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

November 5, 2015

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 05200027/2015003, 05200028/2015003

Dear Mr. Jones:

On September 30, 2015, 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 October 20, 2015, with Ms. April Rice, Licensing Manager, along with other members of your staff and consortium staff members.

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 of the NRC's "Rules of Practice," 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 Publically 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).

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

Sincerely,

/RA/

Michael Ernstes, Chief
Construction Projects Branch 4
Division of Construction Projects

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

Enclosure: NRC Inspection Report (IR) 05200027/2015003
and 05200028/2015003
w/Attachment: Supplemental Information

cc w/encl: (See page 3

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Letter to R. Jones from Michael E. Ernstes dated November 5, 2015

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3
NRC INTEGRATED INSPECTION REPORTS 05200027/2015003
AND 05200028/2015003

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200027 5200028
License Numbers:	NPF-93 NPF-94
Report Numbers:	05200027/2015003 05200028/2015003
Licensee:	South Carolina Electric & Gas 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, 2015 through September 30, 2015
Inspectors:	A. Artayet, Senior Construction Inspector, DCI T. Chandler, Resident Inspector, DCP P. Donnelly, Resident Inspector, DCP D. Harmon, Construction Inspector, DCI P. Heher, Senior Construction Project Inspector, DCP J. Hoellman, General Engineer (NSPDP), DNRL R. Jervey, Construction Inspector, DCI N. Karlovich, Resident Inspector, DCP T. Nazario, Senior Construction Resident Inspector, DCP C. Oelstrom, Construction Inspector, DCI C. Smith, Construction Inspector, DCI S. Smith, Senior Construction Inspector, DCI
Approved by:	Michael Ernstes, Branch Chief Construction Projects Branch 4 Division of Construction Projects

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200027/2015003, 05200028/2015003; 07/01/2015 through 09/30/2015; 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 resident inspectors and announced Inspections, Tests, Analysis, and Acceptance Criteria (ITAAC) inspections by both regional and resident inspectors. The Nuclear Regulatory Commission's (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 inspection period, the licensee continued constructing the auxiliary building walls up to elevation 100' in Units 2 and 3. Fabrication of floors continued in the Unit 2 and 3 non-radiological areas of the auxiliary building. The steam generator and refueling canal module (CA01) was placed inside Unit 2 containment vessel. Additionally, Unit 2 shield building reinforced concrete to steel-composite transition modules were installed and secured in place. Installation of reinforcing steel embed plates, piping, and forms in support of wall placements above elevation 82'6" in the non-radiation area of the auxiliary building. Finally, Unit 2 in-containment refueling water storage tank walls (CA03) continued to be welded and assembled.

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:

- 65001.06-02.02 - Component Welding
- 65001.11-02.01 - Purchase Orders
- 65001.11-02.02 - Storage and Handling
- 65001.11-02.03 - Installation and Welding
- 65001.11-02.05 - Nondestructive Examination
- 65001.11-02.07 - Offsite Fabrication of Assemblies
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors reviewed two Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) American Society of Mechanical Engineers (ASME) N-2 data reports for welded parts of the containment vessel TH4 top head course, and thirteen JFE steel manufacturer Certified Material Test Reports (CMTRs) for plates of the TH4 and TH5 top head courses to verify that the design and material specification requirements for thickness, chemical analysis, mechanical properties, carbon equivalency, and heat treatment were in accordance with the following requirements:

- 2001 Edition including 2002 Addenda of ASME Section III, Subsection NE, Class MC Components;

- Westinghouse (WEC) APP-MV50-Z0-001, AP1000 Containment Vessel Design Specification, Rev. 8; and
- Chicago Bridge and Iron (CB&I) MS-SA-738B-2765, Material Specification for SA-738 Grade B Steel Plate AP1000 Nuclear Containment Vessel (Shell & Head Plate Above Stiffener EL 131'-9), up to 1.75", Rev. 6.

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:

- 65001.06-02.01 - General Installation
- 65001.06-02.02 - Component Welding
- 65001.11-02.03 - Installation and Welding
- 65001.11-02.05 - Nondestructive Examination
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.B-02.05 - Inspection
- 65001.B-02.06 - Records
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed five CB&I field weld travelers for the TH5 top head course and an IHI checklist for two shop welds of TH4 top head course to determine whether the proper reviews and approvals were documented, Quality Control (QC) hold points were signed-off, weld filler metals and welders/welding operators were traceable, and radiographic examinations were conducted in accordance with the requirements of ASME Section III, Subsection NE, Class MC Components. Specifically, the inspectors reviewed:

- one ESAB and two Nippon Steel CMTRs used by CB&I and IHI, respectively, for proper test results of chemical analysis and mechanical properties;
- seventeen CB&I and one IHI Welder and Welding Operator Performance Qualification (WPQ) records for proper essential variable ranges and test results;
- five CB&I and two IHI radiographic reports for proper technique, geometric unsharpness, and signature by a Level II Evaluator; and
- radiographic film quality for seven welds free of defects and proper weld location and identification markings, tolerance of film density and contrast sensitivity using a calibrated densitometer and step wedge comparison film, and sensitivity for #11 wire-type Image Quality Indicator (IQI) used by CB&I and #35 hole-type IQI used by IHI.

In addition, the inspectors reviewed CB&I Nonconformance Report (NCR) VCC-077 to determine whether insufficient preheat of an in-process weld repair area for weld seam C2B-TH5-F was properly identified, documented, and dispositioned with subsequent training of the work crew and magnetic particle examination in accordance with the requirements of the CB&I Quality Assurance Program.

b. Findings

No findings were identified.

1A03 (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 CMTRs for thirteen JFE steel plates of the TH4 and TH5 top head courses, and one ESAB and two Nippon CMTRs for weld filler metals used by CB&I and IHI, respectively, to determine whether the Charpy V-notch and drop weight impact testing results were in accordance with the fracture toughness requirements of the following:

- 2001 Edition including 2002 Addenda of ASME Section III, Subsection NE, Class MC Components;
- WEC APP-MV50-Z0-001, AP1000 Containment Vessel Design Specification, Rev. 8;
- CB&I MS-SA-738B-2765, Material Specification for SA-738 Grade B Steel Plate AP1000 Nuclear Containment Vessel (Shell & Head Plate Above Stiffener EL 131'-9), up to 1.75", Rev. 6;
- CB&I CMS-830-15-SP-54004, Quality Assurance Specification for Welding Materials Nuclear Power Plant Components, Revision 4, dated 09/06/12;
- CB&I CMS-830-15-SP-12046, Welding Material Specification Certification for ENi4 Electrode & ESAB OK Flux 10.72, Revision 5, dated 11/03/10; and
- IHI Drawing No. 026H652, Purchase Specification of Welding Material SFA-5.28 ER80S-G (YM-3N), Rev. 1, dated October 8, 2009.

b. Findings

No findings were identified.

1A04 (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.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.B-02.05 - Inspection
- 65001.B-02.06 - Records

The inspectors observed in-process welding, made a visual inspection of completed welds and reviewed records associated with the attachment of the refueling cavity and steam generator compartment module, CA01, to embed plates at the 83' elevation inside the containment vessel. Specifically, the inspectors observed in-process welding of the module to the P2 and P6 embeds, which supports the south wall of the refueling cavity. The inspectors observed the weld production controls to determine if:

- a weld data sheet had been generated that coordinated the sequence of operations, referenced procedures, and established hold points and inspection signoffs;
- required QC inspections had been signed off prior to welding;
- the weld procedure in use was specified on the weld data sheet and available at the work location;
- the welding environment was in accordance with American Welding Society (AWS) D1.1 section 5.12;
- the joint was pre-heated with a propane torch to insure any moisture trapped between the module and the embed plate was removed prior to welding;
- welding variables specified on the welding procedure specifications (WPS), including voltage and amperage, were within the required limits; and
- the welds were traceable to the welder.

b. Findings

No findings were identified.

1A05 (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:

- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.06 - Record Review
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A.02.02 - Installation Records Review

- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.B-02.02 - Welding Procedure Qualification
- 65001.B-02.05 - Inspection
- 65001.B-02.06 - Records
- 65001.F-02.01 - Design Document Review

The inspectors performed a field inspection of construction activities associated with the Unit 2 shield building from elevation 100' to 103'-6". As part of that inspection, inspectors conducted field measurements, reviewed documents, and interviewed licensee personnel to assess the implementation of the quality assurance (QA) program specific to installation of the shield building structural modules. These activities were performed in order to verify:

- installation of structural modules was completed in accordance with applicable specifications, drawings, and approved procedures;
- key building dimensions, materials, and welding processes satisfied design specifications, requirements, and relevant ITAAC;
- that deviations were being addressed in accordance with procedure requirements; and
- nonconforming conditions identified by the licensee were being appropriately resolved.

Specifically, inspectors performed a field inspection and reviewed work packages, associated design drawings, engineering and design coordination reports (E&DCRs), nonconformance and disposition reports (N&Ds), welding procedure specifications, and nondestructive examination results for welded shield building panels at azimuth 205.68 (panels 01J to 01K) and azimuth 325.68 (panels 01N to 01P). Inspectors also observed installation of reinforcing steel and quality control inspections for the torquing of mechanical couplers associated with the reinforced concrete and steel composite connection for the shield building.

b. Findings

No findings were identified.

1A06 (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 inspected two panels of course 12 of the shield building, VS2-1208-SC-12C and VS2-1208-SC-12K, to verify that shape, size, dimensions, type, and grade of material conformed to the approved design drawings. The inspectors reviewed the

document packages for each panel to verify that appropriate materials were used and material testing requirements were met. The inspectors reviewed a sample of the design changes against the specifications for the modules.

b. Findings

No findings were identified.

1A07 (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:

- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 65001.F-02.01 - Design Document Review
- 65001.F-02.02 - Fabrication Records Review

The inspectors performed an inspection of V.C. Summer Unit 2 CA20 sub-modules for the radiologically controlled sections of the auxiliary building walls after the module was constructed and placed into the nuclear island. The inspectors reviewed documents to assess the implementation of the portion of the QA program specific to design and fabrication activities, and to determine whether:

- design and fabrication was completed in accordance with applicable specifications, drawings, and approved procedures;
- key building critical dimensions, materials, and separation satisfied design specifications, requirements, and relevant ITAAC;
- licensee records established an adequate basis for the acceptance of ITAAC with design and fabrication attributes;
- fabrication activities were performed by qualified personnel;
- records reflected that completed work meets design specifications and acceptance criteria;
- the licensee confirmed that components inspected conformed to design drawings and that deviations were being addressed in accordance with procedure requirements;
- nonconforming conditions identified by the licensee were being appropriately resolved; and
- the licensee, vendor, and fabricator personnel had established an effective method for tracking, evaluating, and dispositioning changes or modifications to the component designs.

The inspectors reviewed various documents, including enhanced QA inspection reports and CMTRs for the following CA20 sub-modules:

- CA20_5, located at the intersection of column line J-1 and column line 4
- CA20_12, located at the intersection of column line J-2 and column line 3

- CA20_18, located at the intersection of column line K-2 and column line 2
- CA20_19, wall section along column line K-2 between column lines 2 and 3
- CA20_24, wall section along column line 3 between column lines K-2 and L-2

The inspectors reviewed CMTRs associated with each sub-module for Nelson studs, weld filler material, and plate material to determine if the materials were in conformance with the applicable codes and standards. The inspectors reviewed engineering and design coordination reports, nonconformance reports, and corrective action reports associated with the sub-modules to determine whether:

- the licensee was identifying problems at an appropriate threshold and entering them into the corrective action program;
- nonconforming material was adequately identified and segregated; and
- deviations from requirements were effectively resolved.

b. Findings

No findings were identified.

