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

August 6, 2014

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 05200027/2014003 and 05200028/2014003

Dear Mr. Jones:

On June 30, 2014, 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 July 9, 2014, and also on July 16, 2014, with you and other members of your staff.

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

One NRC-identified finding of very low safety significance (Green) was identified during this inspection. This finding was determined to involve violations of NRC requirements and has a cross-cutting aspect in the area of baseline inspection, decision making [A.1(b)]. However, because of its very low safety significance, and because the issue was entered into your corrective action program, the NRC is treating the issue as non-cited violation (NCV) in accordance with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector office at the Virgil C. Summer Nuclear Station Units 2 & 3.

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

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 available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

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

Sincerely,

/RA/

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

Docket Nos.: 05200027, 05200028
License Nos.: NPF-93, NPF-94

Enclosure: Inspection Report 05200027/2014003
and 05200028/2014003
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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* Previous Concurrence

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DATE	07/31/2014	07/31/2014	07/31/2014	08/05/2014	07/31/2014	07/31/2014
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Letter to R. Jones from Michael E. Ernstes dated August 6, 2014

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3 - NRC INTEGRATED INSPECTION REPORTS 05200027/2014002 and 05200028/2014002

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200027 5200028
License Numbers:	NPF-93 NPF-94
Report Numbers:	05200027/2014003 05200028/2014003
Licensee:	South Carolina Electric & Gas
Facility:	Virgil C. Summer Nuclear Station Unit 2 Virgil C. Summer Nuclear Station Unit 3
Location:	Jenkinsville, SC
Inspection Dates:	April 1, 2014 through June 30, 2014
Inspectors:	A. Artayet, Senior Construction Inspector, DCI P. Carman, Construction Inspector, DCI P. Donnelly, Resident Inspector, DCP D. Failla, Resident Inspector, DCP R. Jackson, Senior Resident Inspector, DCP A. Johnson, Reactor Operations Engineer, NRO C. Oelstrom, Construction Inspector, DCI A. Ponko, Senior Construction Inspector, DCI S. Temple, Construction Inspector, DCI
Approved by:	Michael Ernstes, Chief Construction Projects Branch 4 Division of Construction Projects

SUMMARY OF FINDINGS

Inspection Report (IR) 05200027/2014003, 05200028/2014003; 04/01/2014 through 06/30/2014; Virgil C. Summer Nuclear Station Unit 2, Virgil C. Summer Nuclear Station Unit 3, routine integrated inspection report.

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

A. NRC-Identified and Self Revealed Findings

Cornerstone: Procurement/Fabrication

Green. The inspectors identified an ITAAC finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment and Services," for South Carolina Electric and Gas' (SCE&G) failure to assure purchased equipment met procurement and ITAAC requirements. The licensee entered this issue into their corrective action program as CR-NND-14-00362.

The finding was associated with the Procurement/Fabrication cornerstone. The inspectors determined the performance deficiency was more than minor following the guidance in IMC 0613, "Power Rector Construction Inspection Reports," Appendix E, Example 4. Specifically, the inspectors identified that the licensee failed to maintain quality-related records in accordance with quality assurance (QA) program requirements that precluded the licensee from demonstrating the ability of a safety significant structure, system, or component (SSC) to meet an ITAAC as required by the contract. The finding was determined to be an ITAAC finding because it was material to the acceptance criteria of Unit 2 ITAAC 190.

The inspectors screened the finding for a possible construction safety focus component (CSFC) aspect in accordance with Appendix F, "Construction Safety Focus Components and Aspects," of IMC 0613, "Power Reactor Construction Inspection Reports." This finding has a cross-cutting aspect in the area of baseline inspection, decision making because the licensee did not properly conduct effectiveness reviews (e.g. self-assessments or audits) to verify underlying assumptions, identify possible unintended consequences, and determine how to improve future decisions. Specifically, the licensee reviewed the calculation provided by Westinghouse as part of the ITAAC 190 closure package and failed to determine whether records existed to verify the underlying assumptions. [A.1(b)]

B. Licensee-Identified Violations

No findings were identified.

REPORT DETAILS

Summary of Plant Construction Status

During this inspection period, for Unit 2, the licensee continued construction of the auxiliary building walls and floors up to elevation 82'6", module CA20 was set in place in the nuclear island (NI), the containment vessel (CV) lower ring was set in place on top of the containment vessel bottom head (CVBH) in the NI, assembly/preparation of the CV middle and upper rings continued, and assembly of modules CA01 and CA05 continued. For Unit 3, the licensee continued construction of the auxiliary building walls and floors up to elevation 82'6", the CVBH was set in place in the NI, and assembly/preparation of the CV lower and middle rings continued.

1. CONSTRUCTION REACTOR SAFETY

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

1A01 (Unit 2) ITAAC Number 2.1.03.02c (71) / Family 05A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.02c (71):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
2.c) The reactor vessel arrangement is as shown in Figure 2.1.3-3.	Inspection of the as-built system will be performed.	The as-built RXS will accommodate the reactor vessel arrangement shown in Figure 2.1.3-3.

The inspectors used the following NRC inspection procedures (IP)/sections to perform this inspection:

- 65001.05-02.07 - Records Review
- 65001.A- As-Built Attributes for SSCs associated with ITAAC

The inspectors reviewed a portion of the Quality Verification Documentation, Volume No. 1 of 1, for the V.C. Summer Unit 2 Reactor Vessel Assembly, supplied by Doosan Heavy Industries & Construction Co. to determine whether the documentation met the requirements of the design specification and the FSAR. Specifically, the inspectors reviewed section 8.0 of the Quality Verification Documentation, As Built Dimension Record, to determine whether the as-built dimensions met the requirements of the design specification as specified by Figure 2.1.3-3 and Table 2.1.3-4, dimensions "A", "B", "C", "F", "G", "H", and "I", of the V.C. Summer Unit 2 FSAR.

b. Findings

No findings were identified.

1A02 (Unit 2) 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):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.05-02.07 - Records Review

The inspectors reviewed the SCE&G Unit 2 Reactor Pressure Vessel ITAAC Closure Notice for completion of ITAAC 2.1.03.11 along with the Completion Package VSL-VSG-000162, Attachment 1, ITAAC Determination Report, and referenced Surveillance Report NND-SUR-2013-102, issued January 6, 2014, to determine whether the initial fracture toughness and upper-shelf energy requirements of the beltline region were in accordance with the:

- 1998 Edition including 2000 Addenda of the American Society of Mechanical Engineers (ASME) Section III Code, Division 1, Subsection NB, Class 1 Components;
- 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 2 Updated Final Safety Analysis Report.

b. Findings

No findings were identified.

1A03 (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):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

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

The inspectors observed welding of fit-up tools to the pressure boundary (see also 2.2.01.03a for further pressure boundary inspections) that were used to aid in the alignment of the CV lower ring to the bottom head to determine whether the identification of temporary SA-36 carbon steel material attachments, cleanliness of adjoining surfaces, and preheat was performed using qualified welding procedures and welders in accordance with the requirements of ASME Section III, Article NE-4000.

b. Findings

No findings were identified.

1A04 (Unit 2) ITAAC Number 2.2.01.02a (91) / Family 06F

a. Inspection Scope

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

- 65001.11-02.05 - Nondestructive Examination

The inspectors reviewed radiographic film to determine whether the radiographic examination (RT) for a sample of middle ring welds was acceptable and film interpretation was performed in accordance with procedures and ASME Code Section III, Subsection NE. The inspectors reviewed radiographic examination reports to determine whether the nondestructive examinations were documented in accordance with the film interpretation, procedures, and ASME Code Section III, Subsection NE. The inspectors reviewed radiographic film for the middle ring S7 to S8 girth weld.

b. Findings

No findings were identified.

1A05 (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):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.11-02.05 - Nondestructive Examination

The inspectors reviewed radiographic film to determine whether the RT for a sample of middle ring welds was acceptable and film interpretation was performed in accordance with procedures and ASME Code Section III, Subsection NE. The inspectors reviewed radiographic examination reports to determine whether the nondestructive examinations were documented in accordance with the film interpretation, procedures, and ASME Code Section III, Subsection NE. The inspectors reviewed radiographic film for the middle ring S7 to S8 girth weld.

b. Findings

No findings were identified.

1A06 (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.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.11-02.03 - Installation and Welding

The inspectors observed in-process fit-up and tack, partial circumferential root pass welding, joint cleanliness, 1/8" maximum internal offset, azimuth alignment, preheat, and electrical welding parameters for a double-V groove girth weld to determine whether assembly of the CV lower ring to the lower head was performed using qualified welding

procedures and welders in accordance the requirements of applicable Chicago Bridge and Iron (CB&I) drawings and ASME Section III, Article NE-4000.

b. Findings

No findings were identified.

1A07 (Unit 2) ITAAC Number 2.2.03.08c.vi.02 (190) / Family 06A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.vi.02 (190):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	vi) Inspections of each of the following tanks will be conducted: 2. Accumulators	vi) The calculated volume of each of the following tanks is as follows: 2. Accumulators ≥ 2000 ft3

The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed the following Westinghouse Electric Company (WEC) documents to determine if the records furnished documentary evidence that the requirements of ITAAC 190 were met:

- VS2-MT02-Z0R-201, "AP1000 Accumulator Tank - V.C. Summer Unit 2 As-Built Analysis"
- VS2-MT02-GNR-016, Dimensional Non-Conformances for AP1000 Accumulator Tank, V.C. Summer Unit 2 Component 1, Rev 0
- VS2-MT02-GNR-017, Dimensional Non-Conformances for AP1000 Accumulator Tank, V.C. Summer Unit 2 Component 2, Rev 0

In addition, the inspectors reviewed the WEC procurement document VSG-MT02-Z5-003, "Appendix 3 Technical Requirements for the AP1000 Accumulator Tank Purchase Order for the VC Summer Project," to determine if the documents supplied by the accumulator fabricator, Mangiarotti, met the requirements of the purchase order.

b. Findings

Inadequate Quality-Related Records Regarding Accumulator Tank Volume Calculation

Introduction

An ITAAC finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion VII, “Control of Purchased Material, Equipment and Services,” was identified by the inspectors for the failure to assure purchased equipment met procurement and ITAAC requirements.

Description

Purchase order requirements VSG-MT02-Z5-003, Revision 3, “Appendix 3 Technical Requirements for the AP1000 Accumulator Tank Purchase Order for the VC Summer Project” require subcontractor Mangioratti to provide final, as-built dimensions of the accumulator in the quality assurance data package sufficient to demonstrate compliance with the ITAAC acceptance criteria. Westinghouse provided calculation note VS2-MT02-Z0R-201, “AP1000 Accumulator Tank – V.C. Summer Unit 2 (VS2) As-Built Analysis” to SCE&G to support closure of ITAAC 190. The acceptance criterion for the ITAAC requires the calculated volume of each accumulator tank to be greater than or equal to 2000 cubic feet. The calculation utilized average outer diameter and average thickness measurements provided by the subcontractor Mangioratti on dimensional inspection reports. SCE&G completed a technical owner review of the ITAAC closure package per procedure NND-AP-0032, Implementation of Inspections, Tests, Analyses and Acceptance Criteria (ITAAC). Subsequent to that review, the inspectors requested the dimensional inspection reports that contained the diameter and thickness measurements used to calculate the average dimensions provided. Mangioratti could not provide the requested information. The inspectors were unable to verify the average dimensions provided by Mangioratti were calculated correctly, and further were unable to determine if the dimensions used in the average were taken at locations sufficiently spaced over the surface of the accumulator to provide accurate average dimensions.

Analysis

The inspectors determined that the licensee's failure to provide adequate oversight of purchased material and services, specifically to ensure that objective evidence of quality was furnished by the contractor and subcontractor, was a performance deficiency. The performance deficiency was considered more than minor following the guidance in IMC 0613, “Power Rector Construction Inspection Reports,” Appendix E, Example 4. Specifically, the inspectors identified that the licensee failed to maintain quality-related records in accordance with QA program requirements that precluded the licensee from demonstrating the ability of a safety significant SSC to meet an ITAAC as required by the contract. The finding was determined to be an ITAAC finding because it was material to the acceptance criteria of Unit 2 ITAAC 190.

The inspectors concluded this finding was associated with the Procurement/Fabrication Cornerstone. The inspectors evaluated the finding using the construction SDP in accordance with IMC 2519, "Construction Significance Determination Process," Appendix A, "AP 1000 Construction Significance Determination Process" and determined that finding was of very low safety significance (Green) because the SSC would have been able to meet its design function and was assigned to Row 1 of the risk importance table.

The inspectors screened the finding for a possible CSFC aspect in accordance with Appendix F, “Construction Safety Focus Components and Aspects,” of IMC 0613, “Power Reactor Construction Inspection Reports.” This finding has a cross-cutting aspect in the area of baseline inspection, decision making because the licensee did not properly conduct effectiveness reviews (e.g. self-assessments or audits) to verify underlying assumptions, identify possible unintended consequences, and determine how to improve future decisions. Specifically, the licensee reviewed the calculation provided by Westinghouse as part of the ITAAC 190 closure package and failed to determine whether records existed to verify the underlying assumptions. [A.1(b)]

Enforcement

10 CFR Part 50, Appendix B, Criterion VII, requires, in part, that, "Measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents."

Contrary to the above, on or before April 1, 2014, the licensee failed to assure that purchased equipment conformed to the procurement documents. Specifically, the Unit 2 accumulators were received without proper records to determine if they met ITAAC volume requirements as required by the procurement documents.

Because this violation was of very low safety significance (Green) and it was entered into the licensee’s corrective action program as CR-NND-14-00362, this violation is being treated as a non-cited violation (NCV 05200027-2014-003-001), Accumulator Volume Records, consistent with Section 2.3 of the NRC Enforcement Policy and EGM 11-006.

