to be signing the documents.

a. Findings

No findings were identified.

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

a. Inspection Scope

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

- 65001.11-02.05 - Nondestructive Examination
- 65001.11-02.07 - Offsite Fabrication of Assemblies
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) fabrication records associated with the assembly of the lower equipment hatch cover (H02) 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 the ASME Form N-2 code data report (manufactured and certified by IHI for CB&I Services, now WECTEC) to determine whether the hatch cover was traceable, fabricated to the correct dimensions and design thicknesses, hydrostatically tested at a pressure of 59 psig, and approved by an Authorized Nuclear Inspector (ANI).

The inspectors also reviewed four base material and two weld filler metal CMTRs associated with H02 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.

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

a. Inspection Scope

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

- 65001.11-02.05 - Nondestructive Examination
- 65001.B-02.06 - Records
- 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 equipment hatch cover (H02). Specifically, the inspectors reviewed nondestructive examination (NDE) records of pressure boundary welds to verify conformance with the requirements of ASME Section III, Subsection NE

The inspectors reviewed final NDE reports to verify NDE was performed and found acceptable by the proper certification level of NDE personnel and in accordance with applicable procedures and sections of the ASME Code. Specifically, the inspectors reviewed 13 magnetic particle examination records to verify the proper method, flux type, yoke lifting power, visible light source, and surface temperature requirements were met, and there were no unacceptable defects on the surface of the weld. The inspectors also reviewed two radiography examination records to verify the density and sensitivity measurements were within the allowable ranges, and there were no rejectable indications in the welds.

b. Findings

No findings were identified.

1A13 (Unit 3) ITAAC Number 2.2.01.04a.ii (96) / Family 06F

a. Inspection Scope

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

- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed IHI Corporation welding records associated with pressure boundary materials of the Unit 2 containment vessel lower equipment hatch cover (H02) to verify that fracture toughness requirements were met in accordance with ASME Code Section II, Part A, SA 738 and Part C, SFA 5.28, as well as Section III, Division 1, Subsection NE. Specifically, the inspectors reviewed four CMTRs for the

base metal and two 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.

1A14 (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
- 65001.01-02.06 - Records
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.05 - Inspection
- 65001.B-02.06 - Records

The inspectors reviewed welding activities associated with the B plates which are welded to the bottom of the CA05 module in order to secure the module to the basemat in the V.C. Summer Unit 3 containment building. The CA05 module includes the chemical and volume control system (CVS), access tunnel, and passive core cooling system (PXS)-B walls. The inspectors sampled three of the B plates to determine if the welds were visually acceptable, were made using an acceptable procedure, and were made by a qualified welder using the correct filler material. The inspectors reviewed CMTRs for filler metal used in the weld to determine if the material was manufactured and tested in accordance with specifications TR-5.5-E8018-C1, "Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding," and TR-5.29-E81T1-K2M-JH4, "Specification for Low-Alloy Steel Electrodes for Flux Cored Arc Welding."

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed the receipt inspection package and associated CMTRs for submodule CA01-04 to verify whether the materials met the specified testing

requirements, in accordance with ASTM standards. CA01-04 is a corner piece that contains portions of the following walls:

- East wall of the refueling cavity, from elevation 97'9" to 135'3"
- East wall of the reactor vessel cavity, from elevation 83' to 98'
- South wall of the east steam generator compartment, from elevation 87'6" to 153"

The specific CMTRs reviewed were:

- FN-0563, welding material TG-S2209, heat FQM116, dated 5/15/2014
- FN-0599, welding material DW-309LP, heat F4M22114141, dated 3/5/2015
- PNQS-14-038, plate material A572 Grade 60, heat/Lot # 6556204/KC9316, dated 4/28/2014
- PNQS-14-041, plate material A572 Grade 60, heat/Lot # 6551914/KC9316, dated 7/9/2014

The inspectors reviewed weld travelers in the receipt package to verify traceability.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.B-02.04 - Production Controls
- 65001.F-02.04 - General QA Review