1A08 (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 - 02.05 - Steel Structures
- 65001.A - As-Built Attributes for structures, systems, and components (SSCs) associated with ITAAC
- 65001.A.02.01 - Observation of In-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F-02.01 - Design Document Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors performed a field inspection of construction activities associated with radiologically controlled area of the auxiliary building composite floor module for V.C. Summer Unit 2 site. The inspectors conducted field measurements, reviewed documents, and interviewed licensee personnel to assess the implementation of the portion of the QA program specific to design and fabrication activities. The inspectors' objectives were to:

- determine design and fabrication was completed in accordance with applicable specifications, drawings, and approved procedures;
- determine key building critical dimensions, materials, and separation satisfied design specifications, requirements, and relevant ITAAC;
- determine the licensee confirmed that components inspected conformed to design drawings and that deviations were being addressed in accordance with procedure

requirements;
- determine nonconforming conditions identified by the licensee were being appropriately resolved; and
- observe, review, or assess as-built SSCs to determine if the as-built configuration is in accordance with the final design of the facility and meet the associated ITAAC.

The inspectors performed independent measurements on the composite floor system of the demineralizer/filter area, (Room 12251), between column lines 4 to 5 and I to J-1. This floor is made up of a structural module (CA22) that is installed in advance of concrete placement. This module consists of structural elements that will connect integrally with the concrete that will be placed directly on this structural module. The inspectors verified attributes of both the fabrication of the structural module and the installation of rebar as part of a reinforced concrete floor.

Specifically, the inspectors measured the following module components: headed stud spacing and dimensions, module plate thickness, channel used to construct module braces, and brace spacing. The inspectors also observed reinforcing steel placement, general module assembly, and stud welds. The inspectors reviewed various documents, such as module design drawings and specifications, to verify:

- the shape, size, dimensions, type, and grade of material conformed to the approved specifications and design drawings;
- design documents associated with ITAAC adequately defined the design and arrangement of the sub-module fabrication;
- applicable construction specifications, installation specifications, shop and field drawings, and construction procedures correctly identified and documented sub-modules for review and approval by responsible engineering personnel;
- fit-up tolerances for length, depth, and straightness of structural members were as specified; and
- critical attributes of as-built SSC conformed to the design.

The inspectors observed installation activities for the floor section associated with penetrations and steel reinforcement, including north-south and east-west top and bottom reinforcing steel bars, shear reinforcement, 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 calculations, and had proper clearances; and
- reinforcing steel was secured and free of concrete or excessive rust.

b. Findings

No findings were identified.

1A09 (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:

- 65001.01-02.05 - Steel Structures
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.B-02.06 - Records

The inspectors observed the welding of weld VS2-CA20_VWK-229-FW-19. This weld was between two submodules associated with the spent fuel floor, CA20_47 and CA20_48. The inspectors observed the weld fit up, gas flow, gas composition, filler metal, amperage, and voltage to verify they were within the tolerances of the welding procedure. The inspectors reviewed an associated N&D to verify its adequacy. The inspectors reviewed the qualifications of the welder. The inspectors reviewed the Ultrasonic Testing (UT) and Magnetic Particle Examination (MT) NDE which took place for the weld to verify that it was acceptable.

b. Findings

No findings were identified.

1A10 (Unit 2) 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:

- 65001.01-02.01 - Procedures
- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

Inspectors reviewed the licensee's report for concrete thickness of the shield wall between the reactor vessel cavity and the reactor coolant drain tank (RCDT) room. This is the E-W wall (parallel with column line 7) from elevation 71'-6" up to 83'-0".

As part of this inspection, the inspectors reviewed procedures to ensure that survey activities related to safety-related work were approved and provided adequate guidance to the individuals performing safety-related activities. Specifically, inspectors reviewed procedures to ensure that the approved procedures described administrative and procedural controls, approved work processes, and inspection requirements; prescribed

acceptable methods to ensure that the survey data properly documented the as-built condition; ensured that equipment used for data collection was calibrated and maintained; and that individuals performing surveying activities were qualified to perform their work.

Inspectors also reviewed the dimension(s) listed in the Updated Final Safety Analysis Report (UFSAR) associated with the shield wall between the reactor vessel cavity and the RCDT room, performed a field walk down, and verified that the results documented in the records met the design specifications and acceptance criteria listed.

Finally, inspectors performed a review of associated nonconformances to develop an understanding of the types of issues encountered; verified that conditions were properly evaluated; and that evaluations were performed by qualified personnel.

b. Findings

No findings were identified.

1A11 (Unit 2) ITAAC Number 3.3.00.02a.ii.b (765) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.b (765). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors measured the thickness of the installed shield building course panels at multiple points between the Q line and N line walls to verify that the thickness of the steel composite/concrete connection was in accordance with Table 3.3-1 of Tier 1. This measurement was taken before concrete was poured.

b. Findings

No findings were identified.

1A12 (Unit 2) ITAAC Number 3.3.00.02a.ii.d (767) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.d (767). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors performed a field inspection of the radiologically controlled sections of the auxiliary building walls at elevation 135', including walls from CA20.

The inspectors sampled the following CA20 sub-modules at elevation 135':

CA20_02, wall section along column line J-1 between column lines 2 and 3
CA20_03, located at the intersection of column line J-1 and column line 3
CA20_04, wall section along column line J-1 between column lines 3 and 4
CA20_06, wall section along column line 2 between column lines J-1 and J-2
CA20_17, wall section along column line 4 between column lines J-2 and K-2
CA20_21, wall section along column line K-2 between column lines 3 and 4
CA20_22A, wall section along column line K-2 between column lines 3 and 4
CA20_26, wall section along column line 2 between column lines L-2 and N
CA20_28, wall section along column line L-2 between column lines 3 and 4

This field sampling was to verify that each section met the wall thickness requirements stated in Appendix C, Table 3.3-1 of the V.C. Summer Unit 2 Combined License Document and to provide reasonable assurance that the acceptance criteria of the ITAAC were met. This verification included an independent inspection to determine whether the as-built thickness conforms to the final design and that the actual dimension was accurately documented in quality records. The inspectors verified that each as-built section met the wall thickness required in Table 3.3-1 by measuring the plate separation of each CA20 submodule.

The inspectors reviewed N&Ds related to the non-conforming conditions at various locations on the northern portion of the east wall of the spent fuel pool along with the survey report. Additionally, the inspectors reviewed the straightening and repositioning execution plan and observed the in-process repair.

b. Findings

No findings were identified.

1A13 (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:

- 65001.01-02.01 - Procedures
- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.A.02.02 - Installation Records Review

The inspectors reviewed records associated with the placement and thickness for the shield wall between the reactor vessel cavity and the RCDT room inside containment. This is the E-W wall (parallel with column line 7) from elevation 71'-6" up to 83'-0". Specifically, the inspectors reviewed a sample of concrete density records, survey reports, and concrete testing reports to verify that:

- the wall thicknesses were within the allowable tolerances listed on Tier 1, Table

3.3-1 of the V.C. Summer Unit 2 UFSAR;
- field data was properly translated into permanent records;
- the concrete density was greater than that required in the design specification documents; and
- the walls met the radiation shielding requirements.

b. Findings

No findings were identified.

1A14 (Unit 3) ITAAC Number 2.1.03.11 (86) / Family 05F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.11 (86). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.05-02.07 - Records Review

The inspectors reviewed the contents of CMTRs for the results of impact testing certified by the Doosan Heavy Industries and Construction Company for the Unit 3 reactor pressure vessel. The review determined whether the initial fracture toughness and upper-shelf energy requirements of the ferritic steel forging materials in the beltline region that includes the upper shell, lower shell (active core area), and transition ring were not less than 75 ft-lbs for fracture toughness properties in accordance with the following requirements:

- 1998 Edition including 2000 Addenda of the American Society of Mechanical Engineers (ASME) Section III Code, Division 1, Subsection NB, Class 1 Components;
- ASME Section II, Part A, SA-508, Grade 3, Class 1, Specification for Quenched and Tempered Vacuum-Treated Carbon and Alloy Steel Forgings for Pressure Vessels;
- Westinghouse Electric Company, APP-MV01-Z0-101, Design Specification for AP1000 Reactor Vessel;
- 10 CFR 50 Appendix G, Section IV, Fracture Toughness Requirements; and
- Unit 3 Updated Final Safety Analysis Report.

Weld filler metal fracture toughness requirements for Kobe Steel, Ltd. CMTR KN-1482 for SAW wire/flux combination of heat/lot numbers GZ005499727/OLGY610 with trade names US-40N/PF-H55SN, and Chosun Welding Co., Ltd. CMTR TR-P1066 for shielded metal arc welding (SMAW) electrode of lot/heat numbers P244017/SA44017, with trade name LC-400G were previously reviewed and documented in IR 05200027/2015-002.

b. Findings

No findings were identified.

1A15 (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:

- 65001.06-02.02 - Component Welding
- 65001.11-02.01 - Purchase Orders
- 65001.11-02.02 - Storage and Handling
- 65001.11-02.03 - Installation and Welding
- 65001.11-02.05 - Nondestructive Examination
- 65001.11-02.07 - Offsite Fabrication of Assemblies
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors reviewed two IHI ASME N-2 data reports for welded parts of the containment vessel TH4 top head course. They also reviewed twenty-four Kobe steel manufacturer CMTRs for plates of the TH4 and TH5 top head courses and S9 and S10 upper ring shell courses. The inspectors verified that the design and material specification requirements for thickness, chemical analysis, mechanical properties, carbon equivalency, and heat treatment were in accordance with the following requirements:

- 2001 Edition including 2002 Addenda of ASME Section III, Subsection NE, Class MC Components;
- WEC APP-MV50-Z0-001, AP1000 Containment Vessel Design Specification, Rev. 8; and
- CB&I MS-SA-738B-2765, Material Specification for SA-738 Grade B Steel Plate AP1000 Nuclear Containment Vessel (Shell & Head Plate Above Stiffener EL 131'-9), up to 1.75", Rev. 6.

b. Findings

No findings were identified.

1A16 (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:

- 65001.06-02.01 - General Installation
- 65001.06-02.02 - Component Welding
- 65001.11-02.01 - Purchase Orders
- 65001.11-02.02 - Storage and Handling
- 65001.11-02.03 - Installation and Welding

- 65001.11-02.05 - Nondestructive Examination
- 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.B-02.05 - Inspection
- 65001.B-02.06 - Records
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors reviewed ten CB&I field weld travelers for the TH5 top head course and S9 and S10 upper ring shell courses, and one IHI checklist for two shop welds of the TH4 top head course. They determined whether the proper reviews and approvals were documented, QC hold points were signed-off, weld filler metals and welders/welding operators were traceable, and radiographic examinations were conducted in accordance with the requirements of ASME Section III, Subsection NE, Class MC Components. Specifically, the inspectors reviewed:

- an ESAB and Nippon Steel CMTR used by CB&I and IHI, respectively, for proper test results of chemical analysis and mechanical properties;
- forty-four CB&I and one IHI Welder and WPQ records for proper essential variable ranges and test results;
- five CB&I and two IHI radiographic reports for proper technique, geometric unsharpness, and signature by a Level II Evaluator; and
- radiographic film quality for seven welds free of defects and proper weld location and identification markings, tolerance of film density and contrast sensitivity using a calibrated densitometer and step wedge comparison film, and sensitivity for #11 wire-type IQI used by CB&I and #35 hole-type IQI used by IHI.