1A08 (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):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02 - Fabrication Records Review
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.F-02.01 - Design Document Review

The inspectors performed a field inspection of construction activities associated with containment internal structures sub-modules at the Modular Assembly Building (MAB) 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 if design and fabrication was completed in accordance with applicable specifications, drawings, and approved procedures;
- determine if key building critical dimensions, materials, and separation satisfied design specifications, requirements, and relevant ITAAC;
- determine if the licensee confirmed that components inspected conformed to design drawings and that deviations were being addressed in accordance with procedure requirements;
- determine if 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 2 containment internal structures:

- The south wall of the refueling cavity (CA01-24);
- 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 conformed to the design.

b. Findings

No findings were identified.

1A09 (Unit 2) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.c (762):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

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

The inspectors performed a direct inspection of the vertical and horizontal wall reinforcement on walls 7.3 and J within the non-radiologically controlled portion of the auxiliary building from elevation 66'6" to 82'6". During this inspection, the inspectors reviewed WEC and CB&I design documents and procedures to determine whether construction related activities were performed in accordance with the following:

- NCSP 3-42, Reinforcing Steel Installation, Revision 1
- VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Revision 5

The inspectors performed field observations of construction activities to determine whether the installation of reinforcing steel and embed plates were performed in accordance with the applicable drawings. In addition, the inspectors independently measured horizontal and vertical lap splices as well as clear cover dimensions to determine whether field conditions conformed to American Concrete Institute (ACI) 349-01. While in the construction area, the inspectors also verified whether the latest approved-for-construction work package, procedures and drawings were readily available in the installation area and whether these documents were legible and appropriately maintained.

b. Findings

No findings were identified.

1A10 (Unit 2) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

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

The inspectors reviewed the concrete pre-placement inspection report for auxiliary building wall L to determine whether all unsatisfactory conditions were resolved in accordance with procedures prior to concrete placement. The inspectors observed the concrete pour from elevation 66’6” to 82’6” of the auxiliary building non-radiation controlled area wall L to determine whether procedures were followed and the requirements of the design specifications and ACI 349-01 were met. The inspectors specifically observed whether:

- pre-placement inspection performed by quality control (QC) was completed;
- time limit between mixing and placement had not been exceeded;
- temperature limits had not been exceeded;
- in-process testing (slump, air, and unit weight) requirements were met;
- batch ticket was reviewed to verify proper concrete mix was used;
- placement drop distances did not exceed specification requirements;
- vibration of concrete was adequate; and
- inspection during placement was performed.

b. Findings

No findings were identified.

1A11 (Unit 2) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 - Procedures
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01 - Design Document Review
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors conducted an inspection of structural concrete reinforcement placement for Wall 7.3 within the non-radiological controlled area of the Unit 2 auxiliary building. The inspectors' objectives were to:

- determine if structural concrete design and construction was accomplished under controlled conditions and in accordance with applicable procedures, specifications, drawings, and approved procedures using qualified personnel;
- evaluate the performance of ITAAC-related structural concrete reinforcement placement, documentation, and verification activities;
- determine if key building critical dimensions and materials satisfied design specifications, requirements, and relevant ITAAC;
- determine if structural concrete work and related licensee quality control activities were being performed in accordance with design specifications and approved procedures; and
- determine if records reflected that completed work met design specifications and acceptance criteria.

The inspectors performed observations and independent measurements on sample areas of the structural concrete reinforcement placement, reviewed applicable design drawings, work packages and specifications to verify construction activities were being conducted in accordance with the design documents and applicable procedures. Specifically, the inspectors observed structural concrete reinforcement along Wall 7.3, from column line I to the shield building and from elevation 66'-6" to 82'-6", within the non-radiological controlled area of the Unit 2 auxiliary building to verify that:

- contractors performing safety-related work had approved implementing procedures that described administrative and procedural controls, approved work processes, and inspection requirements;
- procedures clearly prescribed acceptable methods of quality control inspection which ensured that the as-built condition met specified design requirements, drawings and material specifications;
- procedures included appropriate quantitative and/or qualitative acceptance criteria for determining that the prescribed activities had been accomplished satisfactorily;

- construction records for reinforcing steel and embedments were adequate to furnish evidence of activities affecting quality and that SSCs conform to applicable codes, standards, regulations, and quality and technical requirements;
- reinforcing steel and embedments were located properly in the structure and forms were secured and free of concrete or excessive rust, and had proper clearances;
- reinforcing steel was installed in accordance with the latest approved-for-construction drawings, manufacturer's instructions, and procedures; and records related to inspected activities were accurate and that the recorded information met project requirements, design control document (DCD) specifications, and ITAAC.

b. Findings

No findings were identified.

1A12 (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):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

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 inspection of construction activities to determine the plate separation of sub-modules conforms to the required concrete thicknesses of the building sections.

The inspectors performed independent measurements on the following structural sub-modules for the proposed Unit 2 containment internal structures:

- The south wall of the refueling cavity wall (CA01-24);

- The north-south wall east of the CVS room (CA05-08);

The inspectors reviewed various documents for the selected modules, such as design drawings, and specifications, to verify:

- the shape, size, dimensions, type, and grade of material conformed to the approved specifications and design drawings
- fit-up tolerances for length, depth, and straightness of structural members were as specified

b. Findings

No findings were identified.

1A13 (Unit 2) ITAAC Number 3.3.00.02a.ii.c (766) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.c (766):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A - As-Built Attributes for SSCs associated with ITAAC

The inspectors performed inspection of construction activities to determine the concrete wall thickness to the required concrete thicknesses of Wall 7.3 in the non-radiological controlled area of the auxiliary building of Unit 2 from elevation 66’-6” to 82’-6”.

The inspectors performed independent measurements and reviewed various documents for the wall section, such as design drawings, and specifications, to verify:

- the shape, size, dimensions, type, and grade of material conformed to the approved specifications and design drawings and

- fit-up tolerances for length, depth, and straightness of structural members were as specified.

b. Findings

No findings were identified.

1A14 (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):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

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.02.03 - Independent Assessment/Measurement Inspection

The inspectors reviewed CB&I survey procedures NCSP 3-24, Field Surveying, and CSI 03-24, Site-Specific Field Surveying Instructions, to determine whether the procedures describe administrative and procedural controls and approve work processes. The inspectors observed CB&I personnel recording survey data in the field. Specifically, the inspectors observed the survey of the south side of wall 1 from elevation 66'-6" to 82'-6". The inspectors verified the following:

- the surveying equipment was properly maintained and calibrated;
- the personnel performing the survey were qualified and knowledgeable;
- the surveying activities were performed in accordance with the applicable procedures.

The inspectors reviewed drawing VS2-1200-CCK-009, Unit 2 Aux. Bldg. Col. Line 1 Wall Thickness As-Built from Column I to N From Elev. 66'-6" to 100'-0", to determine if the ITAAC wall thickness requirements of Updated Final Safety Analysis Report (UFSAR) Table 3.3-1 were met.

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:

- 65001.06-02.01 - General Installation
- 65001.06-02.02 - Component Welding
- 65001.F-02.01 - Design Document Review
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.03 - Observation of Fabrication Activities
- 65001.11-02.03 - Installation and Welding
- 65001.11-02.04 - Post Weld Heat Treatment
- 65001.11-02.05 - Nondestructive Examination

The inspectors reviewed Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) records for the Unit 3 CV lower ring shell parts and assemblies to verify that applicable codes, standards, and specifications were met, proper reviews and approvals were documented, test results were acceptable, and material traceability was maintained in accordance with 2001 edition including 2002 addenda of the ASME Section III, Subsection NE, Class MC, and Subsection NC, Class 2. Specifically, the inspectors reviewed six ASME Form N-2 Data Reports, and twenty certified material test reports (CMTRs) for pressure retaining shell/insert plates and penetration sleeves with associated nondestructive examination (NDE) reports used to manufacture items for the following welded parts:

- H01 upper equipment hatch penetration sleeve to insert plate (five CMTRs);
- H04 upper personnel/airlock hatch penetration sleeve to insert plate (two CMTRs);
- S1 course weld joint WB3-A4-A between the lower personnel hatch (H03) insert plate and adjoining shell plate B3-A4-1 (two CMTRs);
- Main steam (P23), and main and loop 1 startup feedwater (P25 and P44) main steam/feedwater penetration sleeves to insert plate B3-B14 assembly (four CMTRs);
- S2 course P13, P14, P15, and P16 stainless steel mechanical penetration sleeves to insert plate B3-B6 (five CMTRs);
- S1 course P41 spare penetration sleeve to insert plate B3-A5 (two CMTRs);

The inspectors reviewed the above CMTRs to determine whether the applicable dimensions, basic oxygen furnace degassing process, chemical compositions, mechanical properties (tensile and yield strength, elongation and reduction of area, carbon equivalency, Brinell hardness, and austenitic stainless grain size), heat treatment records, and NDE reports were in accordance with the requirements of the:

- ASME Section II, Part A, Ferrous Material Specifications;
- ASME Section III, Subsections NE and NC (including Subarticle NCA-3800, Metallic Material Organization's Quality System Program);
- UFSAR with reference to 10 CFR Part 50, Appendix B, and 10 CFR 21 applicability;
- WEC CV design specification APP-MV50-Z0-001;
- CB&I carbon steel material procurement specifications MS-SA-350 LF2-2773 for penetration sleeves, and MS-SA-738B-2888 and MS-SA-738B-2889 for shell plates; and
- CB&I stainless steel material procurement specifications MS-SA-182 F304L-2901 for ASME III-NE, Class MC, and MS-SA-182 F304L-2924 for ASME III-NC, Class 2, penetration sleeves.

The inspectors reviewed four CMTRs associated with welding of the S2 lower ring plates B3-B11, B3-12, B3-B7, and B3-B10, as documented in the 2.2.01.03a section of this report.

The inspector reviewed an IHI Disposition Notice DN-004-105, Rev. 2, for a P14 stainless steel mechanical penetration sleeve with a nonconforming internal wall melt-through at the fillet weld location to determine whether an issue was identified, removed, replaced, and documented in accordance with the requirements of 10 CFR 50 Appendix B, Criterion 15, "Nonconforming Materials, Parts, or Components."

For additional inspections related to ASME fabrication of pressure boundary welds, see 2.2.01.03a and 2.2.01.04a.ii in this report.

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.B-02.05-Inspection
- 65001.11-02.05 - Nondestructive Examination

The inspectors reviewed radiographic film to determine whether the RT for a sample of CV bottom head welds and lower ring welds were acceptable and film interpretation was performed in accordance with procedures and ASME Code Section III, Subsection NE.

The inspectors reviewed radiographic examination reports to determine whether the nondestructive examinations were documented in accordance with the film interpretation, procedures, and ASME Code Section III, Subsection NE. The inspectors reviewed radiographic film for the following welds:

- Bottom Head BH2 vertical weld seam 'Y'
- Lower Ring S1 vertical weld seam 'D'

The inspectors observed welding of the Unit 3 lower equipment hatch insert plate (H02) to vessel to determine whether the following attributes were controlled in accordance with specifications, procedures, and ASME Code Section III, Subsection NE. Specifically, the inspectors:

- reviewed the associated weld data record to determine whether correct welding procedure specifications (WPSs) were referenced, hold points were observed, and inspections were performed;
- determined if the weld root spacing was within the tolerances specified on the drawing;
- examined the weld filler material to determine whether the material was in accordance with the WPS;
- examined the welding gas to determine whether the gas was in accordance with the WPS;
- observed that the welder was welding within the WPS variables;
- determined if the weld joint was protected from wind and rain in accordance with the general welding procedure specification for the flux cored arc welding process;
- determined if preheat and interpass temperatures were monitored and controlled in accordance with the general welding procedure specification for the flux cored arc welding process and the specific WPS; and
- determined if the weld was traceable to the welder.

b. Findings

No findings were identified.

1A17 (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.B-02.02 - Welding Procedure Qualification
- 65001.B-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.B-02.05 - Inspection
- 65001.11-02.03 - Installation and Welding

- 65001.11-02.05 - Nondestructive Examination
- 65001.11-02.04 - Post Weld Heat Treatment
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.03 - Observation of Fabrication Activities

The inspectors reviewed IHI and CB&I records for fabrication of the Unit 3 CV lower ring shell parts and items to determine whether code, design, material specifications, and procedural requirements were met; proper reviews, approvals, and inspections were documented; traceability of shell and insert plates, sleeves, and weld filler metals were maintained; qualified welding procedures, welders, and welding operators were used for welding activities; proper heat treatment techniques were used; and NDE with acceptable results were performed in accordance with the requirements of:

- ASME Section II, Part A - Ferrous Material Specifications, and Part C - Specifications for Welding Rods, Electrodes, and Filler Metals;
- ASME Section III, Subsections NCA - General Requirements, NC - Class 2 Components, and NE - Class MC Components;
- ASME Section V - Nondestructive Examination;
- ASME Section IX - Welding and Brazing Qualification;
- UFSAR with reference to 10 CFR Part 50, Appendix B, and 10 CFR 21 applicability; and
- WEC CV design specification APP-MV50-Z0-001.