The inspectors observed in-process machine gas metal arc welding (GMAW) on seam weld No. VS3-CA01-VWK-800092-FW-0910-02, which is located between submodules CA01-09 and CA01-10. The weld joined two A572 Grade 60 carbon steel plates which are part of the plant north wall of the east steam generator room. The inspectors also observed an in-process fill pass of machine GMAW on seam weld VS3-CA01-VWK-800093-FW-1009-03. This weld was a dissimilar metal weld between A240 stainless steel and carbon steel plates with a backing bar, located on the opposite side of the wall of weld VS3-CA01-VWK-800092-FW-0910-02. Specifically, the inspectors reviewed drawings, welding procedures, weld records, and material issue records to determine if the identification of welds and welders was maintained for each weld and the welders were qualified. In addition, the inspectors verified welding parameters such as amperage, voltage, pre-heat temperature, shielding gas flow rate, shielding gas type, and that the appropriate type of filler metal used was in accordance with welding procedure specifications. The inspectors also reviewed a material transfer request to verify that the backing bar of the dissimilar metal weld was in accordance with the welding procedure.

b. Findings

No findings were identified.

1A17 (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 in-process machine GMAW on seam weld No. VS3-CA01-VWK-800117-FW-2122-07, which is located between submodules CA01-21 and CA01-22. The weld joined two duplex stainless steel plates which are part of the west wall of the refueling cavity room. Specifically, the inspectors reviewed drawings, welding procedures, weld records, and material issue records to determine if the identification of welds and welders was maintained for each weld and the welders were qualified. In addition, the inspectors verified welding parameters such as amperage, voltage, pre-heat temperature, shielding gas flow rate, shielding gas type, and that the appropriate type of filler metal used was in accordance with welding procedure specifications.

b. Findings

No findings were identified.

1A18 (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.F-02.02 - Fabrication Records Review

The inspectors reviewed the receipt inspection package and associated CMTRs for submodules CA01-33, and CA01-34 to verify whether the materials met the specified testing requirements, in accordance with ASME standards.

CA01-33 is a portion of the north-east wall of the pressurizer compartment. The CMTRs reviewed were:

- 1030302 Lot 1, A992 channels material, dated 4/11/2014
- IN-1959, welding material DW-60, dated 5/20/2014

CA01-34 is a corner piece that contains portions of the south-east wall of the pressurizer compartment (elevation 118'-6" to 160'-0") and the north wall of west steam generator compartment (elevation 103'-0" to 153'-0"). The CMTRs reviewed were:

- PNQS-14-284, plate material A572 Grade 60, dated 11/06/2014
- PNQS-14-283, plate material A572 Grade 60, dated 11/06/2014
- PNQS-14-050, plate material A572 Grade 60, dated 04/28/2014
- KN0003, welding material TG-S70SA1, dated 04/15/2014
- IN-1999, welding material DW-588, dated 06/13/2015

The inspectors performed direct measurements and reviewed the condition of submodule CA01-33 in the laydown yard. The inspectors inspected the submodule in the laydown yard to verify that the shape, size and dimensions conformed to the approved specifications and design drawings. The inspectors reviewed design changes to verify their disposition was adequate and that they were reflected in the submodule received. The inspectors performed direct measurements and reviewed the condition of submodule CA01-34 in the laydown yard. The inspectors inspected the submodule in the laydown yard to verify that the shape, size and dimensions conformed to the approved specifications and design drawings.

b. Findings

No findings were identified.

1A19 (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.F-02.04 - General QA Review

The inspectors reviewed the receipt inspection package and associated certified material test reports (CMTRs) for submodules CA01-13 and CA01-16 to verify whether the materials met the specified testing requirements, in accordance with ASME standards.

CA01-13 is a corner piece that contains portions of the north-west wall of the east steam generator compartment (elevation 94'-0" to 153'-0") and the north-east wall of the reactor vessel cavity (elevation 83'-0" to 98'-0"). The CMTRs reviewed were:

- FN-0583A, welding material TG-S2209, dated 6/11/2014
- NSW004-14-05-16430-1, stud material A108 Grade 1010 through 1020, dated 5/08/2014

- 6693-3, plate material A572 Grade 60, dated 8/21/2014

CA01-16 is a corner piece that contains portions of the north-west wall of the reactor vessel cavity (elevation 83'-0" to 98'-0") and the north-east wall of the west steam generator compartment (elevation 103'-0" to 153' 0"). The CMTR's reviewed were:

- 6573-2, plate material A572 Grade 60, dated 5/13/2014
- 6692-1, plate material A572 Grade 60, dated 8/21/2014
- CMTR-CA01-VS3-003, plate material A240 S32101, dated 10/28/2014
- FN-0590A, welding material TG-S3009L, dated 6/18/2014

The inspectors performed direct measurements and reviewed the condition of submodule CA01-13 in the laydown yard. The inspectors inspected the submodule in the laydown yard to verify that the shape, size and dimensions conformed to the approved specifications and design drawings.

b. Findings

No findings were identified.