In addition, the inspectors observed machine flux core arc welding (FCAW) on the external portion of the double-V groove weld TH4-GG in the vertical position joining top head plates C3-A9 to -A13 to determine whether the last cover pass was controlled by welding operator ID-No. 498 in accordance with the requirements of CB&I's Welding Procedure Specification E91TG-H4, Rev. 11.

b. Findings

No findings were identified.

1A17 (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 CMTRs for twenty-four Kobe steel plates of the TH4 and TH5 top head courses and upper ring S9 and S10 courses, and an ESAB and Nippon CMTR

for weld filler metals used by CB&I and IHI, respectively, to determine whether the Charpy V-notch and drop weight impact testing results were in accordance with the fracture toughness requirements of the following:

- 2001 Edition including 2002 Addenda of ASME Section III, Subsection NE, Class MC Components;
- WEC APP-MV50-Z0-001, AP1000 Containment Vessel Design Specification, Rev. 8;
- CB&I MS-SA-738B-2765, Material Specification for SA-738 Grade B Steel Plate AP1000 Nuclear Containment Vessel (Shell & Head Plate Above Stiffener EL 131'-9), up to 1.75", Rev. 6;
- CB&I CMS-830-15-SP-54004, Quality Assurance Specification for Welding Materials Nuclear Power Plant Components, Revision 4, dated 09/06/12;
- IHI Drawing No. 026H652, Purchase Specification of Welding Material SFA-5.28 ER80S-G (YM-3N), Rev. 1, dated October 8, 2009; and
- CB&I CMS-830-15-SP-12043, Welding Material Specification for Low-Alloy Steel Covered Electrode (AA9018), Revision 3, dated 09/17/10.

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 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.05 - Steel Structures
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.B-02.05 - Inspection
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01 - Design Document Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors performed a field inspection of construction activities associated with containment internal structures sub-modules for V.C. Summer Unit 3 site. The inspectors conducted field measurements, reviewed documents, and interviewed licensee personnel to assess the implementation of the QA program specific to design and fabrication activities. The inspectors' objectives were to:

- determine design and fabrication was completed in accordance with applicable specifications, drawings, and approved procedures;
- determine key building critical dimensions, materials, and separation satisfied design specifications, requirements, and relevant ITAAC;

- determine the licensee confirmed that components inspected conformed to design drawings and that deviations were being addressed in accordance with procedure requirements;
- determine nonconforming conditions identified by the licensee were being appropriately resolved; and
- observe, review, or assess as-built SSCs to determine if the as-built configuration is in accordance with the final design of the facility and meet the associated ITAAC.

The inspectors performed independent measurements on the following structural sub-modules for the proposed Unit 3 containment internal structures:

- the north-south wall east of the Chemical and Volume Control System (CVS) room (CA05-07); and
- the north-south wall east of the CVS room (CA05-08).

Specifically, the inspectors measured the following sub-module components: headed stud spacing and dimensions, module plate thickness, angle and channel used to construct module trusses, and truss spacing. The inspectors also observed reinforcing steel placement, general module assembly, and stud welds. The inspectors reviewed various documents, such as sub-module design drawings and specifications, to verify:

- the shape, size, dimensions, type, and grade of material conformed to the approved specifications and design drawings;
- design documents associated with ITAAC adequately defined the design and arrangement of the sub-module fabrication;
- applicable construction specifications, installation specifications, shop and field drawings, and construction procedures correctly identified and documented sub-modules for review and approval by responsible engineering personnel;
- fit-up tolerances for length, depth, and straightness of structural members were as specified; and
- critical attributes of as-built SSC conform to the design.

b. Findings

No findings were identified.

1A19 (Unit 3) ITAAC Number 3.3.00.02a.i.b (761) / Family 01F

a. Inspection Scope

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

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

- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01 - Design Document Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors reviewed quality records and performed direct inspection of construction activities associated with the shield building basemat for V.C. Summer Unit 3. Specifically, the inspectors observed construction activities associated with sections of shield building basemat as well as the annulus tunnel floors on the east side of the shield building between elevations 78'-0" and 82'-6".

For the shield building basemat section listed above, the inspectors reviewed a sample of drawings included in the work packages and specifications to determine whether:

- the documents adequately defined the final design and arrangement of these SSCs;
- critical attributes associated with the ITAAC were correctly identified and documented for review and approval by responsible engineering personnel; and
- the documents were consistent with the design commitments and requirements of the technical specifications, the UFSAR, and code commitments.

The inspectors observed installation activities for the shield building basemat section associated with steel reinforcement, including horizontal and vertical reinforcing steel bars, shear reinforcement, 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 calculations, and had proper clearances; and
- reinforcing steel was secured and free of excessive rust.

The inspectors also performed a field inspection of the concrete placement activities associated with this section of the shield building basemat at the V.C. Summer Unit 3 site. The inspectors performed direct observations, interviewed licensee personnel, and reviewed associated documentation from the work package for the concrete placement to ensure the following:

- pre-placement planning and training was completed as required to assure good quality construction and to protect against unplanned construction joints;
- pre-placement inspections were performed by QC prior to concrete placement;
- the pump truck used to deliver the concrete to the point of placement was of suitable size and condition for the work;
- 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;
- placement drop distances did not exceed specification requirements and did not result in segregation;
- special attention was given to areas of high reinforcing steel congestion to preclude areas of voids or honeycombing;

- records were produced and reviewed, and indicated mix, location, time placed, water additions, and temperature of the concrete mix and ambient conditions;
- in process testing for concrete temperature, slump, air content, and unit weight were being determined at the proper location and frequency as required in the design specifications; and
- test specimen samples, for concrete strength determination, were sampled at the required location and frequency and are cured in accordance with specified requirements.

b. Findings

No findings were identified.

1A20 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.06 - Record Review
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.02 - Installation Records Review

The inspectors performed direct inspection of construction activities associated with the non-radiologically controlled area of the Auxiliary Building for V.C. Summer Unit 3. Specifically, the inspectors observed concrete placement for exterior wall 11 between column lines L and Q, and wall Q between the Shield Building and column line 11 from elevation 82’-6” to 100’-0”.

The inspectors observed concrete placement activities to determine whether:

- 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;
- concrete was maintained within acceptable temperature ranges during the placement;
- inspection during placement was performed as required; and
- records were produced, reviewed, and indicate mix, location, time placed, water additions, temperature of the concrete mix, and ambient conditions.

Inspectors also reviewed concrete testing results to determine whether concrete temperature, slump, air content, and unit weight were determined at the proper location and frequency as required by procedures and specifications. The inspectors reviewed a

sample of corrective action reports to verify:

- that the licensee was identifying problems at an appropriate threshold and entering them into the corrective action program; and
- if any differences between the as-built and as-designed SSCs were documented and dispositioned in accordance with approved modification or change procedures.

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:

- 65001.01-02.03 - Key Site Parameters
- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors performed a visual inspection of a sample of safety related, seismic category I structural sub-modules associated with module CA20. The field activities applied the guidance of IP 65001.01, “Inspection of ITAAC-Related Foundation and Buildings” and IP 65001.A, “Inspection of the As-Built Attributes for Structures, Systems, and Components (SSCs) Associated with ITAAC.” The inspectors compared the as-built sub-modules to their respective design drawing to independently verify whether these sub-modules conformed to the approved design, i.e. whether any structural deviations were present that had not been dispositioned by the licensee. Specifically, the inspectors examined the following sub-modules:

- CA20_03, located at the intersection of column line J-1 and column line 3
- CA20_04, wall section along column line J-1 between column lines 3 and 4
- CA20_19, wall section along column line K-2 between column lines 2 and 3
- CA20_20, located at the intersection of column line K-2 and column line 3
- CA20_24, wall section along column line 3 between column lines K-2 and L-2
- CA20_27, wall section along column line L-2 between column lines 2 and 3

The inspectors verified that the sample of sub-module fabrication and welding met the applicable design drawings and general notes by performing visual observations and independently measuring a sample of structural welds to determine whether:

- as-fabricated condition matched the applicable design drawings with respect to layout and dimensions;
- shear studs, faceplates, steel channels, angle iron, rebar, mechanical threaded

couplers, and pipe sleeves were installed in accordance with drawings;
- an adequate marking system was used to maintain the identity of material from storage to installation; and
- structural steel was protected from corrosion caused by exposure to weather.

The inspectors reviewed engineering and design coordination reports, rework associated with unsat inspection reports, and corrective action reports associated with the sub-modules to determine whether:

- the licensee was identifying problems at an appropriate threshold and entering them into the corrective action program;
- nonconforming material was adequately identified and segregated; and
- deviations from requirements were effectively resolved.

The inspectors observed rework activities associated with sub-modules CA20_03, CA20_20, CA20_24, and CA20_27. The inspectors observed in-process and completed work to verify that the reworked condition was in conformance with the applicable design requirements. The inspectors also performed independent measurements of the sub-modules' components including:

- headed stud spacing and dimensions;
- module plate thickness;
- angle and channel used to construct module trusses; and
- truss spacing.

b. Findings

No findings were identified.

1A22 (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:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors verified that the thickness of the shield wall between reactor vessel cavity and RCDT room in the V.C. Summer Unit 3 nuclear island (NI) was in accordance with the COL Appendix C, Table 3.3-1 "Definition of Wall Thickness for Nuclear Island Buildings, Turbine Building, and Annex Building". The inspectors performed a walk-down of the Unit 3 NI and conducted an independent, direct measurement of the dimension between the north wall of the reactor vessel cavity and the south wall of the RCDT room.

b. Findings

No findings were identified.

1A23 (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:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed independent field measurements for column line K wall from column line 7.3 to column line 11, column line L wall from shield building to column line 11, and for column line 7.3 wall from column line I to the shield building from elevation 66'6" to elevation 82'6." They determined if the wall thickness requirements of UFSAR Tier 1 Table 3.3-1 were met. The inspectors also reviewed wall thickness survey data for column line K wall from column line 7.3 to column line 11 and column line 7.3 from column line I to the shield building from elevation 66'6" to elevation 82'6" to determine if the wall thickness requirements of UFSAR Tier 1 Table 3.3-1 were met.

b. Findings

No findings were identified.

1A24 (Unit 3) ITAAC Number 3.3.00.02a.ii.d (767) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.d (767). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed a field inspection of construction activities for the radiologically controlled sections of the auxiliary building walls between elevation 82'-6" and 100', including walls from CA20.

The inspectors sampled the following six CA20 wall segments at various elevations:

- CA20_03, wall section at the intersection of column line J-1 and column line 3
- CA20_04, wall section along column line J-1 between column lines 3 and 4
- CA20_19, wall section along column line K-2 between column lines 2 and 3
- CA20_20, wall section at the intersection of column line K-2 and column line 3
- CA20_24, wall section along column line 3 between column lines K-2 and L-2
- CA20_27, wall section along column line L-2 between column lines 2 and 3

This field sampling was to verify that each section met the wall thickness requirements stated in Appendix C Table 3.3-1 of the V.C. Summer Unit 3 Combined License Document and to provide reasonable assurance that the acceptance criteria of the ITAAC were met. This verification included an independent inspection to determine whether the as-built thickness conforms to the required concrete thickness of the building sections as specified in applicable specifications, drawings, and approved procedures. The inspectors performed independent measurements of the modules' face plate thickness and the distance between the two face plates for the listed CA20 sub-modules and verified that each as-built section met the wall thickness required in Table 3.3-1.

b. Findings

No findings were identified.