For the H01 upper equipment hatch penetration sleeve to insert plate corner weld WF23-A-N and both sleeve to sleeve butt welds WF23-AA-L1 and -L2 fabricated by IHI with nine NDE reports, the inspectors reviewed:

- three IHI weld checklists to determine whether the control of welding by documenting the WPS used, weld filler metal heat number, and unique traceability number for each welder, and inspections on the root opening, groove angle and surface cleanliness, misalignment, and final weld surfaces were performed in accordance with the requirements of ASME Section III, NCA-3850, Quality System Program Requirements, paragraphs NCA-4134.9 and .10, Control of Processes and Inspection, respectively, and ASME Section III, Subsection NE, Article 4000, Fabrication and Installation;
- a CMTR from Nippon Steel & Sumikin of a solid wire weld filler metal used on all three welds with heat no. 1M7874(1) of ER80S-G classification in the as-welded and heat treated conditions to determine whether mechanical properties, chemical analysis, postweld heat treatment (PWHT) strip chart, and radiographic testing and results were performed in accordance with the requirements of the IHI purchase specification 026H652 and ASME Section II, Part C, SFA-5.28, Specification for Low-Alloy Steel Electrodes and Rods for Gas Shielded Arc Welding;
- two certification records for gas metal arc welding (GMAW) performance qualification of welders 2006 and 2535 that welded on welds WF23-AA-L1 and -L2 to determine whether essential variables with qualification test conditions and limits, visual inspection, quantity of test specimens and results were achieved in accordance with the requirements of ASME Section IX, Article III, Welding Performance Qualifications;
- three NDE reports for wet fluorescent magnetic particle examination (MT) of weld

edge preparations and back groove of both welds WF23-AA-L1 and -L2 to determine whether alternating current 10 lbs. weight hold test, black light intensity for ultraviolet light, and magnetizing at 90º intervals with no indications were performed in accordance with the requirements of ASME Section III, Subsection NE, Article NE-5000, Examination, with reference to paragraph NE-5342, Acceptance Standards, and ASME Section V, Article 7, Magnetic Particle Examination;

- one NDE report for RT of both butt welds WF23-AA-L1 and -L2 to determine whether the geometric un-sharpness, source side no. 60 hole-type Image Quality Indicator (IQI), and shim thickness for the single-wall exposure with acceptable results were performed in accordance with the requirements of ASME Section V, Article 2, Radiographic Examination;
- one NDE report for ultrasonic examination (UT) from the inside surface of the sleeve of weld WF23-A-N to determine whether the transducer size, inspection frequency, amplitude, and scanning speed and overlap were performed with no recordable indications in accordance with the requirements of ASME Section V, Article 5, Ultrasonic Examination Methods for Materials, with reference to ASME Section II, Part A, SA-435, Specification for Straight-Beam Ultrasonic Examination of Steel Plates;
- eleven certification records for GMAW welders W-220, W-1881, W-2002, W-2005, W-2568, W-2588, W-2724, W-2726, W-2730, W-2732, and W-2763 for weld WF23-A-N;
- four NDE-MT reports for weld WF23-A-N for weld edge preparations, back groove, and after PWHT; and
- a PWHT record after completion of welding to determine whether thermocouple placement locations and a strip chart showing heating and cooling rates along with the hold time and temperature were in accordance with the requirements of ASME Section III, Subarticle NE-4600, Heat Treatment.

For the H04 upper personnel/airlock hatch penetration sleeve to insert plate corner weld WE23-AE-N and sleeve to sleeve butt weld WE23-AE-L fabricated by IHI with eight NDE reports, the inspectors reviewed the following documents for the general inspection attributes described for H01 above:

- two IHI weld checklists;
- a CMTR from Nippon Steel & Sumikin of a solid wire weld filler metal used on weld WE23-AE-N with heat no. 9M7999(1) of ER80S-G;
- two NDE-MT reports for weld WE23-AE-L;
- one NDE-RT report of weld WE23-AE-L;
- four certification records for welders W-430, W-1977, W-2595, and W-2705;
- one NDE-UT report for weld WF23-AE-N;
- four NDE-MT reports for weld WF23-AE-N; and
- a PWHT record.

For the H03 lower personnel/airlock hatch insert plate to S1 shell plate butt weld WB3-A4-A fabricated by IHI with four NDE reports, the inspectors reviewed the following documents for the general inspection attributes described for H01 above:

- one IHI weld checklist;
- three NDE-MT reports;
- one NDE-RT report and films to determine whether the geometric un-sharpness,

shim thickness, sensitivity of the radiographs displayed the essential source side #35 hole-type IQI, film density range of 1.8 to 4.0 in the area of interest using a calibrated densitometer, and weld identification and radiograph location markings for the single-wall exposure with acceptable results were performed in accordance with the requirements of ASME Section III, paragraph NE-5320, Radiographic Acceptance Standards, and ASME Section V, Article 2, Radiographic Examination; and
- a PWHT record.

For the main steam (P23) and feedwater (P25 and P44) penetration sleeves to insert plate B3-B14 (MS/FW) fabricated by IHI with seven NDE reports, the inspectors reviewed the following documents for the general inspection attributes described for H01 above:

- three IHI weld checklists;
- six NDE-MT reports; and
- a PWHT record.

For the S1 course P41 spare penetration sleeve to insert plate B3-A5, insert plate to shell plate weld WB3-A5-A, and three weld-neck flange to sleeve welds WB3-P40,41,42-F for each spare penetrations P40, P41, and P42 fabricated by IHI with six NDE reports, the inspectors reviewed the following documents for the inspection attributes described for H01 above, with the exceptions noted:

- four NDE-MT reports for the B3-A5 weld preparations, back groove, and after PWHT;
- one NDE-RT report for the WB3-A5-A weld to determine whether the geometric un-sharpness, source side no. 35 hole-type IQI, and shim thickness for the single-wall exposure with acceptable results were performed in accordance with the requirements of ASME Section V, Article 2, Radiographic Examination;
- one NDE-RT report for the three WB3-P40,41,42-F welds to determine whether the geometric un-sharpness and source side no. 20 hole-type IQI for the single-wall exposure with acceptable results were performed in accordance with the requirements of ASME Section V, Article 2, Radiographic Examination; and
- a PWHT record.

For the S2 course P13, P14, P15, and P16 stainless steel mechanical penetration sleeves to the insert plate B3-B6 fabricated by IHI with eleven NDE reports, the inspectors reviewed:

- eight IHI weld checklists to determine whether the control of weld metal buttering of both internal and external CV insert plate surfaces for all four penetrations by documenting the WPS used, weld filler metal heat number, and unique traceability number for each welder, and buttering surface inspections were performed in accordance with the requirements of ASME Section III, NCA-3850, Quality System Program Requirements, paragraphs NCA-4134.9 and .10, Control of Processes and Inspection, respectively, and ASME Section III, Subsection NE, Article 4000, Fabrication and Installation;
- eight IHI weld checklists to determine whether the control of weld metal buttering all four sleeves at both internal and external CV surface locations by documenting the WPS used; weld filler metal heat number, unique traceability

number for each welder; and inspections of the surface cleanliness and final weld surfaces were performed in accordance with the requirements of ASME Section III, NCA-3850, Quality System Program Requirements, paragraphs NCA-4134.9 and .10, Control of Processes and Inspection, respectively, ASME Section III, Subsections NC, Class 2 Components, and NE, Class MC Components;

- two IHI weld checklists for welds WB3-P14-N1A-R and -N2A-R to determine whether repair/replacement of a defective melt-through P14 sleeve by documenting the WPS used, weld filler metal heat number, and unique traceability number for each welder were performed in accordance with ASME Section III, paragraph NB/NC-4450, Repair of Weld Metal Defects;
- one IHI dissimilar metal WPS TT-1804G [with a supporting Procedure Qualification Record (PQR)] to determine whether manual gas tungsten arc welding (GTAW) stainless steel to carbon steel qualification with pertinent essential and nonessential variables were performed in accordance with the requirements of ASME Section IX, Article II, Welding Procedure Qualifications;
- four certification records for gas tungsten arc welding (GTAW) performance qualification of welders W-1925, W-1963, W-2001, and W-2567 to determine whether essential variables with qualification test conditions and limits, visual inspection, quantity of test specimens and results were achieved in accordance with the requirements of ASME Section IX, Article III, Welding Performance Qualifications;
- two CMTRs from Nippon Welding Rod for each ER308L and ER309L stainless steel solid rod classifications in the as-welded and heat treated conditions used for all four P13 through P16 penetrations to determine whether mechanical properties, chemical analysis, postweld heat treatment, and minimum delta ferrite content were performed in accordance with the requirements of ASME Section II, Part C, SFA-9, Specification for Bare Stainless Steel Welding Electrodes and Rods, and ASME Section III, NE-2433, Delta Ferrite Determination, and ASME Section III, Appendix P, Contents of Certified Material Test Reports (CMTR);
- fifteen NDE reports for visible liquid penetrant examination (PT) of buttering, root pass, and before and after PWHT to determine whether dwell time of the penetrant and developer within temperature range, and light intensity for surface illumination with no indication were performed in accordance with the requirements of ASME Section III, paragraph NE-5350, Liquid Penetrant Acceptance Standards, and ASME Section V, Article 6, Liquid Penetrant Examination;
- three NDE reports for UT from the buttering surface before and after PWHT to determine whether the transducer size, inspection frequency, amplitude, and scanning direction, speed, and overlap were performed with no recordable indications in accordance with the requirements of ASME Section III, paragraph NE-5330, Ultrasonic Acceptance Standards, and ASME Section V, Article 5, Ultrasonic Examination Methods for Materials; and
- a PWHT record.

For the H02 lower equipment hatch the inspectors reviewed a NDE-RT report for both completed L1 and L2 sleeve to sleeve butt welds fabricated by IHI to determine whether the geometric un-sharpness, source side #60 hole-type IQI, and shim thickness for the single-wall exposure with acceptable results were performed in accordance with the requirements of ASME Section V, Article 2, Radiographic Examination.

For the S2 course vertical position weld seams "H" and "L" fabricated by CB&I with two NDE reports, the inspectors reviewed:

- Four CMTRs of S2 shell plates B3-B11 and B3-B12 for weld seam "H", and B3-B7 and B3-B10 for weld seam "L" to determine whether dimensions, basic oxygen furnace degassing process, chemical compositions, mechanical properties (tensile and yield strength, elongation and reduction of area, and carbon equivalency), heat treatment, and NDE reports were in accordance with the requirements of ASME Section II, Part A, and ASME Section III, Subsection NE;
- Two CB&I weld travelers B3B-S2-H and B3B-S2-L each documenting the applicable drawing for field edge preps and weld detail drawing, NDE procedures, weld filler metal specifications, WPSs, recording traceable weld filler metal control numbers and welding operators and welder identification stamps, and hold point sign-offs for acceptable fit-up and tack, final visual inspection on the first-side of the weld joint, back grinding and/or gouging second side before start of welding, final visual inspection on the second-side of the weld joint, and final radiography;
- Two welding operator certifications for welder identification numbers 467 and 921, and eleven welder certifications for welder identification numbers 467, 529, 629, and 921 along with the monthly CB&I Welder Qualification Log dated 5/12/14 for continuity of qualifications;
- In-process vertical machine flux-cored arc welding (FCAW) in the middle-thickness region of the groove for weld seam "L" on the CV lower ring S3 course performed by welding operator 041 to determine whether the control of heat input by volume of deposited weld metal was in accordance with the requirements of ASME Section III, Subsection NE, Class MC Components, CB&I WPS E91TG-H4, Revision 10, Note 9a; and
- Two CB&I NDE-RT reports VCS-U3-2014-RT-087 and VCS-U3-2014-RT-085 with films for vertical welds "H" and "L", respectively, to determine whether the geometric un-sharpness, shim thickness, sensitivity of the radiographs displayed the essential source side #11 wire type IQI, film density range of 1.8 to 4.0 in the area of interest using a calibrated densitometer, and weld identification and radiograph location markings for the single-wall exposure with acceptable results were performed in accordance with the requirements of ASME Section III, paragraph NE-5320, Radiographic Acceptance Standards, and ASME Section V, Article 2, Radiographic Examination.

The inspectors observed CB&I in-process vertical machine FCAW for two weld seams "F" and "L" on the CV lower ring S3 course performed by welding operators 041 and 838, respectively, to determine whether the cleanliness of the bevel and both shell plates near the edge of weld groove, preheat maintenance, welding gas mixture, welding parameters, and four welding operator certification records for each 3G (vertical) and 4G (overhead) test positions were in accordance with the requirements of ASME Section III, Subsection NE. During the in-process field welding, the inspectors observed the following middle-wall thickness weld layer activities to determine whether the qualified welding operator's ability to provide a sound weld was in accordance with the requirements of the previously reviewed CB&I WPS E91TG-H4:

- multipass weld metal spacing prevented lack-of-fusion;
- starts and stops of weld passes without porosity and cracking, respectively;

- weld to bevel interface contour prevented slag entrapment and lack-of-fusion on the sidewalls;
- slag removal on the weld surface to maintain weld surface interpass cleanliness and prevent slag entrapment; and
- weld bead patterns indicating proper travel speed and uphill welding direction.

The inspectors reviewed four CB&I NDE-RT reports (including weld repairs) VCS-U3-2014-RT-099, -101, -102, and -103 and films for the S1 to S2 course girth weld to determine whether the geometric un-sharpness, shim thickness, sensitivity of the radiographs displayed the essential source side #11 wire type IQI, film density range of 1.8 to 4.0 in the area of interest using a calibrated densitometer, and weld identification and radiograph location markings for the single-wall exposure with acceptable results were performed in accordance with the requirements of ASME Section III, paragraph NE-5320, Radiographic Acceptance Standards, and ASME Section V, Article 2, Radiographic Examination.

b. Findings

No findings were identified.