1A20 (Unit 3) ITAAC Number 3.3.00.02a.i.b (761) / Family 01F

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.B-02.04 - Production Controls
- 65001.F-02.04 - General QA Review

The inspectors reviewed welding activities associated with the attachment panels 2J and 2H for the V.C. Summer Unit 3 shield building. These panels are located between elevations 103' 6" and 113'6". The inspectors witnessed in-process welding and verified that welding was performed by a qualified weld operator using the correct filler material per the weld specification. The inspectors also reviewed the weld operator's qualification documentation to verify that the weld operator was qualified in accordance with AWS D1.1. Inspectors observed that adequate preheating was performed and that the weld operator maintained welding parameters within allowed ranges. The inspectors reviewed a CMTR of E71T1M filler material to verify it was in accordance with the specification for shield building carbon steel electrodes. Inspectors also observed that the shielding gas type and flow rate were in accordance with the welding specification.

b. Findings

No findings were identified.

1A21 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors reviewed welding activities associated with the basemat attachment brackets for the CA20 module in the V.C. Summer Unit 3 auxiliary building. The attachment brackets are bolted into the basemat at elevation 66'-6" and then welded to the CA20 module. The inspectors observed in-process welding of two of the brackets to determine if the welders appropriately fit-up, pre-heated, and welded the brackets. The inspectors reviewed documentation to determine if the welders were qualified and used the correct filler material. The inspectors reviewed CMTRs for the filler metal used in the weld to determine if the material was manufactured and tested in accordance with specification TR-5.29-E81T1-K2M-JH4, "Specification for Low-Alloy Steel Electrodes for Flux Cored Arc Welding."

b. Findings

No findings were identified.

1A22 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.01-02.01 - Procedures
- 65001.01-02.06 - Records
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors observed in-process activities associated with the concrete placement in the Unit 3 auxiliary building. The inspectors observed placements of the J-1 line from the 4 line to the shield building and the 4 line from the I line to the J-1 line from elevation 66'6" to 82'6". Specifically, inspectors observed the placement to determine if:

- placement drop distances did not exceed specification requirements;
- self-consolidating concrete was not segregating as it flowed through the forms;
- batch tickets listed the proper mix and location and the transport time was within specification limits; and
- quality control maintained adequate oversight of the placement.

The inspectors performed a record review of concrete temperature, slump, air content and unit weight tests. The inspectors reviewed project specifications and procedures associated with the concrete batch plant and discussed batching operations with operators, supervisors, and quality assurance personnel to determine if the batch plant was being operated and controlled within project specifications, procedures, and applicable codes. The inspectors reviewed testing and calibration records associated with the water, ice, aggregate, and cement scales to verify that all measuring equipment associated with the batching process was maintained and calibrated at the specified frequencies. The inspectors also reviewed the storage and transportation processes of all concrete constituents to verify that the materials were being stored and transported in manner that was not detrimental to the materials and prevented contamination and segregation. The inspectors reviewed the operations' software to determine if batch water and ice were adjusted to account for the moisture content of the aggregates since the stockpiles were exposed to the elements. The inspectors reviewed National Ready Mixed Concrete Association (NRMCA) certification records for the concrete delivery trucks.

b. Findings

No findings were identified.

1A23 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F-02.01 - Design Document Review
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors observed and reviewed the installation of reinforcing steel from elevation 66'6" to 82'-6" on the J-1 wall between the CA20 module and the shield building in the auxiliary building of Unit 3. The inspectors observed reinforcing steel placement and reviewed applicable design drawings and specifications to determine whether structural concrete work was being performed in accordance with design specifications and approved procedures. Specifically, the inspectors verified:

- structural concrete design and construction was accomplished under controlled conditions and in accordance with applicable procedures, specifications, drawings, and approved procedures;
- key building critical dimensions and materials satisfied design specifications, requirements, and relevant ITAAC;

- deviations from the design due to as-built conditions were identified and documented appropriately;
- records reflected that completed work met design specifications and acceptance criteria;
- reinforcing steel installation was controlled and performed in accordance with the applicable specifications, codes, drawings, and procedures; and
- reinforcing steel was located properly in the structures, secured, free of excess rust, and had proper clearances.

b. Findings

No findings were identified.

