



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

April 26, 2013

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 05200027/2013002 and  
05200028/2013002**

Dear Mr. Jones:

On March 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Virgil C. Summer Nuclear Station Units 2 and 3. The enclosed inspection report documents the inspection results which were discussed on April 17, 2013, with you and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

No findings were identified during this inspection.

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

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Sincerely,

**/RA/**

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

Docket Nos.: 05200027, 05200028

License Nos.: NPF-93, NPF-94

Enclosure: Inspection Report 05200027/2013002 and 05200028/2013002  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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Letter to R. Jones from Micheal E. Ernstes dated April 26, 2013

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3 - NRC  
INTEGRATED INSPECTION REPORTS 05200027/2013002 and  
05200028/2013002

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**U.S. NUCLEAR REGULATORY COMMISSION  
Region II**

Docket Numbers: 5200027  
5200028

License Numbers: NPF-93  
NPF-94

Report Numbers: 05200027/2013002  
05200028/2013002

Licensee: South Carolina Electric and Gas

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

Location: Jenkinsville, SC

Inspection Dates: January 1 through March 31, 2013

Inspectors: C. Abbott, Construction Resident Inspector (Vogtle), DCP  
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Accompanying Personnel: J. Christensen, Construction Inspector, DCI

Approved by: M. Ernstes, Chief  
Construction Projects Branch 4  
Division of Construction Projects

Enclosure



## **SUMMARY OF FINDINGS**

Inspection Report 05200027/2013002, 05200028/2013002; 01/01/2013 - 03/31/2013; Virgil C. Summer Nuclear Station Units 2 and 3, Routine Integrated Inspection Report.

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

### **A. NRC-Identified and Self Revealed Findings**

No findings were identified.

### **B. Licensee-Identified Violations**

No findings were identified.

## REPORT DETAILS

### Summary of Plant Construction Status

Virgil C. Summer Unit 2 began this inspection period constructing reinforcing bar for the nuclear island base mat. On March 9, 2013, the licensee began placing first nuclear concrete and completed placement on March 11. Work continued on Unit 3 to prepare the foundation for the construction of reinforcing bar for the Unit 3 nuclear island base mat.

#### 1. CONSTRUCTION REACTOR SAFETY

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

1A01 (Unit 2) ITAAC No. 91 / Family 06F

a. Inspection Scope

During the week of January 7, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 2 ITAAC Number 91 (2.2.01.02a).

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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 inspection procedures to perform these inspections on the Unit 2 containment vessel:

- 65001.F, Inspection of the ITAAC-Related Design and Fabrication Requirements, Section 02.03;
- 65001.06, Inspection of ITAAC-Related Installation of Mechanical Components, Sections 02.01 and 02.02; and
- 65001.11, Construction Inspection Program Inspection of ITAAC-Related Containment Integrity and Containment Penetrations, Sections 02.01 through 02.05.

The inspectors reviewed 15 certified material test reports (CMTRs) to determine whether materials for 7 shell plates and the following nuclear part insert plates and sleeves were purchased in accordance with the requirements of American Society of Mechanical Engineers (ASME) Section II-Part A, ASME Section III-Subsection NE, and

Westinghouse Electric Company, LLC (WEC) containment vessel design and material specifications:

- HO2 lower equipment hatch;
- HO3 lower personnel airlock; and
- P25 main feedwater inlet penetration.

The inspectors reviewed one CMTR from the Nippon Steel & Sumikin Welding Company to determine whether a solid wire weld filler metal was purchased in accordance with the requirements of ASME Section II, Part C, and Section III, Subsection NE.

The inspectors reviewed a certificate of compliance and mill certificate for run-on tabs welded to the bottom of vertical weld joints to determine whether these temporary attachments were identified and welded to the pressure boundary on the S5 course of the middle ring in accordance with ASME Section III, Subsection NE.

The inspectors reviewed a Chicago Bridge and Iron (CB&I) performance qualification test record for one welding operator that the inspectors observed welding on the S5 course of the middle ring. The inspectors performed this review to determine if the welding operator was qualified and certified in accordance with the requirements of ASME Section IX for machine welding the vertical full penetration butt joints.

The inspectors reviewed IHI performance qualification test records for six welders. These welders were using three different welding processes to weld full penetration corner joints between the insert plate and sleeve for the HO3 lower personnel airlock and P25 main feedwater inlet penetration. The review was to determine if the welders were qualified and certified in accordance with the requirements of ASME Section IX.