1A18 (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):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

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.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.03-Observation of Fabrication Activities

The inspectors reviewed twenty CMTRs (four for the H01 upper equipment hatch sleeve to insert plate; two for the H04 upper personnel/airlock hatch sleeve to insert plate; two for the S1 course weld joint WB3-A4-A between the H03 lower personnel/airlock hatch insert plate and shell plate B3-A4; four for the P23, P25, and P44 sleeves to insert plate

of the main steam/feedwater penetration block; five for S2 course P13 through P16 mechanical penetration sleeves to insert plate; two for the P41 spare penetration to insert plate; and four for the shell plates of both welds H and L to determine whether the Charpy V-notch and applicable drop weight impact testing of pressure retaining materials were performed in accordance with the fracture toughness requirements of ASME Section III, Subsection NE; WEC CV design specification APP-MV50-Z0-001; and CB&I material procurement specifications MS-SA-350 LF2-2773, MS-SA-738B-2888, and MS-SA-738B-2889.

The inspectors reviewed two CMTRs for ER80S-G welding wire from Nippon Steel & Sumikin Welding Company to determine whether the Charpy V-notch and applicable drop weight impact testing of pressure retaining materials were performed in accordance with the fracture toughness requirements of ASME Section III, Subsection NE, WEC CV design specification APP-MV50-Z0-001, ASME Section II, Part C; and IHI Nuclear Power Division, Drawing No. 026H652, Revision 1, Purchase Specification of Welding Material SFA-5.28 ER80S-G (YM-3N), dated October 8, 2009.

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):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

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

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

The inspectors performed direct inspection of construction activities associated with the installation of reinforcing bar (rebar) on the Unit 3 CR10 module. The inspection focused on rebar layers 6, 7, 8, 9 and 10 underneath the CV. The inspectors reviewed documents and observed installation of reinforcing steel to verify the following:

- drawings adequately address the requirements of ACI 349-01;
- structural concrete construction was being accomplished under controlled conditions and in conformance with design requirements;
- applicable documentation for selected design changes were complete and accurate;
- placement of reinforcing steel was performed in accordance with the applicable specifications, codes, drawings, and procedures.

Specifically, the inspectors observed the installation of rebar and reviewed survey data reports to determine if the rebar placement met the requirements of the applicable drawings and ACI-349. The inspectors reviewed design changes contained in Engineering and Design Coordination Reports (E&DCRs) to determine whether design deviations were appropriately identified and addressed in a matter that would support closure of the ITAAC. In addition, the inspectors reviewed a sample of rebar CMTRs and compared the chemical, mechanical and geometric characteristics of the rebar being placed under the CV to the requirements of American Society for Testing and Materials (ASTM) A-706-13, Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.

The inspectors observed the pedestal concrete on and around Unit 3 CR10 module to determine whether procedures were followed and the requirements of the design specifications and ACI 349-01 were met. The inspectors specifically observed whether:

- pre-placement inspection performed by QC was completed;
- time limit between mixing and placement had not been exceeded;
- in-process testing (slump, air, temperature, and unit weight) requirements were met;
- concrete was placed and consolidated by properly trained individuals using the proper equipment;
- inspection during placement was performed;
- proper finishing, curing, and temperature monitoring techniques and equipment were used.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

- 65001.01-02.01 – Procedures
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.02 - Laboratory Testing
- 65001.02-02.03 - Special Considerations

The inspectors conducted an inspection of grout placement within the Unit 3 shield building area, beneath the CV bottom head. The inspectors' objectives were to:

- determine if grout design and construction was accomplished under controlled conditions and in accordance with applicable procedures, specifications, drawings, and approved procedures using qualified personnel;
- evaluate the performance of ITAAC-related grout placement, documentation, and verification activities;
- determine if grout work and related licensee quality control activities were being performed in accordance with design specifications and approved procedures; and
- determine if records reflected that completed work met design specifications and acceptance criteria.

The inspectors performed observations on sample areas of the grout placement; reviewed applicable design drawings, work packages and specifications; and interviewed licensee personnel to verify construction activities were being conducted in accordance with the design documents and applicable procedures. Specifically, the inspectors observed placement of grout within the shield building area of the Unit 3 nuclear island directly beneath the CV bottom head and above previously placed concrete to verify that:

- the pre placement inspection performed by QC was completed before any grout was placed;
- proper mix, transport time, placement location, and amount of temper water was added at delivery point;
- placement drop distances did not exceed specification requirements;
- inspection during placement was performed as required;
- grout temperature and strength test specimens were being sampled at the proper location and frequency as required in the design specifications and performed by qualified individuals. Collection and testing techniques conformed to the procedures specified in the ASTM standards, or equivalent;
- grout subgrade and form work were free of foreign materials;
- grout was placed by properly trained individuals using the proper equipment;
- proper temperature monitoring techniques and equipment were utilized;
- provisions for maintaining grout temperature within specification were provided and temperature limits were not exceeded.
- grout mix was free of deleterious material and stored per manufacturer's

specifications; and
- the contractor had approved implementing procedures, which addressed the requirements of applicable codes, prescribed adequate methods of QC inspection, and specified appropriate quantitative and qualitative acceptance criteria.

b. Findings

No findings were identified.

1A21 (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) for the Unit 3 nuclear island walls from elevation 66'6" to 82'6". The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.F-02.01 - Design Document Review
- 65001.F-02.02 - Fabrication Records Review
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.06 - Record Review
- 65001.02-02.07 - Problem Identification and Resolution

The inspectors observed the reinforcing steel placement for the I line wall from column lines 7 to 10 in the non-radiological controlled area of the auxiliary building. The field activities applied the guidance in Inspection Procedure IP 65001.02, “Inspection of ITAAC Related Installation of Structural Concrete" and IP 65001.F, “Inspection of ITAAC-Related Design and Fabrication Requirements.” The inspectors conducted inspections of the concrete reinforcing steel placement, reviewed documents and applicable design drawings and specifications to verify construction activities were being conducted in accordance with design documents and applicable processes and procedures. Specifically, the inspectors verified:

- structural concrete work, design and installation was completed in accordance with applicable specifications, drawings, approved procedures and qualified personnel;
- key building critical dimensions, materials, and separation satisfied design specifications, requirements, and relevant ITAAC;
- reinforcing steel is controlled and placement performed in accordance with the applicable specifications, codes, drawings, and procedures;
- contractors have approved implementing procedures;
- reinforcing steel installation is controlled and performed in accordance with the applicable specifications, codes, drawings, and procedures;
- reinforcing steel are located properly in the structure, secured, free of concrete or excessive rust, and have proper clearances; and
- procedures clearly prescribe acceptable methods of quality control inspection and include appropriate acceptance criteria.

In addition, inspectors reviewed applicable design specifications, E&DCRs and non-conformance reports (N&Ds) associated with the rebar installation 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.

1A22 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family 01F

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 – Procedures
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01 - Design Document Review
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.02-02.08 - Construction Interface Concerns
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed a sample of implementing procedures and specifications to determine if the documents:

- met the requirements specified in the QA program and the UFSAR, including the reconciliation of construction deviations in critical dimensions and tolerances;
- included appropriate quantitative and/or qualitative acceptance criteria for determining that the prescribed activities had been accomplished satisfactorily;
- clearly prescribed acceptable methods of quality control inspection to ensure that the as-built condition met specified design requirements, drawings and material specifications; and
- provided qualification requirements for craft and quality control inspection personnel performing installation and testing activities.

The inspectors reviewed a sample of design calculations, drawings, and specifications to determine whether:

- design activities were completed in accordance with applicable specifications, drawings, and approved procedures;
- design inputs were correctly identified and documented, and that their selection was reviewed and approved by the responsible engineering group;

- design outputs were translated into drawings;
- 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 reviewed a sample of design changes to verify the following activities were performed in accordance with procedural requirements:

- coordination of structural concrete activities with other disciplines;
- the interchange of design information between designers, constructors, inspectors, and managers regarding structural work, constructability issues, and field changes; and
- timeliness in design changes and drawing revisions.

The inspectors performed independent inspection and measurements to determine whether the as-built concrete thickness of completed wall sections were in accordance with the final design, the ITAAC, and UFSAR.

The inspectors performed independent inspection and measurements of the east exterior wall along column line I between column lines 7.3 and 10 to determine whether the as-built concrete thickness of completed wall sections were in accordance with the final design, the ITAAC, and UFSAR.

The inspectors reviewed a sample of work packages in the field associated with reinforcing steel, embedments, and formwork to verify:

- the latest approved procedures, drawings, and other work instructions were available at the installation area;
- the installation, inspection, and testing sequences were maintained;
- the licensee had verified that the items to be installed met specified requirements;
- the items being installed were not damaged prior to installation; and
- design changes, field modifications, and non-conformances associated with the work observed were properly controlled and processed in accordance with the approved QA program.

The inspectors interviewed licensee personnel to determine whether:

- contractors performing safety-related work had approved implementing procedures that describe administrative and procedural controls, approved work processes, and inspection requirements;
- design processes were performed in compliance with applicable instructions and procedures; and
- effective oversight in accordance with specifications and program requirements was implemented for the installation activities observed.

The inspectors reviewed a sample of non-conformances to verify:

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

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.d (763):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.

The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.F-02.01-Design Document Review
- 65001.02-02.01 - Inspection of Concrete Placement

The inspectors performed a field inspection of construction activities associated with ITAAC 763 (3.3.00.02a.i.d) for the Unit 3 nuclear island walls from elevation 66'6" to 82'6". Specifically, the inspectors observed the reinforcing steel placement for the 1 line wall from column lines J2 to N in the radiological controlled area of the auxiliary building. The field activities applied the guidance in Inspection Procedure IP 65001.02, “Inspection of ITAAC Related Installation of Structural Concrete" and IP 65001.F, “Inspection of ITAAC-Related Design and Fabrication Requirements.” The inspectors conducted inspections of the concrete reinforcing steel placement, reviewed documents and applicable design drawings and specifications to verify construction activities were being conducted in accordance with design documents and applicable processes and

procedures. Specifically, the inspectors verified:

- structural concrete work, design and installation was completed in accordance with applicable specifications, drawings, approved procedures and qualified personnel;
- key building critical dimensions, materials, and separation satisfied design specifications, requirements, and relevant ITAAC;
- reinforcing steel is controlled and placement performed in accordance with the applicable specifications, codes, drawings, and procedures;
- contractors have approved implementing procedures;
- reinforcing steel installation is controlled and performed in accordance with the applicable specifications, codes, drawings, and procedures;
- reinforcing steel are located properly in the structure, secured, free of concrete or excessive rust, and have proper clearances; and
- procedures clearly prescribe acceptable methods of quality control inspection and include appropriate acceptance criteria.

In addition, inspectors reviewed applicable design specifications, E&DCRs and N&Ds associated with the rebar installation 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.

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

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 - Procedures
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.F-02.01 - Design Document Review
- 65001.F-02.03 - Observation of Fabrication Activities
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.02 - Laboratory Testing
- 65001.02-02.03 - Special Considerations
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.02-02.08 - Construction Interface Concerns
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors conducted an inspection of structural concrete placement for Wall 1 within the radiological controlled area of the Unit 3 auxiliary building. The inspectors' objectives were to:

- determine if structural concrete design and construction was accomplished under controlled conditions and in accordance with applicable procedures, specifications, drawings, and approved procedures using qualified personnel;
- evaluate the performance of ITAAC-related structural concrete placement, documentation, and verification activities;
- determine if key building critical dimensions and materials satisfied design specifications, requirements, and relevant ITAAC;
- determine if structural concrete work and related licensee quality control activities were being performed in accordance with design specifications and approved procedures; and
- determine if records reflected that completed work met design specifications and acceptance criteria.

The inspectors performed observations on sample areas of the structural concrete placement; reviewed applicable design drawings, work packages and specifications; and interviewed licensee personnel to verify construction activities were being conducted in accordance with the design documents and applicable procedures. Specifically, the inspectors observed placement of structural concrete in the south exterior wall along column line 1, from approximately column line J-2 to column line N and from elevation 66'-6" to 82'-6", within the radiological controlled area of the Unit 3 auxiliary building to verify that:

- the pre placement inspection performed by QC was completed before any concrete is placed;
- batch tickets were reviewed for verification of proper mix, transport time, placement location, and amount of temper water being added at the truck delivery point;
- inspection during placement is performed as required;
- concrete temperature, slump flow, air content, unit weight and concrete strength test specimens were being sampled at the proper location and frequency as required in the design specifications and performed by qualified individuals. Collection and testing techniques conformed to the procedures specified in the ASTM standards, or equivalent;
- concrete subgrade, form work, and reinforcing steel were free of foreign materials and excess rust;
- concrete was placed by properly trained individuals using the proper equipment;
- temperature monitoring techniques and equipment were utilized; and
- provisions for maintaining concrete temperature within specification were provided and temperature limits were not exceeded;

In addition, the inspectors performed an inspection of VC Summer's site batch plant and reviewed various documents including design documents, calibration records, certifications and test reports for the concrete to verify that:

- the batch plant was qualified in accordance with specifications, codes, drawings, and procedures. The batch plant certifications were issued by the National Ready

Mix Concrete Association (NRMCA) and facility reviewed by a Professional Engineer;
- calibration records associated with the water and cement scales were within tolerance and in accordance with batch plant operating procedures;
- the batch plant's control room working conditions and concrete operator's qualifications were in accordance with Batch Plant's operating procedures;
- concrete constituents and concrete mix were free of deleterious material. The cement was kept in a moisture free environment and the aggregate was not subject to contamination; and
- procedures were in place and available to address unexpected events. The contractor had approved implementing procedures, which addressed the requirements of applicable codes, prescribed adequate methods of QC inspection, and specified appropriate quantitative and qualitative acceptance criteria.

The inspectors reviewed a sample of implementing procedures and specifications to determine if the documents:

- met the requirements specified in the QA program and the UFSAR, including the reconciliation of construction deviations in critical dimensions and tolerances;
- included appropriate quantitative and/or qualitative acceptance criteria for determining that the prescribed activities had been accomplished satisfactorily;
- clearly prescribed acceptable methods of quality control inspection to ensure that the as-built condition met specified design requirements, drawings and material specifications; and
- provided qualification requirements for craft and quality control inspection personnel performing installation and testing activities.