1A24 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.B-02.04 - Production Controls
- 65001.F-02.04 - General QA Review

The inspectors observed in-process machine welding (GMAW) for weld No. VS3-CA20-VWK-164-FW-1112-001, located between submodules CA20-11 and CA20-12. The inspectors also observed in-process machine welding (GMAW) for the root of weld No. VS3-CA20-VWK-141-FW-1312-011, located between submodules CA20-12 and CA20-13. Each weld joined two carbon steel submodules which form part of the J2 wall in the auxiliary building. The J2 wall is located plant south of the containment building. Specifically, the inspectors reviewed drawings, welding procedures, weld records, and material issue records to determine if the identification of welds and welders was maintained for each weld and the welders were qualified. In addition, the inspectors verified welding parameters such as amperage, voltage, pre-heat temperature, shielding gas flow rate, shielding gas type, and that the appropriate type of filler metal used was in accordance with welding procedure specifications.

b. Findings

No findings were identified.

1A25 (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:

- 65001.01-02.05 - Steel Structures

The inspectors measured the thickness of submodules CA01-33 and CA01-34 (from face plate to face plate) to verify that they were in accordance with the requirements of Table 3.3-1 of Appendix C of the V.C. Summer Unit 3 COL. These submodules are part of the pressurizer compartment walls and the west steam generator north wall. The thickness was measured in a laydown yard, prior to any future welding and concrete pours.

b. Findings

No findings were identified.

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

1P01 Construction QA Criterion 10

a. Inspection Scope

This inspection applies to both VCS Units 2 & 3. The inspectors reviewed the enhanced inspection process being performed by the licensee on all pipe spools provided by CB&I Laurens to verify the adequacy and completeness of the inspections. The inspectors observed the licensee's QC personnel performing dimensional accuracy measurements and ultrasonic thickness tests on a pipe spool to determine if the pipe spool met the requirements of the design specifications, specifically Westinghouse specifications VS2-PLW-Z0-001, "Piping Class Sheets and Standard Details," and VS2-GW-P0-007, "AP1000 Specification for Shop Fabricated Piping." These tests included minimum wall thickness, ovality, bend angle, bend offset, slope, and configuration on pipe spools. Specifically, the inspectors witnessed these measurements on pipe spool VS2-VES-PLW-03W-1. The inspectors reviewed the calibrations for measuring and test equipment (M&TE) used during the performance of these inspections to verify that the equipment was within calibration date. The inspectors also witnessed QC personnel using a calibrated instrument block to perform calibration checks on the ultrasonic instrument used to measure pipe wall thickness.

The inspectors reviewed N&D's issued by the licensee's personnel to determine if they adequately documented discrepancies found during pipe spool inspections. The inspectors then reviewed a sample of 12 engineering dispositions to N&D's covering 47 pipe spools to verify that the resolutions met NRC regulations and the requirements of ASME BPVC Section III. The inspectors interviewed Westinghouse engineering staff to verify that proper engineering judgment was used in the resolution of discrepancies and to verify that the N&D's and their dispositions would be tracked and attached to the final ASME Section III Code Data Report.

b. Findings

No findings were identified.

1P02 Construction QA Criterion 12

a. Inspection Scope

The inspectors reviewed the licensee's quality assurance implementing documents for controlling M&TE that is used during inspections, tests, and determinations of status of materials, parts, equipment, and components. The inspectors reviewed the documents to determine if they were consistent with the NRC-approved Quality Assurance Program Description and commitments in the Final Safety Analysis Report. The inspectors reviewed the implementing documents to determine if the procedures required:

- use of only calibrated M&TE;
- calibrations performed at prescribed intervals or before use;
- M&TE being calibrated, adjusted, and maintained against reference calibration standards having traceability to nationally recognized standards;
- calibrated M&TE being labeled/tagged/suitably marked or documented;
- tagging and segregating of out-of-calibration M&TE;
- handling and storage requirements for calibrated M&TE; and
- documentation of calibrated items and testing records.