1A25 (Unit 3) ITAAC Number 3.3.00.03c (779) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03c (779). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed records associated with the placement and thickness of concrete walls from the non-radiation area of the auxiliary building. Specifically, the inspectors reviewed concrete density records, survey reports, and concrete testing reports for column line 7.3 wall from column line I to the shield building from elevation 66'-6" to 82'6" and column line K wall from column line 7.3 to 11 from elevation 66'-6" to 82'6". The inspectors verified that:

- the wall thicknesses were within the allowable tolerances listed on Tier 1, Table 3.3-1 of the V.C. Summer Unit 2 UFSAR;
- field data was properly translated into permanent records;
- the concrete density was greater than that required in the design specification documents; and
- the walls met the radiation shielding requirements.

b. Findings

No findings were identified.

1A26 (Unit 3) ITAAC Number 3.3.00.03c (779) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03c (779). The inspectors used the following NRC IPs/sections to perform this inspection:

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

The inspectors reviewed records associated with the placement of concrete walls from the non-radiation area of the auxiliary building. Specifically, the inspectors reviewed concrete density records, and concrete testing reports for column line L wall from column line 11 to the shield building from elevation 66'-6" to 82'6". The inspectors verified that:

- field data was properly translated into permanent records;
- the concrete density was greater than that required in the design specification documents; and
- the walls met the radiation shielding requirements.

b. Findings

No findings were identified.

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

1P01 Quality Assurance Implementation, Appendix 11. Inspection of Criterion XI – Test Control (IP35007)

a. Inspection Scope

The inspectors observed in-process fabrication and inspection of field work and destructive testing of weldable rebar couplers associated with test plan APP-CR01-T1-002, Supplemental Coupler Weld Testing Requirements. The purpose of the testing was to demonstrate the as-designed coupler welds will perform satisfactorily in service. The results of this test program will, in part, support V.C.S License Amendment Request 15-08. The inspectors observed in-process welding to determine if the requirements of the applicable WPS were being met including: voltage; amperage; shielding gas; and preheat and interpass temperatures.

The inspectors also reviewed the drawings, weld procedures specification, and supporting procedure qualification records to determine whether the welding activities were performed in accordance with the design specifications, design drawings, test plan and applicable code requirements in the AWS D1.4, Structural Welding Code - Reinforcing Steel.

The inspectors performed a direct inspection of a CB&I Quality Control inspector performing visual examinations of welds on several completed test specimens. The inspectors verified that the QC inspector ensured the weld met the requirements of Quality Inspection Plan F-S561-005, Structural Welding of Reinforcing Steel - Visual - AWS D1.4, including:

- acceptable weld profile;

- free from overlap, undercut, cracks and spatter;
- complete fusion between weld metal, base metal and successive passes;
- size and length met drawing requirements; and
- weld was traceable to the welder.

The inspectors observed rebar being torqued into the couplers and reviewed equipment calibration records to verify that equipment being used for this work was properly calibrated. Finally, the inspectors observed tensile pull tests of the coupler test specimens. The inspectors observed the in-process testing to determine if traceability of the couplers was maintained, the couplers were properly installed in the machine, the couplers were loaded per the test plan, and the results were properly documented.

b. Findings

No findings were identified.

1P02 Quality Assurance Implementation, Appendix 16, Inspection of Criterion XVI – Corrective Action (IP 35007)

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 in a timely manner commensurate with the safety significance of the issue;

- provisions for escalating to higher management those corrective actions that are not adequate or not timely; and
- conditions adverse to quality were trended to proactively identify potential adverse trends and potential common cause problems, and the trending results were reported to management.

Routine Review of Items Entered into the Corrective Action Program
On a routine basis, the inspectors screened a sample of issues entered into the licensee and the Engineering, Procurement, and Construction (EPC) consortium's corrective action programs. The inspectors attended several weekly management review committee meetings at the site and held discussions with licensee and EPC consortium personnel responsible for the screening and correction of the issues to determine if:

- the licensee and the EPC consortium 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 EPC consortium 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.

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4OA6 Meetings, Including Exit

.1 Exit Meeting.

On October 20, 2015, the inspectors presented the inspection results to Ms. April Rice, Licensing Manager, along with other licensee and consortium 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. Arnall, Concrete Manager, CB&I
Z. Ashcraft, Construction Supervisor, SCE&G
C. Baucom, Licensing, CB&I
B. Bedford, ITAAC Manager, WEC
K. Brown, Licensing, SCE&G
J. Catledge, Construction, SCE&G
J. Cole, Licensing Manager, WEC
M. Engel, Site Design Engineering Manager, WEC
P. Gibbons, Construction Supervisor, SCE&G
N. Kellenburger, Acting Supervisor, ITAAC, SCE&G
B. McClung, Quality Control Manager, CB&I
B. Mcyntire, Licensing Director, WEC
M. Petri, Welding, CB&I
D. Powell, Field Engineering, CB&I
A. Rice, Manager, Licensing SCE&G
J. Robinson, Site Engineering Manager, WEC
R. Troficanto, Engineering, SCE&G
B. Tune, Construction, SCE&G
W. Turnbow, Construction, CB&I
B. Wood, Project Director, CB&I
R. Word, Manager OD&P, SCE&G
K. Young, Construction Supervisor, SCE&G
P. Young, Engineering Manager, WEC

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
None			

LIST OF DOCUMENTS REVIEWED

[2503 Documents]

Section 1A01
IHI ASME Data Report Form N-2 for the Unit 2 TH-4 course plates C2-A3 (S/N IN-5114) with National Board No. 2979, dated October 18, 2013
IHI ASME Data Report Form N-2 for the Unit 2 TH-4 course plates C2-A20 (S/N IN-5131) with National Board No. 2997, dated November 19, 2013
CB&I Drawing 1, Sheet 2, titled Top & Bottom Head Layout, Rev. 3
CB&I Drawing PC02, Sheet 31, Process Control Drawing - Unit 2, Top Head TH4 thru TH6, Rev. 0

CMTR 6456-1, Heat No. 6-9565 Plate No. MD396 C, JFE Steel Corporation for SA-738 Grade B, TH-4 plate ID mark C2-A3-1, February 14, 2013
CMTR 6458-2, Heat No. 6-9568 Plate No. LL428 A, JFE Steel Corporation for SA-738 Grade B, TH-4 plate ID mark C2-A3-2, February 22, 2013
CMTR 6456-7, Heat No. 6-0300 Plate No. MY424 B, JFE Steel Corporation for SA-738 Grade B, TH-4 plate ID mark C2-A20-1, February 14, 2013
CMTR 6458-10, Heat No. 6-0300 Plate No. A2063 B, JFE Steel Corporation for SA-738 Grade B, TH-4 plate ID mark C2-A20-2, February 22, 2013
CMTR 6477-7, Heat No. 6-2704 Plate No. D9170 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B7, May 24, 2013
CMTR 6477-8, Heat No. 6-0300 Plate No. AR107 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B8, May 24, 2013
CMTR 6477-11, Heat No. 6-0301 Plate No. AR105 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B11, May 24, 2013
CMTR 6477-16, Heat No. 6-2706 Plate No. D2419 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B16, May 24, 2013
CMTR 6477-19, Heat No. 6-9568 Plate No. CB136 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B19, May 24, 2013
CMTR 6477-20, Heat No. 6-2706 Plate No. D9168 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B20, May 24, 2013
CMTR 6477-21, Heat No. 6-2706 Plate No. D2417 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B21, May 24, 2013
CMTR 6477-23, Heat No. 6-2706 Plate No. D2416 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B23, May 24, 2013
CMTR 6477-24, Heat No. 6-2706 Plate No. CT391 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B24, May 24, 2013

Section 1A02
IHI Radiographic Examination Records and film review:
RT-004-WC2-A3-1
RT-004-WC2-A20-1

CB&I Weld Travelers:
C2B-TH5-E to join plates C2-B8 to -B21
C2B-TH5-F to join plates C2-B7 to -B8
C2B-TH5-M to join plates C2-B11 to -B23
C2B-TH5-T to join plates C2-B20 to -B24
C2B-TH5-AA to join plates C2-B19 to -B16

CB&I Reports of Radiographic Examination and film review:
V.C.S-U2-2015-RT-024 for weld C2B-TH5-E
VCS-U2-2015-RT-029 for weld C2B-TH5-E (repair)
VCS-U2-2015-RT-025 for weld C2B-TH5-F
VCS-U2-2015-RT-031 for weld C2B-TH5-M
VCS-U2-2015-RT-034 for weld C2B-TH5-T
VCS-U2-2015-RT-039 for weld C2B-TH5-AA

Other:
CB&I Process Control Drawing, Unit 2 Top Head TH5 Field Sub-Assembly (weld map), dwg. PC02, Sheet 30, Rev. 0

CMTR 2-53825-00-0-A, Heat-No. 093108 with Flux Lot-No. ME310012, ESAB ENi4/OK Flux 10.72, 3/32" diameter, dated 09/02/2014
CB&I CMS-830-15-WI-03002, Work Instruction for Performance Qualification Tests for Welders and Welding Operators, Rev. 3, dated August 12, 2013
CB&I WPQs of welders/welding operators with ID-No. 041 (eight total) and 097 (nine total) for manual SMAW, machine SAW, and semiautomatic and machine FCAW
CB&I NCR VCC-077, Rev. 0, prepared on 2/12/15 and resolved on 2/16/15)
CB&I VCS-U2-2015-MT-008, Report of Magnetic Particle Examination for NCR VCC-077, dated 2/16/15
IHI Weld List WL-004-WC2-A1 thru A32 for both shop welds WC2-A3-1 and WC2-A20-1
CMTR RINJQ-229-3-5, Heat No. 1M7872 (1), Nippon Steel & Sumikin Welding Company ER80S-G, Trade Name YM-3N, 8/20/2012 (weld WC2-A3-1)
CMTR RINJQ-229-3-11, Heat No. 2N7886 (1), Nippon Steel & Sumikin Welding Company ER80S-G, Trade Name YM-3N, 10/11/2012 (weld WC2-A20-1)
IHI WPQ for W-2703 using semiautomatic pulsed-spray GMAW in the 6G (45°) position with acceptable visual examination and 4 guided side-bends

Section 1A03
CMTR 6456-1, Heat No. 6-9565 Plate No. MD396 C, JFE Steel Corporation for SA-738 Grade B, TH-4 plate ID mark C2-A3-1, February 14, 2013
CMTR 6458-2, Heat No. 6-9568 Plate No. LL428 A, JFE Steel Corporation for SA-738 Grade B, TH-4 plate ID mark C2-A3-2, February 22, 2013
CMTR 6456-7, Heat No. 6-0300 Plate No. MY424 B, JFE Steel Corporation for SA-738 Grade B, TH-4 plate ID mark C2-A20-1, February 14, 2013
CMTR 6458-10, Heat No. 6-0300 Plate No. A2063 B, JFE Steel Corporation for SA-738 Grade B, TH-4 plate ID mark C2-A20-2, February 22, 2013
CMTR 6477-7, Heat No. 6-2704 Plate No. D9170 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B7, May 24, 2013
CMTR 6477-8, Heat No. 6-0300 Plate No. AR107 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B8, May 24, 2013
CMTR 6477-11, Heat No. 6-0301 Plate No. AR105 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B11, May 24, 2013
CMTR 6477-16, Heat No. 6-2706 Plate No. D2419 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B16, May 24, 2013
CMTR 6477-19, Heat No. 6-9568 Plate No. CB136 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B19, May 24, 2013
CMTR 6477-20, Heat No. 6-2706 Plate No. D9168 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B20, May 24, 2013
CMTR 6477-21, Heat No. 6-2706 Plate No. D2417 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B21, May 24, 2013
CMTR 6477-23, Heat No. 6-2706 Plate No. D2416 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B23, May 24, 2013
CMTR 6477-24, Heat No. 6-2706 Plate No. CT391 A, JFE Steel Corporation for SA-738 Grade B, TH-5 plate ID mark C2-B24, May 24, 2013
CMTR 2-53825-00-0-A, Heat-No. 093108 with Flux Lot-No. ME310012, ESAB ENi4/OK Flux 10.72, 3/32" diameter, dated 09/02/2014
CMTR RINJQ-229-3-5, Heat No. 1M7872 (1), Nippon Steel & Sumikin Welding Company ER80S-G, Trade Name YM-3N, 8/20/2012
CMTR RINJQ-229-3-11, Heat No. 2N7886 (1), Nippon Steel & Sumikin Welding Company ER80S-G, Trade Name YM-3N, 10/11/2012