The inspectors reviewed a sample of design calculations, drawings, and specifications to determine whether:

- design activities were completed in accordance with applicable specifications, drawings, and approved procedures;
- design inputs were correctly identified and documented, and that their selection was reviewed and approved by the responsible engineering group;
- design outputs were translated into drawings;
- 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 reviewed a sample of design changes to verify the following activities were performed in accordance with procedural requirements:

- coordination of structural concrete activities with other disciplines;
- the interchange of design information between designers, constructors, inspectors, and managers regarding structural work, constructability issues, and field changes; and
- timeliness in design changes and drawing revisions.

The inspectors observed a sample of installation activities associated with formwork and steel reinforcement, including horizontal and vertical reinforcing steel bars, shear reinforcement, wall dowel bars, and bar splices, in the areas of the south exterior wall along column line 1 between column lines I and J-2 and the east exterior wall along column line I between column lines 1 and 5 to determine whether:

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

The inspectors performed independent inspection and measurements to determine whether the steel reinforcement and formwork conformed to the final design. The inspectors performed independent inspection and measurements of the south exterior wall along column line 1 between column lines J-2 and N and the east exterior wall along column line I between column lines 5 and 7.3 to determine whether the as-built concrete thickness of completed wall sections were in accordance with the final design, the ITAAC, and UFSAR.

The inspectors reviewed a sample of work packages in the field associated with reinforcing steel, embedments, and formwork to verify:

- the latest approved procedures, drawings, and other work instructions were available at the installation area;
- the installation, inspection, and testing sequences were maintained;
- the licensee had verified that the items to be installed met specified requirements;
- the items being installed were not damaged prior to installation; and
- design changes, field modifications, and non-conformances associated with the work observed were properly controlled and processed in accordance with the approved QA program.

The inspectors interviewed licensee personnel to determine whether:

- contractors performing safety-related work had approved implementing procedures that describe administrative and procedural controls, approved work processes, and inspection requirements;
- design processes were performed in compliance with applicable instructions and procedures;
- effective oversight in accordance with specifications and program requirements was implemented for the installation activities observed.

The inspectors reviewed a sample of non-conformances to verify:

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

- dispositions had adequate technical bases.

b. Findings

No findings were identified.

1A25 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

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

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.B-02.05-Inspection
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors conducted an inspection of structural concrete placement for Wall I within the radiological controlled area of the Unit 3 auxiliary building. The inspectors' objectives were to:

- determine if structural concrete design and construction was accomplished under controlled conditions and in accordance with applicable procedures, specifications, drawings, and approved procedures using qualified personnel;
- evaluate the performance of ITAAC-related structural concrete placement, documentation, and verification activities;
- determine if key building critical dimensions and materials satisfied design specifications, requirements, and relevant ITAAC;
- determine if structural concrete work and related licensee quality control activities were being performed in accordance with design specifications and approved procedures; and
- determine if records reflected that completed work met design specifications and acceptance criteria.

The inspectors performed observations on sample areas of the structural concrete placement; reviewed applicable design drawings, work packages and specifications; and interviewed licensee personnel to verify construction activities were being conducted in accordance with the design documents and applicable procedures. Specifically, the inspectors observed placement of structural concrete along Wall I, from approximately column line 1 to column line 4 and from elevation 66'-6" to 82'-6", within the radiological controlled area of the Unit 3 auxiliary building to verify that:

- the pre placement inspection performed by QC was completed before any concrete is placed;
- batch tickets were reviewed for verification of proper mix, transport time, placement location, and amount of temper water being added at the truck delivery point;
- inspection during placement is performed as required;
- concrete temperature, slump flow, air content, unit weight and concrete strength

test specimens were being sampled at the proper location and frequency as required in the design specifications and performed by qualified individuals. Collection and testing techniques conformed to the procedures specified in the ASTM standards, or equivalent;
- concrete subgrade, form work, and reinforcing steel were free of foreign materials and excess rust;
- concrete was placed by properly trained individuals using the proper equipment;
- temperature monitoring techniques and equipment were utilized; and
- provisions for maintaining concrete temperature within specification were provided and temperature limits were not exceeded.

b. Findings

No findings were identified.

1A26 (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.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A- As-Built Attributes for SSCs associated with ITAAC

The inspectors performed independent inspection and measurements of the east exterior wall along column line I between column lines 7.3 and 10 to determine whether the as-built concrete thickness of completed wall sections were in accordance with the final design, the ITAAC, and UFSAR.

b. Findings

No findings were identified.

1A27 (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.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A- As-Built Attributes for SSCs associated with ITAAC

The inspectors performed independent inspection and measurements of the south exterior wall along column line 1 between column lines J-2 and N and the east exterior wall along column line I between column lines 5 and 7.3 to determine whether the as-built concrete thickness of completed wall sections were in accordance with the final

design, the ITAAC, and UFSAR.

b. Findings

No findings were identified.

1A28 (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 field observations of construction activities and independent measurements of formwork to determine the concrete wall thickness of Wall I from column line 1 to 4 in the radiological controlled area of the auxiliary building in Unit 3 from elevation 66'-6" to 82'-6". The inspectors verified the wall met the required concrete thickness listed in ITAAC 767.

b. Findings

No findings were identified.

1P01 Quality Assurance Implementation, Appendix 10 Inspection of Criterion X – Inspection (35007)

a. Inspection Scope

The inspectors observed CB&I's receipt inspection of the Unit 2 shield building panel VS2-1208-SC-02J. The inspector verified that the person conducting the inspection was a qualified QC inspector, and had the current procedure and appropriate drawings to perform the inspection. The inspector verified that the item was accurately marked to reflect its inspection status. In addition, the inspector later observed that the shield building panel was appropriately tagged following the receipt inspection with the updated inspection status. The inspector also reviewed inspection report Q445-14-0703 to determine if the requirements of QS 14.2, "Inspection Report System", were met.

b. Findings

No findings were identified.

1P02 Quality Assurance Implementation, Appendix 13 Inspection of Criterion XIII – Handling, Storage and Shipping (35007)

a. Inspection Scope

The inspectors performed a walkdown of several of the CB&I controlled storage areas to determine whether CB&I had controlled the storage of safety-related equipment to prevent damage or deterioration. Specifically, the inspectors observed the storage areas to determine whether CB&I was adequately implementing Section 13, “Handling Storage, and Shipping,” of SWSQAP 1-74A, "CB&I Standard Nuclear Quality Assurance Program," Revision B; and Quality Standard (QS) 13.11, “Material/Equipment Storage,” Revision C. The inspectors examined the following items in the CB&I designated storage areas for compliance with program requirements:

- CA05 Submodules CA05_02 and CA05_03
- Unit 2 Accumulators
- Unit 2 Core Makeup Tanks
- Unit 3 Nuclear Island Reinforcing Bar

The inspectors observed various storage areas to ensure the following storage requirements were properly implemented:

- storage areas were properly designated;
- materials were properly segregated to avoid deleterious effects;
- pipes and penetrations were properly sealed;
- materials were properly supported, and;
- applicable storage level requirements were met for temperature and exposure.

In addition, the inspectors reviewed APP-MT02-VHM-001, "AP1000 Accumulator Tank Technical Manual: Instructions for Receipt Inspection, Storage and Assembly", and APP-MT01-VHM-001, "AP1000 Core Makeup Tank Technical Manual: Instructions for Receipt Inspection, Storage and Assembly", to determine if the tanks were being maintained in accordance with specification requirements. Specifically, the inspectors observed CB&I field personnel inspect the Unit 2 Core Makeup Tanks internal surface and replace the desiccant bags in accordance with specified requirements.

b. Findings

No findings were identified.

1P03 Quality Assurance Implementation, Appendix 16 Inspection of Criterion XVI – Corrective Action (35007)

a. Inspection Scope

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

reviewed included:

- classification, prioritization, and evaluation for reportability (i.e., 10 CFR 50.55(e)) of conditions adverse to quality;
- complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery;
- consideration of extent of condition, generic implications, common cause, and previous occurrences;
- classification and prioritization of the resolution of the problem commensurate with its safety significance;
- identification of root and contributing causes, as well as actions to preclude recurrence for significant conditions adverse to quality; and
- completion of corrective actions in a timely manner commensurate with the safety significance of the issue.

Routine Review of Items Entered into the Corrective Action Program

On a routine basis, the inspectors screened a sample of issues entered into the licensee 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 verify that:

- 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
- potentially 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 List of Documents Reviewed section of this report. The inspectors reviewed these corrective action documents to verify that:

- 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 July 9, 2014, the inspectors presented the inspection results to Mr. R. Jones, Vice President for New Nuclear Operations for V.C. Summer Units 2 and 3, along with other licensee and consortium staff members. Also, on July 16, 2014, the inspectors re-exited with Mr. R. Jones, Vice President for New Nuclear Operations for V.C. Summer Units 2 and 3, along with other licensee and consortium staff members. The inspectors stated that no proprietary information would be included in the inspection report.

KEY POINTS OF CONTACT

Licensees and Contractor Personnel

B. Bedford, Consortium Licensing
P. Fleming, Project Manager, CB&I
J. Hjelseth, Consortium Engineering Director
K. Spinola, WEC Senior Quality Engineer
R. Thompson, SCE&G ITAAC

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
05200027/2014003-001	NCV	Open	Inadequate Quality-Related Records Regarding Accumulator Tank Volume Calculation (Section 1A07)

LIST OF DOCUMENTS REVIEWED

Section 1A01:

Drawings
Doosan D-AC-11104-M01 through M04, V.C. Summer #2 Vessel As-Built, Rev.0

CMTRs
CN2009080006, Upper Shell Dimensional Examination Record MIJOO 0908-001 (VS2-MV01-VQQ-001 Rev. 0 Page 439-451), Rev.2
CN2010090027, Lower Shell Top and Bottom of Shell Dimensional Examination Records SAMO100914-01 and SAMO100916-01 (VS2-MV01-VQQ-001 Rev. 0 Page 452-466), Rev. 1
CN2010100009, Transition Ring Dimensional Examination Record SAMO100906-01 (VS2-MV01-VQQ-001 Rev. 0 Page 651-665), Rev. 1
CN2010110035, RV wall thickness at bottom head (without cladding) Dimensional Examination Record MIJOOO-1010-031 (VS2-MV01-VQQ-001 Rev.0 Page 666-673), Rev.0

Section 1A02:

SCE&G, Virgil C. Summer Unit 2 ITAAC Closure Notice, dated May 30, 2014, Docket No. 52-027, Completion of ITAAC 2.1.03.11 (Index Number 86)

Section 1A03:

CB&I WPS E9018M H4R, Rev. 8, Welding Procedure Specification for SMAW
CB&I Welder Performance Qualification Record for boilermaker-welder 838

Section 1A04:

RT Reports
VCS-U2-2014-RT-002, S7 to S8 Girth Seam S7 B to S7 C, January 8, 2014

VCS-U2-2014-RT-013, S7 to S8 Girth Seam S7 B to S7 C repair 1-2, March 3, 2014
VCS-U2-2014-RT-005, S7 to S8 Girth Seam S7 E to S7 F, January 9, 2014
VCS-U2-2014-RT-014, S7 to S8 Girth Seam S7 E to S7 F repair 1-2, March 3, 2014
VCS-U2-2014-RT-008, S7 to S8 Girth Seam S7 H to S7 J, January 14, 2014
VCS-U2-2014-RT-015, S7 to S8 Girth Seam S7 H to S7 J repair, March 3, 2014
VCS-U2-2014-RT-016, S7 to S8 Girth Seam S7 H to S7 J repair, March 6, 2014

Section 1A05:

RT Reports
VCS-U2-2014-RT-002, S7 to S8 Girth Seam S7 B to S7 C, January 8, 2014
VCS-U2-2014-RT-013, S7 to S8 Girth Seam S7 B to S7 C repair 1-2, March 3, 2014
VCS-U2-2014-RT-005, S7 to S8 Girth Seam S7 E to S7 F, January 9, 2014
VCS-U2-2014-RT-014, S7 to S8 Girth Seam S7 E to S7 F repair 1-2, March 3, 2014
VCS-U2-2014-RT-008, S7 to S8 Girth Seam S7 H to S7 J, January 14, 2014
VCS-U2-2014-RT-015, S7 to S8 Girth Seam S7 H to S7 J repair, March 3, 2014
VCS-U2-2014-RT-016, S7 to S8 Girth Seam S7 H to S7 J repair, March 6, 2014

Section 1A06:

CB&I WPS E91TG-H4, Rev. 10, Welding Procedure Specification for FCAW
CB&I Welder Performance Qualification Record for boilermaker-welder 838
CB&I Drawing No. 13, Field Edge Preps & Weld Details, Sheet 1, Revision 4
CB&I Drawing No. 15, Field Vessel Tolerances, Sheet 1, Revision 4

Section 1A07:

VS2-MT02-Z0R-201, AP1000 Accumulator Tank - V.C. Summer Unit 2 As-Built Analysis, Rev 1
APP-GW-GAH-030, Quality Assurance Requirements for Safety Related Components/Services of Standard AP1000 Plants, Rev 5
VSG-MT02-Z5-003, Appendix 3 Technical Requirements for the AP1000 Accumulator Tank Purchase Order for the VC Summer Project, Rev 3
VS2-MT02-GNR-016, Dimensional Non-Conformances for AP1000 Accumulator Tank, V.C. Summer Unit 2 Component 1, Rev 0
VS2-MT02-GNR-017, Dimensional Non-Conformances for AP1000 Accumulator Tank, V.C. Summer Unit 2 Component 2, Rev 0