The inspectors reviewed the implementation of the M&TE program. The inspectors reviewed:

- the check-out system for M&TE equipment;
- laboratory calibration equipment used to calibrate M&TE;
- storage and labeling of calibrated M&TE;
- control of out-of-tolerance M&TE;
- investigation requirements when M&TE was found to be out-of-tolerance;
- samples of in-tolerance and out-of-tolerance M&TE; and
- samples of M&TE being calibrated.

b. Findings

No findings were identified.

1P03 Construction QA Criterion 15

a. Inspection Scope

The inspectors verified that non-conforming pipe spools were properly segregated in accordance with licensee procedures. The inspectors verified through observation that all non-conforming pipe spools were segregated and hold tags applied to prevent use while being inspected and dispositioned.

b. Findings

No findings were identified.

1P04 Construction QA Criterion 16

a. Inspection Scope

The inspectors reviewed the licensee's resolutions of corrective action records (CARs) written to document the non-conformances in the pipe spools to verify that the resolutions cover the entire scope of the issues identified in the Part 21 Report issued by CB&I Laurens. The inspectors also verified that the resolutions and action steps identified are in accordance with regulations and the applicable ASME Section III code requirements. Finally, the inspectors reviewed the extent of condition results from the CARs to verify that all items under the scope of the Part 21 have been identified.

b. Findings

No findings were identified.

1P05 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. The inspectors reviewed corrective action program procedures and evaluated implementation of these procedures to determine whether the procedures contained guidance for the following attributes:

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

- conditions adverse to quality were trended to pro-actively identify potential adverse trends and potential common cause problems, and the trending results were reported to management.

Routine Review of Items Entered into the Corrective Action Program

On a routine basis, the inspectors screened a sample of issues entered into the licensee and 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.

During the inspection period, a problem identification and resolution (PI&R) team inspection was conducted on September 12, 2016 through September 16, 2016, the results of which were documented in inspection report 2016007 (ML16293A152). Additionally, a focused inspection of corrective actions associated with non-conforming piping spools is documented in Section 1P04 of this inspection report.

b. Findings

No findings were identified.

1P06 Construction QA Criterion 18

a. Inspection Scope

The inspectors reviewed a sample of audits performed by the licensee of the CB&I Laurens facility for thoroughness and adequacy. The audits that were reviewed were associated with a 10 CFR Part 21 report issued by CB&I Laurens. Some of the audits that were reviewed were performed prior to the 10 CFR Part 21 report and some were performed after the report. The inspectors also reviewed any follow-up actions performed to verify completion and adequacy. The inspectors conducted interviews with CB&I QA personnel that performed the audits of CB&I Laurens to verify the thoroughness of the audits and the results of the findings.

b. Findings

No findings were identified.

4. **OTHER INSPECTION RESULTS**

4OA6 Meetings, Including Exit

Exit Meeting.

On October 18, 2016, the inspectors presented the inspection results to Thomas D. Gatlin, Vice President of Nuclear Support Services, V.C. Summer 2 & 3, 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

SCE&G

Z. Ashcraft, Construction Supervisor
K. Boykin, Employee Concerns Program
K. Brown, Licensing
T. Gatlin, Vice President, Nuclear Support Services
P. Gibbons, Construction Supervisor
A. Harris, Manager, Nuclear Operations
L. Harris, Manager, Quality Systems
T. Herring, Supervisor, Quality Systems
N. Kellenberger, Supervisor, Licensing
B. Reams, Licensing
A. Rice, Manager, Licensing
G. Sanders, Licensing
R. Thompson, Supervisor, Design Engineering
A. Torres, General Manager, Nuclear Construction
W. Trombley, Manager, Maintenance Services
R. Word, Manager, Organization Development and Performance

Westinghouse/WECTEC/Fluor

C. Baucom, WECTEC Licensing & Regulatory Compliance
D. Beauchamp, Quality Director
G. Beltz, Manager, Quality Control
G. Cesare, WEC Engineering
J. Cole, WEC Licensing
S. DiTommaso, WEC Licensing
E. Draper, M&TE/Calibration Lab Supervisor
C. Elliott, Fluor Field Engineering
M. Evans, WEC Engineering
J. Hawkins, Fluor Site Director
M. Klinvex, WEC Licensing
C. Landon, WEC Engineering
S. Larter, Fluor Batch Plant Superintendent
B. McIntyre, WEC Licensing and Nuclear Safety Director
J. Petagno, WEC Engineering
M. Peters, Fluor Batch Plant Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Type</u>	<u>Status</u>	<u>Description</u>
None			