Section 1A04
Traveler:
Weld Record 152352
Weld Procedure
WPS2-1.1S02, Rev 1

Drawings:
VS2-CA01-CAK-001, Field Weld Map for Installing the CA01 Module on the Landing Plates - Sheet 1 of 3 – V.C. Summer Unit 2, Rev A
VS2-CA01-CAK-017, CA01 Module Installation to CA01 Embed Landing Plates, Rev C
VS2-CA01-S8-311, Containment Building Module CA01 Post-Lift Landing Plates Weld Details, Rev 0

Section 1A05
Work Packages
VS2-1020-C0W-001, Shield Building Layers D, E, and F Rebar, Formwork, and Embeds elev. 82ft-6in to 100ft-0in, Rev. 0

Drawings
APP-1208-SC-100, Shield Building Steel Wall Panels El 100'-0" to El 248'-6.5" General Notes, Rev 2
APP-1208-SC-107, Shield Building Steel Wall Panels El 100'-0" to El 248'-6.5" Construction & Erection General Notes, Rev 0
APP-1208-SC-112, Shield Building Steel Wall Panels El 100'-0" to El 103'-6" Critical Erection Tolerances Plan and Section, Rev 0
APP-1208-SC-108, Shield Building Steel Wall Panels El 100'-0" to El 248'-6.5" Critical Erection Tolerances Rollout View, Rev 0
APP-1208-SC-101, Shield Building Steel Wall Panels El 100'-0" to El 248'-6.5" Location and Identification Rollout View, Rev 4
APP-1208-SC-029, Shield Building Steel Wall Panels El 100'-0" to El 248'-6.5" Construction Attachment Plate Zone Rollout View, Rev 0
APP-1208-SC-251, Shield Building Steel Wall Panels El 100'-0" to El 248'-6.5" Connection Panel Group 25, Rev 2

Procedures
100-RT-313, Computed Radiographic Testing of Groove Welds in Butt Joints in Accordance with AWS D1.1, Rev. 3, Dated 11/21/2013

Computed Radiography Examination Report
RT Log/Report# V2-15-W-R-0004 for Weld IDs: VS2-1238-VWK-001-FW-JK-001; VS2-1238-VWK-001-FW-KJ-001; VS2-1238-VWK-001-FW-KL-001; VS2-1238-VWK-001-FW-LK-001; VS2-1238-VWK-001-FW-LM-001; VS2-1238-VWK-001-FW-ML-001; VS2-1238-VWK-001-FW-NM-001; VS2-1238-VWK-001-FW-MN-001; VS2-1238-VWK-001-FW-NP-001; VS2-1238-VWK-001-FW-PN-001
RT Log/Report# V2-15-W-R-0005 for Weld IDs: VS2-1238-VWK-001-FW-NM-001-RW-1; VS2-1238-VWK-001-FW-NP-001-RW-1

Weld Procedure Specifications
WPS2-1.1S20-SB(SMAW), Rev. 3
WPS2-1.1F20-SB(FCAW), Rev. 4

Personnel
R. Lough, CB&I Quality Control Supervisor
R. House, CB&I Quality Control Supervisor
J. Vires, Mistras Project Manager
J. Hoover, Mistras NDE
J. White, CB&I NDE
T. Allman, CB&I Field Engineer
D. Powell, CB&I Field Engineer
C. Rolf, CB&I Quality Control

Section 1A06
VS2-1208-SC-701-R2, Shield Building Steel Wall Panels EL. 100'-0" to El. 248'-6 ½" Type 2 Panel Group 70, Rev. 2
VS2-1208-SC-702-R0, Shield Building Steel Wall Panels EL. 100'-0" to El. 248'-6 ½" Type 1 Panel Group 70 Details 1, Rev. 0
VS2-1208-SC-902-R1, Shield Building Steel Wall Panels EL. 100'-0" to El. 248'-6 ½" Typical Details (Sheet 2), Rev. 1
VS2-1208-SC-100-R2, Shield Building Steel Wall Panels EL. 100'-0" to El. 248'-6 ½" General Notes, Rev. 2
132177-D100.SB003-404-012-00062, 13NNI140 Deformed Wire
132177-D100.SB003-404-012-00071, 12NNI162 Plate ¾"
132177-D100.SB003-404-012-00074, 13NNI032 Plate ¾"
132177-D100.SB003-404-012-00081, 14NNI014 Weld Metal ER100S-1, 3/32"
132177-D100.SB003-404-012-00109, Document Package for VS2-1208-SC-12C, July 28, 2015
132177-D100.SB003-404-012-00108, Document Package for VS2-1208-SC-12K, July 28, 2015
APP-1208-GEF-028, Clarification of Charpy Impact Requirements to AP1000 Shield Building SC Plate, Rev. 0
APP-12088-GEF-085, Shield Building Lifting Lug Removal, Rev. 0

Section 1A07
CMTRs:
430000-CMTR-10-000035, CMTR for ASTM A36-08 for CA20_12 plate material, 8/18/2010
430000-CMTR-10-000044, CMTR for ASTM A36-08 for CA20_12 plate material, 7/16/2010C
430000-CMTR-10-000033, CMTR for ASTM A36-08 for CA20_12 plate material, 8/18/2010
430000-CMTR-10-000046, CMTR for ASTM A36-08 for CA20_12 plate material, 7/16/2010
430000-CMTR-12-000229, CMTR for ASTM A-572 for CA20_24 plate material, 5/26/2011
430000-CMTR-12-000230, CMTR for ASTM A572 for CA20_24 plate material, 5/24/2011
430000-CMTR-12-000231, CMTR for ASTM A572 for CA20_24 plate material, 5/24/2011
430000-CMTR-12-000232, CMTR for ASTM A572 for CA20_24 plate material, 5/26/2011
430000-CMTR-12-000233, CMTR for ASTM A572 for CA20_24 plate material, 5/26/2011
430000-MTR-12-000297, CMTR for ASTM A572-07 for CA20_24 plate material, 3/17/2011
430000-MTR-12-000298, CMTR for ASTM A572-07 for CA20_24 plate material, 3/23/2011
430000-MTR-12-000299, CMTR for ASTM A572-07 for CA20_24 plate material, 3/22/2011
430000-MTR-12-000300, CMTR for ASTM A572-07 for CA20_24 plate material, 3/17/2011
430000-MTR-12-000301, CMTR for ASTM A572-07 for CA20_24 plate material, 5/14/2011
430000-MTR-12-000302, CMTR for ASTM A572 for CA20_24 plate material, 5/14/2011
430000-CMTR-13-000613, CMTR for ASTM A572-12 for CA20_18 plate material, 8/8/2013
430000-CMTR-12-000156, CMTR for ASTM A572-07 for CA20_18 plate material, 2/23/2012
430000-CMTR-12-000158, CMTR for ASTM A572-07 for CA20_18 plate material, 2/23/2012
430000-CMTR-12-000154, CMTR for ASTM A572-07 for CA20_18 plate material, 2/23/2012
430000-MTR-11-000003, CMTR for ASTM A572-07 for CA20_05 plate material, 1/17/2011

430000-MTR-11-000004, CMTR for ASTM A572-07 for CA20_05 plate material, 1/17/2011
430000-MTR-11-000006, CMTR for ASTM A572-07 for CA20_05 plate material, 1/18/2011
430000-MTR-11-000007, CMTR for ASTM A572-07 for CA20_05 plate material, 1/20/2011
430000-MTR-11-000013, CMTR for ASTM A572-07 for CA20_05 plate material, 1/21/2011
430000-MTR-11-000014, CMTR for ASTM A572-07 for CA20_05 plate material, 1/24/2011
430000-MTR-11-000015, CMTR for ASTM A572-07 for CA20_05 plate material, 1/24/2011
430000-MTR-11-000016, CMTR for ASTM A572-07 for CA20_05 plate material, 1/24/2011
430000-MTR-11-000017, CMTR for ASTM A572-07 for CA20_05 plate material, 1/24/2011
430000-MTR-11-000018, CMTR for ASTM A572-07 for CA20_05 plate material, 1/25/2011
430000-MTR-11-000035, CMTR for ASTM A572-07 for CA20_19 plate material, 1/10/2011
430000-MTR-11-000038, CMTR for ASTM A572-07 for CA20_19 plate material, 1/18/2011
430000-MTR-11-000268, CMTR for ASTM A572-07 for CA20_19 plate material, 6/21/2011
430000-MTR-11-000269, CMTR for ASTM A572-07 for CA20_19 plate material, 6/28/2011
430000-MTR-11-000270, CMTR for ASTM A572-07 for CA20_19 plate material, 6/29/2011
430000-CMTR-12-000383, CMTR for AWS A5.9 for CA20_12 weld material, 9/14/2012
430000-CMTR-12-000377, CMTR for AWS A5.18-05 for CA20_12 weld material, 2/13/2012
430000-CMTR-12-000376, CMTR for AWS A5.18-05 for CA20_12 weld material, 2/13/2012
430000-CMTR-12-000151, CMTR for AWS A5.9 for CA20_12 weld material, 5/15/2012
430000-CMTR-12-000045, CMTR for AWS A5.9-06 for CA20_12 weld material, 4/9/2012
430000-CMTR-12-000053, CMTR for AWS A5.28-05 for CA20_24 weld material, 2/1/2012
430000-CMTR-12-000019, CMTR for AWS A5.28-05 for CA20_24 weld material, 1/20/2012
430000-CMTR-11-000118, CMTR for AWS A5.28-05 for CA20_24 weld material, 10/19/2011
430000-CMTR-11-000054, CMTR for AWS A5.28-05 for CA20_24 weld material, 10/18/2011
430000-CMTR-12-000152, CMTR for AWS A5.9 for CA20_18 weld material, 5/16/2012
430000-CMTR-13-000796, CMTR for AWS A5.9 for CA20_18 weld material, 10/11/2013
430000-CMTR-13-000682, CMTR for AWS A5.9 for CA20_18 weld material, 9/7/2013
430000-CMTR-13-000757, CMTR for AWS A5.9 for CA20_18 weld material, 9/24/2013
430000-CMTR-11-000052, CMTR for AWS A5.28-05 for CA20_05 weld material, 10/7/2011
430000-CMTR-11-000072, CMTR for AWS A5.28-05 for CA20_05 weld material, 10/7/2011
430000-CMTR-12-000376, CMTR for AWS A5.18-05 for CA20_05 weld material, 2/13/2012
430000-CMTR-12-000377, CMTR for AWS A5.18-05 for CA20_05 weld material, 2/13/2012
430000-CMTR-12-000051, CMTR for AWS A5.28-05 for CA20_19 weld material, 1/20/2012
430000-CMTR-12-000066, CMTR for AWS A5.9 for CA20_19 weld material, 4/20/2012
430000-CMTR-12-000026, CMTR for AWS A5.9 for CA20_19 weld material, 2/17/2012
430000-CMTR-12-000053, CMTR for AWS A5.28-05 for CA20_19 weld material, 2/1/2012
430000-CMTR-12-000054, CMTR for ASTM A108-07 and AWS D1.1 for CA20_12 Nelson stud material, 3/22/2012
430000-CMTR-12-000048, CMTR for ASTM A108-07 and AWS D1.1 for CA20_12 Nelson stud material, 1/26/2012
430000-CMTR-11-000036, CMTR for ASTM A108-07 and AWS D1.1 for CA20_12 Nelson stud material, 12/14/2011
430000-CMTR-12-000054, CMTR for ASTM A108-07 and AWS D1.1 for CA20_24 Nelson stud material, 3/22/2012
430000-COC-11-000018, Certificate of Compliance to ASTM A108-07 and AWS D1.1 for CA20_24 Nelson stud material, 8/23/2011
430000-COC-11-000024, Certificate of Compliance to ASTM A108-07 and AWS D1.1 for CA20_24 Nelson stud material, 8/23/2011
430000-MTR-11-000077, CMTR for ASTM A108-07 and AWS D1.1 for CA20_24 Nelson stud material, 8/2/2011
430000-MTR-11-000078, CMTR for ASTM A108-07 and AWS D1.1 for CA20_24 Nelson stud material, 8/3/2011