Section 1A08:

APP-CA01-GEF-200, CA01-24 Additional Studs, Rev.0

Section 1A09:

Codes, Specifications and Procedures
ACI-349-01, Code Requirements for Nuclear Safety Related Concrete Structures
NCSP 3-42, Reinforcing Steel Installation, Revision 1
VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Revision 5

Drawings
VS2-1210-CR-990, Auxiliary Building concrete Reinforcement Secondary Walls Elevation El. 66'6", Rev 1

VS2-1210-CR-931, Auxiliary Building Areas 3 & 4 Concrete Reinforcement Wall 7.3 Sections & Details El 66'6", Rev 2
VS2-1210-CR-912, Auxiliary Building Area 2 Concrete Reinforcement Wall J Sections & Details El 66'6", Rev 2
VS2-1212-CE-918, Auxiliary Building Area 2 Embedments Wall J Elevation 66'-6" West View, Rev 3
VS2-1212-CE-912, Auxiliary Building Area 2 Embedments Wall J Elevation 66'-6" East View, Rev 3

Nonconformance Reports
VS2-CR01-GNR-000077, Lap Splices @ I to 7.3, Rev 0

Section 1A10:

Specifications
VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Rev. 5

Miscellaneous
C112-14-0354, Concrete pre-placement inspection report, June 19, 2014
VS2-1210-CCw-001, L-line concrete placement supplemental instructions, Rev.1

Section 1A11:

Design Specifications
SV3-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I, Safety Class C “Nuclear Safety”, Rev. 5

Procedures
NCSP 3-42-1, Reinforcing Steel Installation, Rev. 1

Section 1A12:

VS2-CA05-S5X-0800, Containment Building Area 3 Module CA05 Submodule CA05_08 Index, Rev. 3
VS2-CA05-S5-08004, Containment Building Area 3 Module CA05 Submodule CA05_08 Structural Outline Horizontal Sections/ Views, Rev. 3
VS2-CA01-S5-24003, Containment Building Area 4 Module CA01 Submodule CA01_24 Structural Outline Vertical Sections, Rev.5
VS2-CA01-S5-24004, Containment Building Area 4 Module CA01 Submodule CA01_24 Structural Outline Horizontal Sections, Rev.5

Section 1A13:

Work Packages
VS2-1210-C0W-002, Rebar, Embeds, and Formwork for Walls in Areas 3 & 4 on Elev. 66’6” in U2 NI

Section 1A14:

Procedures
NCSP 3-24, Field Surveying, Rev 2

CSI 03-24, Site-Specific Field Surveying Instructions, Rev 6

Records

VS2-1200-CCK-009, Unit 2 Aux. Bldg. Col. Line 1 Wall Thickness As-Built from Column I to N From Elev. 66'-6" to 100'-0", Rev A

132177-113-002-00004, Leica Total Station #5 63674 Instrument Verification Records, 4/23/14

Section 1A15:

IHI ASME Form N-2 Data Report for the H01 upper equipment hatch penetration sleeve to insert plate (S/N IN-4926 and NB-2967)

IHI ASME Form N-2 Data Report for the H04 upper personnel/airlock hatch penetration sleeve to insert plate (S/N IN-4922 and NB-2882)

IHI ASME Form N-2 Data Report for the S1 course weld joint WB3-A4-A between the lower personnel hatch (H03) insert plate and adjoining shell plate B3-A4-1 (S/N IN-4920 and NB-2879)

IHI ASME Form N-2 Data Report for the MS/FW (P23, P25, and P44) penetration sleeves to insert plate B3-B14 (S/N IN-5013 and NB-2886)

IHI ASME Form N-2 Data Report for the S2 course P13 through P16 stainless steel mechanical penetration sleeves to insert plate B3-B6 (S/N IN-5011 and NB-2881)

IHI ASME Form N-2 Data Report for the S1 course P41 spare penetration sleeve to insert plate B3-A5 (S/N IN-5003 and NB-2859)

CMTR PNQS-12-185, Heat No. KC1973, Lot No. 3936921, Kobe Steel, Ltd., for SA738-B insert plate F23-A-J1 of H01 upper equipment hatch, dated 2012-11-29

CMTR PNQS-12-186, Heat No. KC1973, Lot No. 3995001, Kobe Steel, Ltd., for SA738-B insert plate F23-A-J3 of H01 upper equipment hatch, dated 2012-11-29

CMTR PNQS-12-187, Heat No. KC1973, Lot No. 3936931, Kobe Steel, Ltd., for SA738-B insert plate F23-A-J2 and -J4 of H01 upper equipment hatch, dated 2012-11-29

CMTR PNQS-12-189, Heat No. KC6843, Lot No. 3961051, Kobe Steel, Ltd., for SA738-B penetration sleeve F23-AA-1A of H01 upper equipment hatch, dated 2012-12-11

CMTR PNQS-12-190, Heat No. KC6843, Lot No. 3954921, Kobe Steel, Ltd., for SA738-B penetration sleeve F23-AA-2A of H01 upper equipment hatch, dated 2012-12-11

CMTR PNQS-12-182, Heat No. KC6843, Lot No. 4024601, Kobe Steel, Ltd., for SA738-B penetration sleeve E23-AE-1 of H04 upper personnel/airlock hatch, dated 2012-11-20

CMTR PNQS-12-183, Heat No. KC6043, Lot No. 3837361, Kobe Steel, Ltd., for SA738-B insert plate E23-AE-J1 and -J2 of H04 upper personnel/airlock hatch, dated 2012-11-14

CMTR PNQS-12-119, Heat No. KC5047, Lot No. 3759701, Kobe Steel, Ltd., for SA738-B shell plate B3-A4-1 of S1 weld joint WB3-A4-A, dated 2012-09-26

CMTR PNQS-12-137, Heat No. KC9135, Lot No. 4024581, Kobe Steel, Ltd., for SA738-B H03 lower personnel/airlock hatch insert plate E13-AE-J1 of S1 weld joint WB3-A4-A, dated 2012-10-31

CMTR PNQS-11-101, Heat No. KC6684, Lot No. 2029551, Kobe Steel, Ltd., for SA738-B MS penetration sleeve P23 of the MS/FW assembly, dated 2011-08-26

CMTR PNQS-11-102, Heat No. KC2917, Lot No. 188951A, Kobe Steel, Ltd., for SA738-B main FW penetration sleeve P25 of the MS/FW assembly, dated 2011-08-26

CMTR G24314-045CM, Heat No. AH13901, Lot No. 2-P44-S, Seo Koatsu Kogyo Co., Ltd., for SA350-LF2-Cl. 1 mechanical penetration sleeve P44 of the MS/FW assembly, dated October 18, 2012

CMTR PNQS-11-149, Heat No. KC6043, Lot No. 3804421, Kobe Steel, Ltd., for SA738-B insert plate B3-B14 of the MS/FW assembly, dated 2011-11-09

CMTR PNQS-11-151, Heat No. KC6043, Lot No. 3837331, Kobe Steel, Ltd., for SA738-B insert plate for the S2 course P13 thru P16 stainless steel mechanical penetration sleeves, dated 2012-11-09
CMTR G25547-002CM, Heat No. AH11902, Lot No. EVNB, Seo Koatsu Kogyo Co., Ltd., for SA182-F304L stainless steel mechanical penetration sleeve P13, dated November 16, 2012
CMTR OTTE5520, Heat No. F82A133, Lot No. 0TTE5520, Sumitomo Metals, for SA312-F304L stainless steel mechanical penetration sleeve P14, dated 2010-10-02
CMTR OTTE5527, Heat No. F82A133, Lot No. 0TTE5527, Sumitomo Metals, for SA312-F304L stainless steel mechanical penetration sleeve P15, dated 2010-10-02
CMTR OTTE5526, Heat No. F82A133, Lot No. 0TTE5526, Sumitomo Metals, for SA312-F304L stainless steel mechanical penetration sleeve P16, dated 2010-10-02
CMTR PNQS-12-138, Heat No. KC6043, Lot No. 383732A, Kobe Steel, Ltd., for SA738-B insert plate for the P41 spare penetration, dated 2012-10-31
CMTR G24314-039CM, Heat No. AH13401, Lot No. 3-P41-S, Seo Koatsu Kogyo Co., Ltd., for SA350-LF2-Cl. 1 spare penetration sleeve P41, dated October 18, 2012
CB&I MS-SA-182 F304L-2901, Material Specification for SA 182 F304L Stainless Steel Forgings ASME Section III Division 1 Subsection NE Class MC, Rev. 1
CB&I MS-SA-182 F304L-2924, Material Specification for SA 182 F304L Stainless Steel Forgings ASME Section III Division 1 Subsection NC Class 2, Rev. 0

Section 1A16:

RT Reports
VCS-U3-2014-RT-009, Bottom Head BH2 vert. Y, January 28, 2014
VCS-U3-2014-RT-047, Bottom Head BH2 vert. Y repairs, February 19, 2014
VCS-U3-2014-RT-059, Bottom Head BH2 vert. Y repairs-2, February 23, 2014
VCS-U3-2014-RT-077, Shell Course 1 vert. D, March 3, 2014

Weld Documentations
B3B-S2-N-H02, Weld traveler for Lower Equipment Hatch Insert Plate

Section 1A17:

IHI Weld Checklist WF23-AA-L1 and -L2 for welding the halves of the H01 upper equipment hatch sleeves with two butt welds
IHI MT-004-EP-WF23-AA-L1, L2-1, Magnetic Particle Examination Record for weld edge preparation of first sleeve to sleeve weld for H01 upper equipment hatch
IHI MT-004-EP-WF23-AA-L1, L2-2, Magnetic Particle Examination Record for weld edge preparation of second sleeve to sleeve weld for H01 upper equipment hatch
IHI MT-004-BG-WF23-AA-L1, L2, Magnetic Particle Examination Record for back groove of both sleeve to sleeve welds for H01 upper equipment hatch
IHI RT-004-WF23-AA-L1,2, Radiographic Examination Record after completion of both longitudinal sleeve to sleeve butt weld joints for H01 upper equipment hatch
IHI Weld Checklist WF23-A-N for H01 upper equipment hatch insert plate to sleeve
IHI welder qualification records with identification numbers W-220, W-1881, W-2002, W-2005, W-2006, W-2535, W-2568, W-2588, W-2724, W-2726, W-2730, W-2732, and W-2763 for GMAW/FCAW processes
IHI MT-004-EP-WF23-A-N-S, Magnetic Particle Examination Record for weld edge preparation of H01 upper equipment hatch insert plate sleeve surface

IHI MT-004-EP-WF23-A-N-P, Magnetic Particle Examination Record for weld edge preparation of H01 upper equipment hatch insert plate edge
IHI MT-004-BG-WF23-A-N, Magnetic Particle Examination Record for back groove of H01 upper equipment hatch insert plate to sleeve
IHI MT-004-AP-WF23-A-N, Magnetic Particle Examination Record after PWHT of H01 upper equipment hatch insert plate to sleeve weld
IHI UT-004-AP-F23-AA-1A,2A, Ultrasonic Examination Record in accordance with SA-435 from inside sleeve after PWHT of H01 upper equipment hatch insert plate with no recordable indication
CMTR RINJQ-229-3-6, Heat No. 1M7874(1), Nippon Steel & Sumikin Welding Company, SFA-5.28, ER80S-G, dated August 20, 2012 for H01 upper equipment hatch sleeve to insert plate
IHI Drawing No. 026H652, Purchase Specification of Welding Material SFA-5.28 ER80S-G (trade name YM-3N)
IHI PWHT Record No. 004-SRB-068 for Unit 2 H01 upper equipment hatch penetration sleeve to insert plate
IHI Weld Checklist WE23-AE-L for H04 upper personnel/airlock hatch sleeve butt weld
IHI Weld Checklist WE23-AE-N for H04 upper personnel/airlock hatch insert plate to sleeve
CMTR RINJQ-229-3-4, Heat No. 9M7999(1), Nippon Steel & Sumikin Welding Company, SFA-5.28, ER80S-G, dated October 02, 2012 for H01 upper equipment hatch sleeve to insert plate
IHI welder qualification records with identification numbers W-0430, W-1977, W-2595, and W-2705 for GMAW/FCAW processes
IHI MT-004-EP-WE23-AE-L, Magnetic Particle Examination Record for weld edge preparation of sleeve to sleeve weld for H04 upper personnel/airlock hatch
IHI MT-004-BG-WE23-AE-L, Magnetic Particle Examination Record for back groove of sleeve to sleeve weld for H04 upper personnel/airlock hatch
IHI MT-004-EP-WE23-AE-N-S, Magnetic Particle Examination Record for weld edge preparation of H04 upper personnel/airlock hatch insert plate sleeve surface
IHI MT-004-EP-WE23-AE-N-P, Magnetic Particle Examination Record for weld edge preparation of H04 upper personnel/airlock hatch insert plate edge
IHI MT-004-BG-WE23-AE-N, Magnetic Particle Examination Record for back groove of H04 upper personnel/airlock hatch insert plate to sleeve
IHI MT-004-AP-WE23-AE-N, Magnetic Particle Examination Record after PWHT of H04 upper personnel/airlock hatch insert plate to sleeve weld
IHI RT-004-WE23-AE-L, Radiographic Examination Record after completion of longitudinal sleeve butt weld joint for H04 upper personnel/airlock hatch
IHI UT-004-AP-E23-AE-1, Ultrasonic Examination Record in accordance with SA-435 from inside sleeve after PWHT of H04 upper personnel/airlock hatch insert plate with no recordable indication
IHI PWHT Record No. 004-SRB-55 for Unit 2 H04 upper personnel/airlock hatch penetration sleeve to insert plate
IHI Weld Checklist B3-A4-A for weld WB3-A4-A that joins the S1 shell plate B3-A4 to H03 lower personnel hatch insert plate
IHI MT-004-EP-WB3-A4-A, Magnetic Particle Examination Record for weld edge preparation of weld WB3-A4-A joining S1 shell plate B3-A4 to H03 insert plate
IHI MT-004-BG-WB3-A4-A, Magnetic Particle Examination Record for back groove of weld WB3-A4-A joining S1 shell plate B3-A4 to H03 insert plate
IHI MT-004-APT-WB3-A4-A, Magnetic Particle Examination Record for tapered transition on H03 insert plate adjacent to weld WB3-A4-A after PWHT