LIST OF DOCUMENTS REVIEWED

Section 1A01

Code Data Reports

Form N-2 Certificate Holders' Data Report for Identical Nuclear Parts and Appurtenances for Serial No. IN-4796, National Board No. 2742, 11/22/2012

Supplemental Information for Form N-2 Certificate Holders' Data Report for Serial No. IN-4796, National Board No. 2742, 11/22/2012

Drawings

225B011, "Detail Drawing of Upper and Lower Equipment Hatches Cover Assembly," Rev. 0

Base Metal Certified Material Test Reports

6013-2 for Heat No. 4-8088 and Lot No. FB095A, 08/27/2010

6013-4 for Heat No. 4-8088 and Lot No. F9227A, 08/27/2010

6033-5 for Heat No. 5-2247 and Lot No. G4366A, 10/28/2010

Filler Metal Certified Material Test Reports

RINJQ-229-1-1 for Heat No. 9D7894(1), 06/04/2012

RINJQ-229-2-2 for Heat No. 9L7977(1), 06/05/2012

Section 1A02

Magnetic Particle Examination Records

MT-004-ACS-WF22-AA-CL

MT-004-ACS-WF22-AA-L1, L2

MT-004-AP-WF22-AA-C

MT-004-BG-WF22-AA-L1, L2

MT-004-BG-WF22-AA-C

MT-004-BP-WF22-AA-C

MT-004-BR-WF22-AA-C

MT-004-EP-WF22-AA-C

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6013-4 for Heat No. 4-8088 and Lot No. F9227A, 08/27/2010

6033-5 for Heat No. 5-2247 and Lot No. G4366A, 10/28/2010

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Calibration Checklist, QC22489-24, "Batch Plant Ice Scale," 12/14/15

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APP-1214-CE-939, "Auxiliary Building Area 4 Embedments Wall J-1 Elevation 66'-6" West View," Rev. 5

APP-1214-CEX-939, "Auxiliary Building Area 4 Embedments Index Wall J-1 Elevation 66'-6" West View," Rev. 5

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VS2-PXS-GNR-000056, "PXS ASME-III piping spools mis-fab 3," Rev. 0

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VS2-RCS-GNR-000013, "VS2-RCS-PLW-580 Spool #2 fabricated out of tolerance," Rev. 0

VS2-RCS-GNR-000038, "ASME III Reactor Coolant System Fabrication Out of Tolerance,"

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VS3-RNS-GNR-000004, "VS3-RNS-PLW-402 Spool #1 fabricated out of tolerance," Rev. 0

VS3-PXS-GNR-000026, "ASME III PXS-Passive Core Cooling System Pipe Spools Fab'd Out of Tolerance," Rev. 0 (for spools VS3-PXS-PLW-291-5, VS3-PXS-PLW-291-6, VS3-PXS-PLW-294-2, VS3-PXS-PLW-295-2, VS3-PXS-PLW-296-3, VS3-PXS-PLW-297-2, VS3-PXS-PLW-297-3, VS3-PXS-PLW-410-2, VS3-PXS-PLW-680-2)

VS3-PCS-GNR-000010, "ASME III Passive Core Cooling System Laurens ASME Pipe Survey," Rev. 0 (for spools VS3-PCS-PLW-451-1, VS3-PCS-PLW-451-2, VS3-PCS-PLW-250-1, VS3-PCS-PLW-454-1)

E&DCR APP-GW-GEF-850126, "APP-GW-PLW-109 Drawing Revision," Rev. 0 (for spools VS3-PCS-PLW-456-1, VS3-PCS-PLW-453-1)

E&DCR APP-GW-GEF-1559, "Exemption to PFI ES-3 Linear Fabrication and PFI ES-24 Bend Angle Tolerance Limits," Rev. 0

Inspection Plan F-S500-004, "Post Receipt Enhanced Inspection of ASME III Pipe and Inline Components," Rev. 0

Section 1P02

Surveillance S-132177-2016-017, "M&TE Issue and Control (Tool Room/Building 56)," dated 3/4/2016

Surveillance S-132177-2016-040, "Acceptability and timeliness of Out of Tolerance M&TE Evaluations," dated 4/25/2016

MS 1.01, "M&TE Procedural System," Rev. 1

MS 1.02, "Calibration Identification Labels, M&TE Identification Numbers, and Inventory," Rev. 1