430000-CMTR-12-000483, CMTR, Rev 1 for ASTM A108-07 and AWS D1.1 for CA20_18 Nelson stud material, 3/15/2013
430000-CMTR-12-000482, CMTR, Rev 1 for ASTM A108-07 and AWS D1.1 for CA20_18 Nelson stud material, 3/15/2013
430000-CMTR-12-000472, CMTR for ASTM A108-07 and AWS D1.1 for CA20_18 Nelson stud material, 10/16/2012
430000-CMTR-12-000468, CMTR for ASTM A108-07 and AWS D1.1 for CA20_18 Nelson stud material, 10/22/2012
430000-COC-11-000064, Certificate of Compliance to ASTM A108-07 and AWS D1.1 for CA20_05 Nelson stud material, 8/29/2011
430000-COC-11-000065, Certificate of Compliance to ASTM A108-07 and AWS D1.1 for CA20_05 Nelson stud material, 8/29/2011
430000-MTR-10-000191, CMTR for ASTM A108-07 and AWS D1.1 for CA20_05 Nelson stud material, 5/5/2010
430000-MTR-10-000192, CMTR for ASTM A108-07 and AWS D1.1 for CA20_05 Nelson stud material, 6/2/2010
430000-COC-11-000059, Certificate of Compliance to ASTM A108-07 and AWS D1.1 for CA20_19 Nelson stud material, 8/29/2011
430000-COC-11-000060, Certificate of Compliance to ASTM A108-07 and AWS D1.1 for CA20_19 Nelson stud material, 8/29/2011
430000-MTR-10-000186, CMTR for ASTM A108-07 and AWS D1.1 for CA20_19 Nelson stud material, 9/3/2010
430000-MTR-10-000188, CMTR for ASTM A108-07 and AWS D1.1 for CA20_19 Nelson stud material, 9/27/2010
430000-MTR-10-000189, CMTR for ASTM A108-07 and AWS D1.1 for CA20_19 Nelson stud material, 9/27/2010
430000-MTR-10-000190, CMTR for ASTM A108-07 and AWS D1.1 for CA20_19 Nelson stud material, 10/1/2010

Specification:
APP-VW01-Z0-001, Rev 3: “Structural Module Shear Stud Welding Specification”

E&DCRs:
VS2-CA20_GEF-000062, Rev 0: “CA20_12 Rebar Close to Leak Chase”
VS2-CA20_GEF-000076, Rev 0: “CA20_04/CA20_05 Lifting Lug 163”
VS2-CA20_GEF-000071, Rev 0: “CA20_18 Lifting Frame Interference”
VS2-CA20_GEF-000083, Rev 0: “CA20_15/18 CJP Fillet Weld Repairs”
VS2-CA20_GEF-000091, Rev 0: “CA20_01 and CA20_05 Stud Inter.”

N&Ds:
VS2-CA20_GNR-000580, Rev 0: “Hooked Rebar Assemblies Unable to be Removed on CA20_05”
VS2-CA20_GNR-000385, Rev 0: “CA20_18 and CA20_19 Assembly Out of Tolerance”
VS2-CA20_GNR-000087, Rev 0: “CA20_12 South Inside Corner CJP Repair - Backing Fillet Weld not installed”
VS2-CA20_GNR-000144, Rev 0: “CA20_18 Discontinuities in BM inside eff weld area (Lake Charles NCR 2013-2140)”
VS2-CA20_GNR-000029, Rev 0: “CA20_24 Internal Nelson Stud Layout”

CARs:
2013-0384, “Stud Weld Performed to WDS Under Inapplicable Weld Document”

2014-0056, " Weld Performed with Unqualified Welding Procedure"
2014-0313, "Potential adverse trend. Within the past couple of days, it has been determined that four (4) CA20 submodules have areas that are inaccessible for inspection."
2014-0498, "10CFR21/10CFR50.55(e) Potential Reportability for CA20_12 Missing Weld"
2014-0545, "Work Process Controls Associated with CA20_18 and CA20_23"

Section 1A08
APP-1220-GEF-423, "Sections to be added to APP-1220-CR-393 & APP-1220-CR-123," Rev. 0
VS2-1220-CR-123, "Auxiliary Building Area 4 Concrete Reinforcement Floor EL 82'-6" Sections & Details," Rev. 0
VS2-CR01-C8-800303, "Auxiliary Bldg Slab @El. 82'-6"," Rev. 2
VS2-1220-CR-392, "Auxiliary Building Areas 3 & 4 Concrete Reinforcement Floor EL 82'-6" Details," Rev. 2
VS2-1224-CCY-402, "Auxiliary Building Floor Sloping Area 4 Floor EL 82'-6"," Rev. 0
VS2-1220-CR-342, "Auxiliary Building Areas 3 & 4 Concrete Reinforcement Floor EL 82'-6" Plan View," Rev. 2
VS2-1220-CR-393, "Auxiliary Building Area 4 Concrete Reinforcement Floor EL 82'-6"," Rev. 0

Nonconformance and Disposition Reports
VS2-CR01-GNR-000123, 5-Line Clear Space, Rev. 0
VS2-CR01-GNR-000126, Layer C, J-1 Form Savers, Rev. 0
VS2-CR01-GNR-000185, J-1 Embeds O.O.T., Rev. 0
VS2-CR01-GNR-000351, CA22 Form Saver/C Channel Conflicts, Rev. 0
VS2-CR01-GNR-000368, CA22 Corner Bar Installation Issues, Rev. 0

Engineering & Design Coordination Reports
APP-0000-GEF-087, Cast-in-Place Concrete Placement Tolerances, Rev. 0
APP-0000-GEF-095, Clarification of Lap Splice Requirements in APP-0000-C9-001, Rev. 0
APP-1220-GEF-207, Weld Detail 1 in CA22 Slab - Auxiliary Building Area 4 El. 82'-6", Rev. 0
VSG-1220-GEF-000028, Issues with New Sections for CA22, Rev. 0
APP-1200, GEF-449, DI-OI-041343 Closure, Rev. 0

Section 1A09
Weld Doc 140302
VS2-CA20_S4W-03100
VS2-CA20_VWK-229, Installation of CA20 SA3 floors, Rev. 1
V2-15-W-M-1680, MT report dated 8/7/2015
V2-15-W-U-0901, UT report dated 8/4/2015
Record of Welder Performance Qualification test for Welder JLF2558 of WPS2-1.1F01
VSG-CA20_GNR-000003, SA3 Floor CJP welds Rev.0
WPS2-1.1F01, Rev. 0

Section 1A10
Reports
Unit 2 As-Built Wall Thickness for Shield Wall between Reactor Vessel Cavity and RCDT Control Room from Elev. 71'-6" to 83'-0", Dwg No VS2-1110-CCK-005, Rev B, 2 Sheets

Procedures
APP-GW-IT-001, "Guidelines for Concrete Wall and Slab Thickness Measurements," Rev. 0
NCSP 03-24, "Field Surveying," PCN No. NCSP-PCN-03-24-3-A, Rev. 3

CSI 3-24, "CSI 03-24 - Site-Specific Field Surveying Instructions," CSI ICN No. CSI-ICN-3-24-6-A, Rev. 6-A

E&DCRs
APP-GW-GEF-863, "Revision to APP-GW-IT-001," Rev. 0

N&Ds
VS2-1110-GNR-000006, "Containment Layer 1A Concrete Curing," Rev. 0

Test Records
C-14-00447, Convential Concrete Field Testing & Compression Data Record for Work Package VS2-1110-CCW-003-ITAAC, Rev. 0
Data Report for Determining Density of Structural Lightweight Concrete, Lab No. 29531, Chain of Custody No. C-14-00448, VCVS 4243, Date Received 8/22/2014
Data Report for Determining Density of Structural Lightweight Concrete, Lab No. 29532, Chain of Custody No. C-14-00448, VCVS 4244, Date Received 8/22/2014

Work Package
VS2-1110-CCW-003-ITAAC, Concrete Inside Containment Layer 1A - EL 71'-6" to 76'-6", Rev. 0

Training Records
J. Wood, Industrial Surveyor
M. Mobley, Industrial Surveyor
N. Kessinger, Industrial Surveyor
D. Mireles, Industrial Surveyor

Section 1A12
N&Ds:
VS2-CA20_GNR-00512 Rev. 0, “CA20 Spent Fuel Pool East Wall”
VS2-CA20_GNR-00505 Rev. 0, “CA20 Spent Fuel Pool Tolerance Issues”

Other:
Unit 2 CA20 – SFP North Wall Straightening & Repositioning Execution Plan Rev. 4

Section 1A13
Reports
Unit 2 As-Built Wall Thickness for Shield Wall between Reactor Vessel Cavity and RCDT Control Room from Elev. 71'-6" to 83'-0", Dwg No VS2-1110-CCK-005, Rev B, 2 Sheets

Procedures
APP-GW-IT-001, "Guidelines for Concrete Wall and Slab Thickness Measurements," Rev. 0
NCSP 03-24, "Field Surveying," PCN No. NCSP-PCN-03-24-3-A, Rev. 3
CSI 3-24, "CSI 03-24 - Site-Specific Field Surveying Instructions," CSI ICN No. CSI-ICN-3-24-6-A, Rev. 6-A

E&DCRs
APP-GW-GEF-863, "Revision to APP-GW-IT-001," Rev. 0

N&Ds
VS2-1110-GNR-000006, "Containment Layer 1A Concrete Curing," Rev. 0

Test Records
C-14-00447, Convential Concrete Field Testing & Compression Data Record for Work Package VS2-1110-CCW-003-ITAAC, Rev. 0
Data Report for Determining Density of Structural Lightweight Concrete, Lab No. 29531, Chain of Custody No. C-14-00448, VCVS 4243, Date Received 8/22/2014
Data Report for Determining Density of Structural Lightweight Concrete, Lab No. 29532, Chain of Custody No. C-14-00448, VCVS 4244, Date Received 8/22/2014

Work Package
VS2-1110-CCW-003-ITAAC, Concrete Inside Containment Layer 1A - EL 71'-6" to 76'-6", Rev. 0

Training Records
J. Wood, Industrial Surveyor
M. Mobley, Industrial Surveyor
N. Kessinger, Industrial Surveyor
D. Mireles, Industrial Surveyor