IHI RT-004-WB3-A4-A SR, Radiographic Examination Record and films after PWHT of weld WB3-A4-A joining S1 shell plate B3-A4 to H03 insert plate
IHI PWHT Record No. 004-SRB-56 for weld WB3-A4-A joining S1 shell plate B3-A4 to H03 insert plate
IHI Weld Checklists WB3-P23-N, WB3-P25-N, and WB3-P44-N for mainsteam (P23), and main and loop 1 startup feedwater (P25 and P44) penetration sleeves to insert plate B3-B14 assembly
IHI welder qualification records with identification numbers W-1820, W-2431, and W-2699 for GMAW/FCAW processes
IHI MT-004-EP-WB3-P44-N-S, Magnetic Particle Examination Record for weld edge preparation of P44 penetration sleeve
IHI MT-004-EP-WB3-P23, P25, P44-N-P, Magnetic Particle Examination Record for weld edge preparation of P23, P25, and P44 penetration insert plate
IHI MT-004-BG-WB3-P23, P25-N, Magnetic Particle Examination Record for back groove of P23 and P25 penetration block
IHI MT-004-BG-WB3-P44-N, Magnetic Particle Examination Record for back groove of P44 penetration block
IHI MT-004-AP-WB3-P23, P25-N, Magnetic Particle Examination Record for P23 and P25 penetration block after PWHT
IHI MT-004-AP-WB3-P44-N, Magnetic Particle Examination Record for P44 penetration block after PWHT
IHI UT-004-AP-WB3-P23, P25-N, Ultrasonic Examination Record for P23 and P25 penetration block after PWHT
IHI PWHT Record No. 004-SRB-57 for P23, P25, and P44 penetration sleeves and insert plate block
IHI Drawing 221A206, revision 3, Detail Drawing of Lower Ring B2/3-B6 Assemblies with sectional views of P13 through P16 stainless steel mechanical penetrations
IHI Drawing 221B206, revision 4, Detail Drawing of Penetration Block B2/3-B6-A Assemblies with welding details of P13 through P16 stainless steel mechanical penetrations
IHI Weld Checklists (eight total) WB3-P13/14/15/16-N1 and -N2 (buttering insert plate - CV inside & outside, respectively) for P13 through P16 penetrations
IHI Weld Checklists (eight total) WB3-P13/14/15/16-N1A and -N2A (sleeve root pass - CV inside & outside, respectively) for P13 through P16 penetrations
IHI Weld Checklists WB3-P14-N1A-R and -N2A-R (CV inside & outside, respectively) for repair/replacement of P14 penetration
IHI WPS TT-1804G, revision 1, with supporting PQR TT-1802G
IHI welder qualification records with identification numbers W-1925, W-1963, W-2001, and W-2567 for the GTAW process
CMTR NR-1262, Heat No. HA5481, Nippon Welding Rod Co., Ltd., SFA-5.9, ER309L, dated 6/22/2012, for buttering of insert plate of P13 through P16 penetrations
CMTR NR-1314, Heat No. HA6538, Nippon Welding Rod Co., Ltd., SFA-5.9, ER308L, dated 12/21/12, for buttering insert plate and root pass welding of P13 through P16 penetrations
IHI PT-004-RP-WB3-P13, P14, P15, P16-N1, Liquid Penetrant Examination Record for root pass
IHI PT-004-RP-WB3-P13, P14, P15, P16-N2, Liquid Penetrant Examination Record for root pass
IHI PT-004-RP-WB3-P13-N1A, Liquid Penetrant Examination Record for root pass
IHI PT-004-RP-WB3-P14, P16-N1A, Liquid Penetrant Examination Record for root pass
IHI PT-004-RP-WB3-P15-N1A, Liquid Penetrant Examination Record for root pass
IHI PT-004-RP-WB3-P13-N2A, Liquid Penetrant Examination Record for root pass
IHI PT-004-RP-WB3-P14, P16-N2A, Liquid Penetrant Examination Record for root pass

IHI PT-004-RP-WB3-P15-N2A, Liquid Penetrant Examination Record for root pass
IHI PT-004-AW-WB3-P13-N1A, N2A Liquid Penetrant Examination Record after weld
IHI PT-004-AW-WB3-P14, P16-N1A, N2A Liquid Penetrant Examination Record after weld
IHI PT-004-AW-WB3-P15-N1A, N2A Liquid Penetrant Examination Record after weld
IHI PT-004-BP-WB3-P13, P14, P15, P16-N1, Liquid Penetrant Examination Record before PWHT
IHI PT-004-BP-WB3-P13, P14, P15, P16-N2, Liquid Penetrant Examination Record before PWHT
IHI PT-004-AP-WB3-P13, P14, P15, P16-N1, N2, Liquid Penetrant Examination Record after PWHT
IHI PT-004-AG-WB3-P13, P14, P15, P16-N1, N2, Liquid Penetrant Examination Record after ground
IHI UT-004-BP-WB3-P13, P14, P15, P16-N1, Ultrasonic Examination Record before PWHT
IHI UT-004-BP-WB3-P13, P14, P15, P16-N2, Ultrasonic Examination Record before PWHT
IHI UT-004-AP-WB3-P13, P14, P15, P16-N1, N2, Ultrasonic Examination Record after PWHT
IHI PWHT Record No. 004-SRB-54 with strip chart for S2 plate B3-B6 mechanical penetration block for P13 through P16
IHI MT-004-EP-WB3-P40, P41, P42-N-S, Magnetic Particle Examination Record for weld edge preparation of P41 spare penetration sleeve
IHI MT-004-EP-WB3-P40, P41, P42-N-P, Magnetic Particle Examination Record for weld edge preparation of P41 insert plate
IHI MT-004-BG-WB3-P40, P41, P42-N, Magnetic Particle Examination Record for back groove of penetration block
IHI MT-004-AP-WB3-P40, P41, P42-N, Magnetic Particle Examination Record after PWHT for the penetration block
IHI RT-004-WB3-A5-A SR, Radiographic Examination Record of weld WB3-A5-A between the P40, P41, and P42 insert plate and B3-A5 shell plate after PWHT
IHI RT-004-WB3-P40, 41, 42-F, Radiographic Examination Record of three welds WB3-P40, 41, 42-F between weld-neck flanges and each P40, P41, and P42 sleeves after completion of weld
IHI PWHT Record No. 004-SRB-044 for P40, P41, and P42 spare penetrations block B3-A5-A
IHI RT-004-WF13-AA-L1, L2, Radiographic Examination Record after completion of both longitudinal sleeve to sleeve butt weld joints for H02 lower equipment hatch
CB&I weld traveler for completed weld "H" (B3B-S2-H)
CMTR PNQS-12-130, Heat No. KC6004, Lot No. 3763301, Kobe Steel, Ltd., for SA738-B shell plate B3-B11, dated 2012-10-19
CMTR PNQS-12-131, Heat No. KC6004, Lot No. 3774311, Kobe Steel, Ltd., for SA738-B shell plate B3-B12, dated 2012-10-19
CB&I VCS-U3-2014-RT-087, Radiographic Examination Report and films, dated 5/2/14
CB&I weld traveler for completed weld "L" (B3B-S2-L)
CMTR PNQS-12-126, Heat No. KC6004, Lot No. 3763291, Kobe Steel, Ltd., for SA738-B shell plate B3-B7, dated 2012-10-19
CMTR PNQS-12-129, Heat No. KC6004, Lot No. 3774461, Kobe Steel, Ltd., for SA738-B shell plate B3-B10, dated 2012-10-19
CB&I VCS-U3-2014-RT-085, Radiographic Examination Report and films, dated 5/1/14
CB&I VCS-U3-2014-RT-099, -101, -102, and -103, four Radiographic Examination Reports and films for the S1 to S2 girth butt weld

Section 1A18:

CMTR PNQS-12-185, Heat No. KC1973, Lot No. 3936921, Kobe Steel, Ltd., for SA738-B insert plate F23-A-J1 of H01 upper equipment hatch, dated 2012-11-29
CMTR PNQS-12-186, Heat No. KC1973, Lot No. 3995001, Kobe Steel, Ltd., for SA738-B insert plate F23-A-J3 of H01 upper equipment hatch, dated 2012-11-29
CMTR PNQS-12-187, Heat No. KC1973, Lot No. 3936931, Kobe Steel, Ltd., for SA738-B insert plate F23-A-J2 and -J4 of H01 upper equipment hatch, dated 2012-11-29
CMTR PNQS-12-189, Heat No. KC6843, Lot No. 3961051, Kobe Steel, Ltd., for SA738-B penetration sleeve F23-AA-1A of H01 upper equipment hatch, dated 2012-12-11
CMTR PNQS-12-190, Heat No. KC6843, Lot No. 3954921, Kobe Steel, Ltd., for SA738-B penetration sleeve F23-AA-2A of H01 upper equipment hatch, dated 2012-12-11
CMTR PNQS-12-182, Heat No. KC6843, Lot No. 4024601, Kobe Steel, Ltd., for SA738-B penetration sleeve E23-AE-1 of H04 upper personnel/airlock hatch, dated 2012-11-20
CMTR PNQS-12-183, Heat No. KC6043, Lot No. 3837361, Kobe Steel, Ltd., for SA738-B insert plate E23-AE-J1 and -J2 of H04 upper personnel/airlock hatch, dated 2012-11-14
CMTR PNQS-12-119, Heat No. KC5047, Lot No. 3759701, Kobe Steel, Ltd., for SA738-B shell plate B3-A4-1 of S1 weld joint WB3-A4-A, dated 2012-09-26
CMTR PNQS-12-137, Heat No. KC9135, Lot No. 4024581, Kobe Steel, Ltd., for SA738-B H03 lower personnel/airlock hatch insert plate E13-AE-J1 of S1 weld joint WB3-A4-A, dated 2012-10-31
CMTR PNQS-11-101, Heat No. KC6684, Lot No. 2029551, Kobe Steel, Ltd., for SA738-B MS penetration sleeve P23 of the MS/FW assembly, dated 2011-08-26
CMTR PNQS-11-102, Heat No. KC2917, Lot No. 188951A, Kobe Steel, Ltd., for SA738-B main FW penetration sleeve P25 of the MS/FW assembly, dated 2011-08-26
CMTR G24314-045CM, Heat No. AH13901, Lot No. 2-P44-S, Seo Koatsu Kogyo Co., Ltd., for SA350-LF2-Cl. 1 mechanical penetration sleeve P44 of the MS/FW assembly, dated October 18, 2012
CMTR PNQS-11-149, Heat No. KC6043, Lot No. 3804421, Kobe Steel, Ltd., for SA738-B insert plate B3-B14 of the MS/FW assembly, dated 2011-11-09
CMTR PNQS-11-151, Heat No. KC6043, Lot No. 3837331, Kobe Steel, Ltd., for SA738-B insert plate for the S2 course P13 thru P16 stainless steel mechanical penetration sleeves, dated 2012-11-09
CMTR PNQS-12-138, Heat No. KC6043, Lot No. 383732A, Kobe Steel, Ltd., for SA738-B insert plate for the P41 spare penetration, dated 2012-10-31
CMTR G24314-039CM, Heat No. AH13401, Lot No. 3-P41-S, Seo Koatsu Kogyo Co., Ltd., for SA350-LF2-Cl. 1 spare penetration sleeve P41, dated October 18, 2012
CMTR PNQS-12-130, Heat No. KC6004, Lot No. 3763301, Kobe Steel, Ltd., for SA738-B shell plate B3-B11, dated 2012-10-19
CMTR PNQS-12-131, Heat No. KC6004, Lot No. 3774311, Kobe Steel, Ltd., for SA738-B shell plate B3-B12, dated 2012-10-19
CMTR PNQS-12-126, Heat No. KC6004, Lot No. 3763291, Kobe Steel, Ltd., for SA738-B shell plate B3-B7, dated 2012-10-19
CMTR PNQS-12-129, Heat No. KC6004, Lot No. 3774461, Kobe Steel, Ltd., for SA738-B shell plate B3-B10, dated 2012-10-19
CMTR RINJQ-229-3-6, Heat No. 1M7874(1), Nippon Steel & Sumikin Welding Company, SFA-5.28, ER80S-G, dated August 20, 2012 for H01 upper equipment hatch sleeve to insert plate
CMTR RINJQ-229-3-4, Heat No. 9M7999(1), Nippon Steel & Sumikin Welding Company, SFA-5.28, ER80S-G, dated October 02, 2012 for H01 upper equipment hatch sleeve to insert plate

Section 1A19:

Codes

American Society for Testing and Materials A-706-13, Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

American Concrete Institute 349-01, Code Requirements for Nuclear Safety Related Concrete Structures

Drawings

VS3-1010-CR-172, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 7 South-West Quadrant, Rev 1

VS3-1010-CR-175, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 7 North-West Quadrant, Rev 1

VS3-1010-CR-161, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 6 Reinf Plan, Rev 1

VS3-1010-CR-171, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 7a, b, c, d, & e Key Plan, Rev 1

VS3-1010-CR-181, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 8 Reinf Plan, Rev 1

VS3-1010-CR-191, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 9 Reinf Plan, Rev 1