MS 1.09, "Procurement of M&TE and Calibration Services," Rev. 3

NCSP-03-10, "Measuring and Test Equipment Control," Rev. 4

QA Form 12005, "Checklist for Procurement and M&TE and Calibration Services," Rev. 1

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None

Section 1P04

Part 21 Report 15-0186, "CB&I Laurens ASME III Pipe Spool Fabrication Deficiencies," dated 01/25/2016

CAR 2015-2798, "Fabrication tolerance issues for ASME III pipe spools," dated 07/29/2015

CAR 2015-4320, "Adverse trend in quality of pipe of ASME III pipe," dated 11/18/2015

Section 1P05

None

Section 1P06

Audit V2015-15, "CBI Power Quality Assurance Audit of CBI-Laurens," dated 03/26/2015
Surveillance Report VS 2015-90, "CB&I Laurens Phase Restart Surveillance-Phase I (Limited Work Release)," August 3-6, 2015

Surveillance Report VS 2015-81, "Vendor Surveillance of CBI-Laurens," December 7-10, 2015

Surveillance Report VS 2016-15, "Vendor Surveillance of CBI-Laurens," February 22-25, 2016

Surveillance Report VS 2016-62, "Vendor Surveillance of CBI-Laurens," June 20-23, 2016

ITAAC INSPECTED

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.
162	2.2.03.03b	3.b) Pressure boundary welds in piping identified in Table 2.2.3-2 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
550	2.5.02.11	11. The PMS hardware and software is developed using a planned design process which provides for specific design documentation and reviews during the following life cycle stages: a) Not used b) System definition phase c) Hardware and software development phase, consisting of hardware and software design and implementation d) System integration and test phase e) Installation phase	Inspection will be performed of the process used to design the hardware and software.	A report exists and concludes that the process defines the organizational responsibilities, activities, and configuration management controls for the following: a) Not used. b) Specification of functional requirements. c) Documentation and review of hardware and software. d) Performance of system tests and the documentation of system test results, including a response time test performed under maximum CPU loading to demonstrate that the PMS can fulfill its response time criteria. e) Performance of installation tests and inspections.
760	3.3.00.02a.i.a	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.a) A report exists which reconciles deviations during construction and concludes that the as-built containment internal structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

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.
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
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.
778	3.3.00.03b	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.	b) A report exists and concludes that the shield walls of the shield building 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.
841	3.7.00.01	1. The D-RAP ensures that the design of SSCs within the scope of the reliability assurance program (Table 3.7-1) is consistent with the risk insights and key assumptions (e.g., SSC design, reliability, and availability).	An analysis will confirm that the design of RAP SSCs identified in Table 3.7-1 has been completed in accordance with applicable D-RAP activities.	An analysis report documents that safety-related SSCs identified in Table 3.7-1 have been designed in accordance with a 10 CFR 50 Appendix B quality program. An analysis report documents that non-safety-related SSCs identified in Table 3.7-1 have been designed in accordance with a program that satisfies quality assurance requirements for SSCs important to investment protection.

LIST OF ACRONYMS

ADAMS	Agency Wide Documents Access & Management 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
CAR	Corrective Action Record
CB&I	Chicago Bridge & Iron
CFR	Code of Federal Regulations
CMTR	Certified Material Test Reports
COL	Combined License
CV	Containment Vessel
CVS	Chemical and Volume Control System
DCO	Division of Construction Oversight
E&DCR	Engineering and Design Coordination Report
GMAW	Gas Metal Arc Welding
IHI	Ishikawajima-Harima Heavy Industries Co., Ltd
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
ITAAC	Inspections, Tests, Analysis, and Acceptance Criteria
M&TE	Measuring and Test Equipment
NCSP	Nuclear Construction and Startup Procedure
N&D	Nonconformance and Disposition Report
NDE	Nondestructive Examination
NPF	Nuclear Power Facility
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PI&R	Problem Identification and Resolution
PMS	Protection and Safety Monitoring System
PXS	Passive Core Cooling
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QC	Quality Control
SCE&G	South Carolina Electric & Gas
SSC	Structure, System, or Component
UFSAR	Updated Final Safety Analysis Report
WEC	Westinghouse Electric Company

Letter to R. Jones from Michael Ernstes dated November 9, 2016

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3 - NRC
INTEGRATED INSPECTION REPORTS 05200027/2016003,
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