Section 1A14
WEC, APP-MV01-Z0-101, Design Specification for AP1000 Reactor Vessel For System: Reactor Coolant System (RCS), Rev. 12, dated 6/11/14
Doosan WM-VC23AP1000-203RV, Weld Map of Lower Vessel Assembly, Rev. 1, dated 7/30/2010, 5 pages
Doosan WM-VC23AP1000-204RV, Weld Map of Final Vessel Assembly, Rev. 1, dated 2/13/2014, 4 pages
Doosan, CMTR CN2011080007, Rev. 2, dated March 12, 2015 for ASME SA-508, Grade 3, Class 1, Upper Shell Heat No. F08697 030, with Material Certificate No. N2011080007, dated August 23, 2011 (VS3-MV01-VQQ-001, Rev. 0, pages 560-561 of 5980), including Test Results for Fracture Appearance Transition Temperature (F.A.T.T) Report No. IP-11-07-1112 S1, dated July 14, 2011 (VS3-MV01-VQQ-001, Rev. 0, pages 567-568 of 5980)
Doosan, CMTR CN2012030059, Rev. 1, dated Feb. 4, 2013 for ASME SA-508, Grade 3, Class 1, Lower Shell Heat No. F09157 050, with Material Certificate No. N2012030059, dated March 30, 2012 (VS3-MV01-VQQ-001, Rev. 0, pages 573-574 of 5980), including Test Results for Fracture Appearance Transition Temperature (F.A.T.T) Report No. IP-12-03-0442 S1, dated March 9, 2012 (VS3-MV01-VQQ-001, Rev. 0, pages 579-580 of 5980)
Doosan, CMTR CN2011100033, Rev. 2, dated Feb. 4, 2013 for ASME SA-508, Grade 3, Class 1, Transition Ring Heat No. F09159 050, with Material Certificate No. N201100033, dated Jan. 20, 2012 (VS3-MV01-VQQ-001, Rev. 0, pages 863-864 of 5980), including Test Results for Fracture Appearance Transition Temperature (F.A.T.T) Report No. IP-11-09-1599 S1, dated Sept. 29, 2011 (VS3-MV01-VQQ-001, Rev. 0, pages 869-870 of 5980)

Section 1A15
IHI ASME Data Report Form N-2 for the Unit 2 TH-4 course plates C2-A4 (S/N IN-5247) with National Board No. 3072, dated March 28, 2014
IHI ASME Data Report Form N-2 for the Unit 2 TH-4 course plates C2-A20 (S/N IN-5257) with National Board No. 3083, dated May 8, 2014
CB&I Drawing 1, Sheet 2, titled Top & Bottom Head Layout, Rev. 3
CB&I Drawing PC03, Sheet 30, Process Control Drawing - Unit 3, Top Head TH4 thru TH6, Rev. 0

CMTR PNQS-12-315, Heat No. KB1706 Plate No. 5133461, Kobe Steel Ltd. for SA-738 Grade B, TH-4 plate ID mark C3-A4-1, 2013-08-27
CMTR PNQS-12-283, Heat No. KB1707 Plate No. 5133031, Kobe Steel Ltd. for SA-738 Grade B, TH-4 plate ID mark C3-A4-2, 2013-08-27
CMTR PNQS-12-325, Heat No. KB1706 Plate No. 5133432, Kobe Steel Ltd. for SA-738 Grade B, TH-4 plate ID mark C3-A14-1, 2013-08-27
CMTR PNQS-12-293, Heat No. KB1703 Plate No. 5123241, Kobe Steel Ltd. for SA-738 Grade B, TH-4 plate ID mark C3-A14-2, 2013-08-27
CMTR PNQS-12-366, Heat No. KB1703 Plate No. 5397411, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B3, 2013-10-21
CMTR PNQS-12-368, Heat No. KB2993 Plate No. 5503951, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B5, 2013-10-21
CMTR PNQS-12-369, Heat No. KB1704 Plate No. 5397441, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B6, 2013-10-21
CMTR PNQS-12-370, Heat No. KB2993 Plate No. 5489471, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B7, 2013-10-21
CMTR PNQS-12-372, Heat No. KB2993 Plate No. 5497611, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B9, 2013-10-21
CMTR PNQS-12-374, Heat No. KB2994 Plate No. 5500911, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B11, 2013-10-21
CMTR PNQS-12-376, Heat No. KC2945 Plate No. 5647321, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B13, 2013-10-21
CMTR PNQS-12-379, Heat No. KB1706 Plate No. 5397451, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B16, 2013-10-21
CMTR PNQS-12-384, Heat No. KB1703 Plate No. 5397421, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B21, 2013-10-21
CMTR PNQS-12-250, Heat No. KB7216 Plate No. 5078321, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E14-1, 2013-07-26
CMTR PNQS-12-251, Heat No. KB7180 Plate No. 5079401, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E15-1, 2013-07-26
CMTR PNQS-12-252, Heat No. KB8087 Plate No. 5078491, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E16-1, 2013-07-26
CMTR PNQS-12-256, Heat No. KB5047 Plate No. 5078191, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E20-1, 2013-07-26
CMTR PNQS-12-257, Heat No. KB6740 Plate No. 5078261, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E21-1, 2013-07-26
CMTR PNQS-12-269, Heat No. KB6739 Plate No. 5078231, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C38-1, 2013-07-26
CMTR PNQS-12-270, Heat No. KB6740 Plate No. 5078281, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C39-1, 2013-07-26
CMTR PNQS-12-272, Heat No. KB8087 Plate No. 5078511, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C41-1, 2013-07-26
CMTR PNQS-12-273, Heat No. KB6740 Plate No. 5078291, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C42-1, 2013-07-26
CMTR PNQS-12-276, Heat No. KB8087 Plate No. 5078501, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C45-1, 2013-07-26
CMTR PNQS-12-277, Heat No. KB6742 Plate No. 5078471, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C46-1, 2013-07-26

Section 1A16
CB&I Weld Travelers:

C3B-TH5-C to join plates C3-B6 to -B9
C3B-TH5-J to join plates C3-B11 to -B13
C3B-TH5-P to join plates C3-B16 to -B21
C3B-TH5-W to join plates C3-B3 to -B5
C3B-TH5-Z to join plates C3-B7 to -B8
B3E-S9-D to join shell plates B3-E15 to E-21
B3E-S9-H to join shell plates B3-E14 to E-16
B3C-S10-B to join shell plates B3-C38 to C-46
B3C-S10-F to join shell plates B3-C41 to C-45
B3C-S10-K to join shell plates B3-C39 to C-42

CB&I WPQs for the following welding processes and associated Welder and Welding Operator ID-Nos.:
Manual SMAW - 358, 422, 491, 560, 605, 715, and 744
Semiautomatic FCAW - 003, 422, 529, 560, 715, 744, and 921
Machine FCAW - 003, 498, 560, 605, 715, and 921
Machine SAW - 003, 358, 370, 491, and 605

CB&I Reports of Radiographic Examination and film review:
VCS-U3-2015-RT-050 for weld C3B-TH5-C
VCS-U3-2015-RT-062 for weld C3B-TH5-J
VCS-U3-2015-RT-066 for weld C3B-TH5-P
VCS-U3-2015-RT-070 for weld C3B-TH5-W
VCS-U3-2015-RT-077 for weld C3B-TH5-Z
VCS-U3-2015-RT-093 for weld B3E-S9-D
VCS-U3-2015-RT-097 for weld B3E-S9-H
VCS-U3-2015-RT-108 for weld B3C-S10-B
VCS-U3-2015-RT-112 for weld B3C-S10-K
VCS-U3-2015-RT-114 for weld B3C-S10-F

IHI Radiographic Examination Records and film review:
RT-004-WC3-A4-1
RT-004-WC3-A14-1

Other:
CB&I Process Control Drawing - Unit 3 Top Head TH5 Field Sub-Assembly (weld map), Dwg. PC03, Sheet 30, Rev. 0
CB&I Process Control Drawing - Unit 3 Shell S9 thru S11 (weld map), Dwg. PC03, Sheets 26 thru 29, Rev. 0
CMTR 2-54493-00-0-A, Lot-No. 2S312P01, Nuclear ID-No. 000018, ESAB Atom Arc E9018-H4R, 5/32" diameter, dated 10/02/2013
CB&I CMS-830-15-WI-03002, Work Instruction for Performance Qualification Tests for Welders and Welding Operators, Rev. 3, dated August 12, 2013
IHI Weld List WL-004-WC3-A1 thru A32 for both shop welds WC3-A4-1 and WC3-A14-1
CMTR RINJQ-229-3-12, Heat No. 2N7887 (1), Nippon Steel & Sumikin Welding Company ER80S-G, Trade Name YM-3N, 10/11/2012
IHI WPQ for W-2769 using semiautomatic pulsed-spray GMAW in the 6G (45°) position with acceptable visual examination and 4 guided side-bends

Section 1A17
CMTR PNQS-12-315, Heat No. KB1706 Plate No. 5133461, Kobe Steel Ltd. for SA-738 Grade B, TH-4 plate ID mark C3-A4-1, 2013-08-27
CMTR PNQS-12-283, Heat No. KB1707 Plate No. 5133031, Kobe Steel Ltd. for SA-738 Grade B, TH-4 plate ID mark C3-A4-2, 2013-08-27
CMTR PNQS-12-325, Heat No. KB1706 Plate No. 5133432, Kobe Steel Ltd. for SA-738 Grade B, TH-4 plate ID mark C3-A14-1, 2013-08-27
CMTR PNQS-12-293, Heat No. KB1703 Plate No. 5123241, Kobe Steel Ltd. for SA-738 Grade B, TH-4 plate ID mark C3-A14-2, 2013-08-27
CMTR PNQS-12-366, Heat No. KB1703 Plate No. 5397411, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B3, 2013-10-21
CMTR PNQS-12-368, Heat No. KB2993 Plate No. 5503951, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B5, 2013-10-21
CMTR PNQS-12-369, Heat No. KB1704 Plate No. 5397441, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B6, 2013-10-21
CMTR PNQS-12-370, Heat No. KB2993 Plate No. 5489471, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B7, 2013-10-21
CMTR PNQS-12-372, Heat No. KB2993 Plate No. 5497611, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B9, 2013-10-21
CMTR PNQS-12-374, Heat No. KB2994 Plate No. 5500911, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B11, 2013-10-21
CMTR PNQS-12-376, Heat No. KC2945 Plate No. 5647321, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B13, 2013-10-21
CMTR PNQS-12-379, Heat No. KB1706 Plate No. 5397451, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B16, 2013-10-21
CMTR PNQS-12-384, Heat No. KB1703 Plate No. 5397421, Kobe Steel Ltd. for SA-738 Grade B, TH-5 plate ID mark C3-B21, 2013-10-21
CMTR PNQS-12-250, Heat No. KB7216 Plate No. 5078321, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E14-1, 2013-07-26
CMTR PNQS-12-251, Heat No. KB7180 Plate No. 5079401, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E15-1, 2013-07-26
CMTR PNQS-12-252, Heat No. KB8087 Plate No. 5078491, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E16-1, 2013-07-26
CMTR PNQS-12-256, Heat No. KB5047 Plate No. 5078191, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E20-1, 2013-07-26
CMTR PNQS-12-257, Heat No. KB6740 Plate No. 5078261, Kobe Steel Ltd. for SA-738 Grade B, S9 shell plate ID mark B3-E21-1, 2013-07-26
CMTR PNQS-12-269, Heat No. KB6739 Plate No. 5078231, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C38-1, 2013-07-26
CMTR PNQS-12-270, Heat No. KB6740 Plate No. 5078281, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C39-1, 2013-07-26
CMTR PNQS-12-272, Heat No. KB8087 Plate No. 5078511, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C41-1, 2013-07-26
CMTR PNQS-12-273, Heat No. KB6740 Plate No. 5078291, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C42-1, 2013-07-26
CMTR PNQS-12-276, Heat No. KB8087 Plate No. 5078501, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C45-1, 2013-07-26
CMTR PNQS-12-277, Heat No. KB6742 Plate No. 5078471, Kobe Steel Ltd. for SA-738 Grade B, S10 shell plate ID mark B3-C46-1, 2013-07-26
CMTR RINJQ-229-3-12, Heat No. 2N7887 (1), Nippon Steel & Sumikin Welding Company ER80S-G, Trade Name YM-3N, 10/11/2012