Survey Data Reports

U3 Nuclear Island CR10 Rebar Layer 7a As-built Locations, 5/6/14

U3 Nuclear Island CR10 Rebar Layer 7b As-built Locations, 5/6/14

U3 Nuclear Island CR10 Rebar Layer 7c As-built Locations, 5/6/14

U3 Nuclear Island CR10 Rebar Layer 7d As-built Locations, 5/7/14

U3 Nuclear Island CR10 Rebar Layer 10d As-built Locations, 5/7/14

CMTRs

CMTR Gerdau Ameristeel PO 132177-J400-00, Heat 5609540804, 11/12/2013

CMTR Gerdau Ameristeel PO 132177-J400-00, Heat 5609540904, 11/12/2013

CMTR Gerdau Ameristeel PO 132177-J400-00, Heat 5609587402, 11/13/2013

CMTR Gerdau Ameristeel PO 132177-J400-00, Heat 5609541003, 11/12/2013

CMTR Gerdau Ameristeel PO 132177-J400-00, Heat 5609572002, 1/2/2014

E&DCRs

VS3-CR10-GEF-000008, U3 CR10 - Air Pocket Concerns, Rev 0

APP-1010-GEF-086, Relocation of Construction Joint for Concrete Pedestal Below the Containment Vessel, Rev 0

Section 1A20:

Design Specifications

SV3-CC01-Z0-26, Safety Related Mixing and Delivering Concrete, Westinghouse Seismic Category I, Safety Class C “Nuclear Safety”, Rev. 5

SV3-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I, Safety Class C “Nuclear Safety”, Rev. 5

APP-CC01-Z0-027, Safety Related Concrete Testing Services, Westinghouse Safety Classification C, Rev.3

Work Packages
VS3-1110-CCW-001-ITAAC, “Unit 3 CVBH Grout,” Rev. 0

Section 1A21:

Drawings:
VS3-1210-CR-911, Auxiliary Building Area 2 Concrete Reinforcement Wall I Sections & Details El 66'-6", Rev 1
VS3-1200-CR-911, Auxiliary Building Area 2 Concrete Reinforcement Wall I Elevation, Rev 1

E&DCR:
APP-1210-GEF-210, Wall "I" Shear Reinforcement, Rev 0

N&D:
VS3-CR01-GNR-000029, I Line, 11 Line and Q Line Corners, Rev 0
VS3-CR01-GNR-000027, Nonconforming Lap Splice Location, Rev 0

Work Package:
VS3-1210-C0W-001, Formwork, Rebar, Embeds and Concrete for I wall Unit 3 El 66'-6" to 82'-6", Rev 0

Section 1A22:

Work Packages:
VS3-1210-C0W-004-ITAAC, “Formwork, Rebar, Embeds, and Concrete for 1 Wall, Unit 3, EL. 66’-6” to 82’-6”, Rev. 0
VS3-1210-C0W-001-ITAAC, “Formwork, Rebar, Embeds, and Concrete for I Wall Unit 3 El. 66’-6 to 82’-6”, Rev. 0

Procedures:
VS3-CC01-Z0-031, “Safety Related Placing Concrete and Reinforcing Steel”, Rev. 5
VS3-CR01-Z0-011, “Furnishing of Safety Related Reinforcing Steel”, Rev. 2
CSI 3-42, “Bending, Cutting and Threading Reinforcing Steel”, Rev. 3-A
NCSP-3-42, “Reinforcing Steel Installation”, Rev. 1
QS 15.01, “Nonconformance & Disposition Report”, Rev. 5
APP-GW-GAP-420, “Engineering and Design Coordination Report”, Rev. 8
APP-GW-GAP-428, “Control of Nonconforming Items for the AP1000 Program”, Rev. 4

Calculations:
APP-1200-S3C-121, “Aux Bldg A2 Wall I Technical Justification for Release of Concrete Placement for EL 66’-6” to 82’-6””, Rev. A
APP-1200-CCCC-121, “Auxiliary Building Wall I Reinforcement Design”, Rev. 3
APP-1220-S3R-001, “Justification for APP-1220-GEF-159 R0 of Auxiliary Building Wall I Concrete Placement Release”, Rev. 0
DCP_DCP_004099, “Aux Bldg A2 Wall I Technical Justification for Release of Concrete Placement for EL 66’-6” to 82’-6”

E&DCRs:
APP-1223-GEF-055, “Slab 1223-CP-S06 Reinforcement Modifications”, Rev. 0

APP-1210-GEF-192, “Concrete Placement Release Auxiliary Building A2 Wall I up to EL 82’-6””, Rev. 0
APP-1230-GEF-111, “Auxiliary Building Wall I (eye) Reinforced Concrete Design”, Rev. 1
APP-1210-GEF-210, “Wall "I" Shear Reinforcement”, Rev. 0
VS3-CR01-GEF-000026, “U3 i Wall A2 Vert. Rebar Spacing”, Rev. 0

Section 1A23:

Drawings:
VS3-1210-CR-950, Auxiliary Building Areas 5 & 6 Concrete Reinforcement Wall 1 Sections & Details El 66'-6", Rev 1
VS3-1210-CR-954, Auxiliary Building Areas 5 & 6 Concrete Reinforcement Wall 1 Sections & Details El 66'-0", Rev 1
VS3-1200-CR-950, Auxiliary Building Areas 5 & 6 Concrete Reinforcement Wall 1 Elevation, Rev 1
VS3-1215-CEX-960, Auxiliary Building Area 6 Wall 1 Embedments Index El 66'-6" North View, Rev 1

Work Package:
VS3-1210-C0W-004, Formwork, Rebar, Embeds and Concrete for 1 Wall, Unit 3, El 66'-6" to 82'-6", Rev 0

E&DCRs:
VSG-0000-GEF-000246, Rebar Tolerance and Start Location, Rev 0
APP-CE01-GEF-015, A2-CS-X Area 5 & 6 Embed Plate Fabrication Tolerance, Rev 0
VS3-CR01-GEF-000009, Unit 3 Corner Congestion, Rev 0

N&Ds:
VS3-CE01-GNR-000019, Q445-14-0026: Unsat Embeds, Rev 0

Section 1A24:

Certifications
NRMCA Batch Plant Certification No. 16580
NRMCA Batch Plant Certification No. 16581

Batch Plant Calibration Records
QC25004-15
QC25001-17
QC25000-15
QC25002-17
QC25003-16
22487-20
22486-20
22489-17
22488-20

Concrete Constituents Laboratory Test
A-14-00936
A-14-00948

A-14-00931
A-14-00930
A-14-00898

Work Packages
VS3-1210-C0W-001-ITAAC, “Formwork, Rebar, Embeds, and Concrete for I Wall Unit 3 El. 66’-6 to 82’-6”, Rev. 0
VS3-1210-C0W-004-ITAAC, “Formwork, Rebar, Embeds and Concrete for 1 Wall Unit 3 El 66’-6” to 82’-6,” Rev. 0

Design Specifications
SV3-CC01-Z0-26, Safety Related Mixing and Delivering Concrete, Westinghouse Seismic Category I, Safety Class C “Nuclear Safety”, Rev. 5
SV3-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I, Safety Class C “Nuclear Safety”, Rev. 5
APP-CC01-Z0-027, Safety Related Concrete Testing Services, Westinghouse Safety Classification C, Rev.3

Procedures
CSI 3-32-4, Concrete Batch Plant Mix and Material Control
CSI 3-30-4, Batch Plant Delivery Equipment – Testing, Calibration, and Certification
CSI 3-31-4, Concrete Batch plant Operations
CSI 3-42, “Bending, Cutting and Threading Reinforcing Steel”, Rev. 3-A
NCSP-3-42, “Reinforcing Steel Installation”, Rev. 1
QS 15.01, “Nonconformance & Disposition Report”, Rev. 5
APP-GW-GAP-420, “Engineering and Design Coordination Report”, Rev. 8
APP-GW-GAP-428, “Control of Nonconforming Items for the AP1000 Program”, Rev. 4
VS3-CR01-Z0-011, “Furnishing of Safety Related Reinforcing Steel”, Rev. 2

Calculations:
APP-1200-S3C-121, “Aux Bldg A2 Wall I Technical Justification for Release of Concrete Placement for EL 66’-6” to 82’-6””, Rev. A
APP-1200-CCCC-121, “Auxiliary Building Wall I Reinforcement Design”, Rev. 3
APP-1220-S3R-001, “Justification for APP-1220-GEF-159 R0 of Auxiliary Building Wall I Concrete Placement Release”, Rev. 0
DCP_DCP_004099, “Aux Bldg A2 Wall I Technical Justification for Release of Concrete Placement for EL 66’-6” to 82’-6”

E&DCRs:
APP-1223-GEF-055, “Slab 1223-CP-S06 Reinforcement Modifications”, Rev. 0
APP-1210-GEF-192, “Concrete Placement Release Auxiliary Building A2 Wall I up to EL 82’-6””, Rev. 0
APP-1230-GEF-111, “Auxiliary Building Wall I (eye) Reinforced Concrete Design”, Rev. 1
APP-1210-GEF-210, “Wall "I" Shear Reinforcement”, Rev. 0
VS3-CR01-GEF-000026, “U3 i Wall A2 Vert. Rebar Spacing”, Rev. 0

Other
Concrete Batch Ticket No. 34227
Concrete Batch Ticket No. 34299
Concrete Pour Card 258106214-14-00871

Section 1A25:

Specification
VS3-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I and II, Safety Class C Nuclear Safety, Rev 5

Drawings
VS3-1210-CR-932, Auxiliary Building Areas 3 & 4 Concrete Reinforcement Wall I Sections and Details El 66'-6", Rev 1
VS3-1210-CR-954, Auxiliary Building Areas 5 & 6 Concrete Reinforcement Wall I Sections and Details El 66'-6", Rev 1
VS3-1200-CR-954, Auxiliary Building Areas 5 & 6 Concrete Reinforcement Wall I Elevation, Rev 1

Section 1A26:

Work Order:
VS3-1210-C0W-001-ITAAC, “Formwork, Rebar, Embeds, and Concrete for I Wall Unit 3 El. 66’-6 to 82’-6”, Rev. 0

Section 1A27:

Work Packages:
VS3-1210-C0W-004-ITAAC, “Formwork, Rebar, Embeds, and Concrete for 1 Wall, Unit 3, EL. 66’-6” to 82’-6””, Rev. 0
VS3-1210-C0W-001-ITAAC, “Formwork, Rebar, Embeds, and Concrete for I Wall Unit 3 El. 66’-6 to 82’-6”, Rev. 0

Section 1A28:

Drawing
VS3-1210-CR-932, Auxiliary Building Areas 3 & 4 Concrete Reinforcement Wall I Sections & Details El 66'-6", Rev 1

Spec
VS3-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I and II, Safety Class C "Nuclear Safety", Rev 5

Section 1P01:

Procedures
QS 14.2, Inspection Report System, Revision K
F-Q445-001, Receipt Inspection Procedure, Revision 5

Inspection Reports
Q445-14-0703, Shield Building Module 02J, 05/07/2014

Section 1P02:

CB&I Procedures
SWSQAP 1-74A Section 13, Handling Storage, and Shipping, Rev B
QS 13.11, Material/Equipment Storage, Rev C

WEC Specifications
APP-MT01-VHM-001, AP1000 Core Makeup Tank Technical Manual: Instructions for Receipt Inspection, Storage and Assembly, Rev 0
APP-MT02-VHM-001, AP1000 Accumulator Tank Technical Manual: Instructions for Receipt Inspection, Storage and Assembly, Rev 0

Section 1P03:

CB&I
CAR 2014-0819, Weld data sheet signed off incorrectly
CAR 2014-0797, Inadvertent omission of interrupted rebars discovered in Aux. Bldg. I Wall Pour
CAR 2014-0802, U3 pedestal concrete left height

WEC
100005030, CBI CAR 2014-0336 Multiple Unsat Conditions associated with the accumulator tanks receipt inspection
100018065, E&DCR APP-RCS-GEF-099 document corrections are inadequate
100019712, CBI CAR 2014-0259 Module received on site with defects (studs not meeting clearance requirements)

SCE&G
CR-NND-14-00721, Accumulator tanks exposed to weather conditions
CR-NND-14-00530, Unit 2 Accumulators will not meet technical manual 6 month requirement for internal inspection

LIST OF ACRONYMS

ACI	American Concrete Institute
ADAMS	Agencywide Document Access and Management System
ASME	American Society of Mechanical Engineers
CB&I	Chicago Bridge and Iron
CFR	Code of Federal Regulations
CMTR	Certified Material Test Report
CSFC	Construction Safety Focus Component
CV	Containment Vessel
CVBH	Containment Vessel Bottom Head
CVS	Chemical and Volume Control System
DCD	Design Control Document
E&DCR	Engineering and Design Coordination Reports
EPC	Engineering, Procurement, and Construction
FCAW	Flux-cored Arc Welding
GMAW	Gas Metal Arc Welding
IHI	Ishikawajima-Harima Heavy Industries Co., Ltd.
IP	Inspection Procedure
ITAAC	Inspections, Tests, Analyses, and Acceptance Criteria
MAB	Modular Assembly Building
MT	Magnetic Particle Examination
N&D	Nonconformance and Disposition Reports
NDE	Nondestructive Examination
NI	Nuclear Island
NRC	Nuclear Regulatory Commission
PQR	Procedure Qualification Record
PT	Liquid Penetrant Examination
PWHT	Postweld Heat Treatment
QA	Quality Assurance
QC	Quality Control
RT	Radiographic Examination
SCE&G	South Carolina Electric and Gas
SSC	Structure, System, or Component
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Examination
WEC	Westinghouse Electric Company
WPS	Welding Procedure Specification