CMTR 2-54493-00-0-A, Lot-No. 2S312P01, Nuclear ID-No. 000018, ESAB Atom Arc E9018-H4R, 5/32" diameter, dated 10/02/2013

Section 1A18
APP-GW-S9-200, “AP1000 Structural Modules Standard Structural Details,” Rev. 6
APP-GW-S9-202, “AP1000 Structural Modules Standard Structural Details,” Rev. 4
APP-GW-S9-210, “AP1000 Structural Modules Standard Structural Details,” Rev. 1
APP-GW-S9-300, “AP1000 Structural Modules Standard Weld Details,” Rev. 6
APP-GW-S9-302, “AP1000 Structural Modules Standard Weld Details,” Rev. 4
APP-GW-S9-310, “AP1000 Structural Modules Standard Weld Details,” Rev. 1
VS3-CA05-S5B-07001, “Containment Building Area 3 Module CA05 Submodule CA05_07 Bill of Materials,” Rev. 0
VS3-CA05-S5-07001, “Containment Building Area 3 Module CA05 Submodule CA05_07 Isometric Views,” Rev. 2
VS3-CA05-S5-07002, “Containment Building Area 3 Module CA05 Submodule CA05_07 Breakdown,” Rev. 0
VS3-CA05-S5-07003, “Containment Building Area 3 Module CA05 Submodule CA05_07 Structural Outline – Vertical Sections / Views,” Rev. 0
VS3-CA05-S5-07004, “Containment Building Area 3 Module CA05 Submodule CA05_07 Structural Outline – Horizontal Sections / Views,” Rev. 0
VS3-CA05-S5-07005, “Containment Building Area 3 Module CA05 Submodule CA05_07 Structural Outline – Specific Details,” Rev. 0
APP-CA05-GEF-137, Addition of Overlay Plates to CA05_07, Rev. 0
VS3-CA05-S5B-08001, “Containment Building Area 3 Module CA05 Submodule CA05_08 Bill of Materials,” Rev. 0
VS3-CA05-S5-08001, “Containment Building Area 3 Module CA05 Submodule CA05_08 Isometric Views,” Rev. 0
VS3-CA05-S5-08002, “Containment Building Area 3 Module CA05 Submodule CA05_08 Breakdown,” Rev. 0
VS3-CA05-S5-08003, “Containment Building Area 3 Module CA05 Submodule CA05_08 Structural Outline – Vertical Sections / View 1,” Rev. 0
VS3-CA05-S5-08004, “Containment Building Area 3 Module CA05 Submodule CA05_08 Structural Outline – Horizontal Sections / Views,” Rev. 0
VS3-CA05-S5-08005, “Containment Building Area 3 Module CA05 Submodule CA05_08 Structural Outline – Specific Details,” Rev. 0
VS3-CA05-S5-08006, “Containment Building Area 3 Module CA05 Submodule CA05_08 Structural Outline – Vertical Sections / View II,” Rev. 0

Section 1A19
VS3-1000-COW-003, Rev 0, Formwork, Rebar, Embeds and Concrete for Unit 2 Shield Building, EL 66’6” to 82’6” (Layers A-C)

Section 1A20
Work Packages
VS3-1220-C0W-002-ITAAC, Rebar, Embeds, and Formwork for Walls in Areas 3 and 4 on Elev. 82ft.-6in. in U2 NI, Rev.0
VS3-1220-C0W-003-ITAAC, Rebar, Embeds, and Formwork for Walls in Areas 5 and 6 on Elev. 82ft.-6in. in U2 NI, Rev. 0

E&DCRs
VS3-1200-GEF-000009, Wall 11 & Q Concrete Hold (CR01312), Rev 0

Corrective Action Documents
CAR 2015-3212, Leakage of Formwork Bulkheads on SCC Wall Placements, 8/27/2015
CAR 2015-3206, Unit 3 Wall 11/Q Formwork Bulkhead, 8/27/2015
CR-NND-15-01312, ACI 349-01 Appendix B, 8/7/2015
Discrete Issue/Suggestion for Improvement ID: 100322678, Deformed Wire Anchor (DWA): Appendix B Design Requirements, 8/27/2015

Other Documents
WEC Letter to VC Summer titled "Comparison of Capacities of DWAs," Dated 8/26/2015

Personnel Interviewed
M. Frisina, CB&I Quality Control
R. Cole, CB&I Field Engineer

Section 1A21
Drawings:
VS3-CA20_S5-03001, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_03"
VS3-CA20_S5-04001, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_04"
VS3-CA20_S5-19003, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_19"
VS3-CA20_S5-20003, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_20"
VS3-CA20_S5-24003, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_24"
VS3-CA20_S5-27001, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_27"

Other:
VS3-CA20_S5W-27001, "CA20_27 Structural Repair-Rework Weld Map"
VS3-CA20_S5W-03001, "Unit 3 CA20_03 Submodule Readiness"

Section 1A22

Section 1A23
Survey Reports:
VS3-1200-CCK-084, Unit 3 Aux. Bldg. Column Line 7.3 Wall Thickness As-Built From Shield Bldg to I from Elevations 66'6" to 100'0", Rev A
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 A

Section 1A24
Drawings:
VS3-CA20_S5-03001, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_03"
VS3-CA20_S5-04001, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_04"
VS3-CA20_S5-19003, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_19"

VS3-CA20_S5-20003, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_20"
VS3-CA20_S5-24003, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_24"
VS3-CA20_S5-27001, Rev 0: "Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20_27"

E&DCRs:
APP-CA20_GEF-1234, Rev 0:
VS3-CA20_GEF-000008, Rev 0: "U3 CA20 Single Panel Wall Bracing"
VS3-CA20_GEF-000003, Rev 0: "CA20 Slip-Critical Bolt Connection"
VS3-CA20_GEF-000002, Rev 0: "FNC CA20 Embed/WRS Interference"

Section 1A25
Conventional Concrete Field Testing & Compression Data Record, Reports
C-15-00151

AMEC Data Report for Determining Density of Structural Lightweight Concrete Report
C-15-00152

Drawings
VS3-1200-CCK-084, "Unit 3 Aux. Bldg. Column Line 7.3 Wall Thickness As-Built From Shield Bldg to I From Elevations 66'6" to 100'0"," Rev. A, 2 Pages
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. A, 2 Pages

Section 1A26
132177-1642-1401, Data Report for Determining Density of Structural Ligthweight Concrete, Rev. A
C-15-00269, Self Consolidating Concrete Filed Testing & Compression Data Record, Rev. 0

[2504 Documents]

Section 1P01
Inspection Plans
Quality Inspection Plan F-S561-005, Structural Welding of Reinforcing Steel - Visual - AWS D1.4, Rev 5

Weld Procedure
WPS8-1.1T71, AWS Welding Procedure Specification GTAW, A108 Gr. 1018/1030 Mechanical J Groove (Lenton) Couplers to A572-50 and A36 Materials, Revision 5

Procedure Qualification Records
1-1-213, Rev 2
1-1-214, Rev 1
SP299, Rev 0
PQ101, Rev 0
PQ102, Rev 0
PQ103, Rev 0

Test Plan
APP-CR01-T1-002, Supplemental Coupler Weld Testing Requirements, Rev 0

E&DCR
APP-CR-GEF-049, Addition of Weld Position Table to Test Plan, Rev 0

M&TE
Torque Wrench, #167671, Date Serviced 5/5/15, Calibration Due 11/5/15

Section 1P02

CB&I CARs
2015-1006, VCS Unit 3 CA20_21 submodule shipped and received from Lake Charles with non-conforming rebar/coupler assemblies
2015-2342, Post work activity inspection for drilling or coring operations on safety-related SSCs
2015-3208, failure to identify nonconforming condition related to ITAAC wall thickness measurements
2015-3431, Comparison of as-built survey information to concrete general notes tolerance requirements

ITAAC INSPECTED

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
86	2.1.03.11	11. The RPV beltline material has a Charpy upper-shelf energy of no less than 75 ft-lb.	Manufacturing tests of the Charpy V-Notch specimen of the RPV beltline material will be performed.	A report exists and concludes that the initial RPV beltline Charpy upper-shelf energy is no less than 75 ft-lb.
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.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
760	3.3.00.02a.i.a	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.a) A report exists which reconciles deviations during construction and concludes that the as-built containment internal structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.
761	3.3.00.02a.i.b	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.b) A report exists which reconciles deviations during construction and concludes that the as-built shield building structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.
762	3.3.00.02a.i.c	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	i.c) A report exists which reconciles deviations during construction and concludes that the as-built structures in the non-radiologically controlled area of the auxiliary building, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

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.
765	3.3.00.02a.ii.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.	ii) An inspection of the as□built concrete thickness will be performed.	ii.b) A report exists that concludes that the as-built concrete thicknesses of the shield building sections 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.
767	3.3.00.02a.ii.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.	ii) An inspection of the as□built concrete thickness will be performed.	ii.d) A report exists that concludes that the as-built concrete thicknesses of the 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.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
779	3.3.00.03c	3. Walls and floors of the nuclear island structures as defined on Table 3.3□1 except for designed openings or penetrations provide shielding during normal operations.	Inspection of the as-built nuclear island structures wall and floor thicknesses will be performed.	c) A report exists and concludes that the shield walls and floors of the non□radiologically controlled area of the auxiliary building as defined in Table 3.3-1 except for designed openings or penetrations are consistent with the concrete wall thicknesses provided in Table 3.3-1.

LIST OF ACRONYMS

ASTM	American Concrete Institute
ADAMS	Agencywide Documents Access & Management System
ASME	American Society of Mechanical Engineers
ASTM	American Society for TeAWSsting and Materials
AWS	American Welding Society
CAR	Corrective Action Report
CB&I	Chicago Bridge and Iron
CFR	Code of Federal Regulations
CMTR	Certified Material Test Report
CSI	Construction Site Instruction
CVS	Chemical and Volume Control System
E&DCR	Engineering and Design Coordination Report
EPC	Engineering, Procurement, and Construction
ESAB	English for Electric Welding Limited (*Elektriska Svetsnings-Aktiebolaget*, a Swedish industrial company)
FCAW	Flux Core Arc Welding
IHI	Ishikawajima-Harima Heavy Industries Co., Ltd.
IP	Inspection Procedure
IQI	Image Quality Indicator
ITAAC	Inspections, Tests, Analysis, and Acceptance Criteria
MT	Magnetic Particle Examination
N&D	Nonconformance and Disposition Report
NCR	Nonconformance Report
NDE	Nondestructive Examination
NI	Nuclear Island
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PQR	Procedure Qualification Record
QA	Quality Assurance
QC	Quality Control
RCDT	Reactor Coolant Drain Tank Room
SCC	Self-Consolidating Concrete
SCE&G	South Carolina Electric and Gas
SMAW	Shielded Metal Arc Welding
SSC	Structures, Systems, and Components
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing
WEC	Westinghouse Electric Company
WPS	Welding Procedure Specifications