The inspectors reviewed a sample of four ASME N-2 data report forms certified by IHI for Unit 2 to determine whether the following nuclear parts were fabricated in accordance with the requirements of ASME Section III, Subsection NE:

- lower equipment hatch HO2 insert plate to sleeve;
- S2 shell plate B2-B5 (welded to the top portion of the HO2 insert plate);
- lower personnel airlock HO3 insert plate assembly; and
- insert plate B2-B14 welded to the Loop-1 main feedwater inlet P25 penetration sleeve (includes the main steam outlet P23 penetration sleeve and start-up feedwater P44 penetration sleeve).

b. Findings

No findings were identified.

1A02 (Unit 2) ITAAC No. 93 / Family 06Ba. Inspection Scope

During the week of January 7, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 2 ITAAC Number 93 (2.2.01.03a):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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 nondestructive examination of pressure boundary welds.

The inspectors used the following NRC inspection procedures to perform these inspections on the Unit 2 containment vessel:

- 65001.B, Inspection of the ITAAC-Related Welding Program, Sections 02.01 through 02.06;
- 65001.F, Section 02.03;
- 65001.06, Sections 02.01 and 02.02; and
- 65001.11, Sections 02.01 through 02.05.

*Procurement and Receipt Inspection:*

The inspectors reviewed fifteen CMTRs on the following items that were receipt inspected from IHI to determine whether chemical composition and mechanical properties (including applicable Charpy V-notch and drop weight impact tests), grain size, carbon equivalency, Brinell hardness, heat treatment, and degassing process were in accordance with the requirements of the ASME Section II-Part A, ASME Section III-Subsection NE, and WEC containment vessel design and material specifications:

- S5 course plates E9 and E12 (first course of the middle ring);
- S3 course plates C5 and C10;
- S2 shell plate B2-B5 (welded to the top portion of the HO2 insert plate);
- S2 shell plates B2-B11 and B2-B12;
- HO2 lower equipment hatch insert plate and sleeve;
- HO3 lower personnel airlock insert plate and sleeve; and
- P25 sleeve and B2-B14 insert plate.

The inspectors reviewed one CMTR from the Nippon Steel & Sumikin Welding Company to determine whether an ER80S-G (Heat OP7521) weld filler metal used with both the gas tungsten arc welding (GTAW) and gas metal arc welding (GMAW) processes was in accordance with the requirements of ASME Section II - Part C, SFA 5.28, and Section III, Subsection NE.

*Procedure Reviews:*

The inspectors reviewed the latest revision, Revision 7, of CB&I welding procedure specification (WPS) E91TG-H4 to determine whether changes were in accordance with the requirements of ASME Section IX and did not affect the essential variables of the flux-cored arc welding (FCAW) process.

The inspectors reviewed IHI WPS IT-1116G, Revision 0 (including supporting PQRs I 11Q6G and T 11R3G) to determine whether the welding procedure was qualified in accordance with the requirements of ASME Section III, Subsection NE and Section IX for welding the P25 penetration sleeve to insert plate B2-B14.

*Welder/Operator Qualifications:*

The inspectors reviewed a CB&I welding operator performance qualification record with identification number 2871467 (WPQ FC MACH 3GU4G using test WPS E71T-1, Revision 2) to determine whether the welding operator was qualified and certified in accordance with the requirements of ASME Section IX to weld on vertical weld joint J of the S5 course for the middle ring.

The inspectors reviewed several IHI welder qualification records with identification numbers W-1925, W-1964, W-2556, W-2565, and W-2567 for the GTAW and GMAW/FCAW processes (including W-2431 for GTAW only) to determine whether the welders were qualified and certified in accordance with the requirements of ASME Section IX.

*Production Controls:*

The inspectors reviewed five CB&I weld travelers after completion of full penetration butt welds for the S1 to S2 circumferential weld (including associated spread sheets) and the following four vertical field welds for the lower ring:

- weld joint M (shell plates C5 to C10) for the S3 shell course;
- weld joint L (shell plates B11 to B12) for the S2 shell course; and
- weld joints E and F (shell plate B2-A5 to the HO2 lower equipment hatch insert plate) for the S1 lowest shell course.

The inspectors performed this review to determine whether the weld filler metals and welders/welding operators were traceable, and the inspection hold/witness points for fit-up and tack, and final visual examinations were completed and accepted in accordance with the requirements of the CB&I Nuclear Quality Assurance Manual (NQAM) and ASME Section III, Subsection NE.

The inspectors reviewed shell plate thickness measurements recorded in the weld traveler for field welds E and F to determine whether the recorded thicknesses were in accordance with the WEC containment vessel design specifications.

The inspectors physically measured the thickness of the HO2 and HO3 sleeves and reviewed the CB&I Dimensional Inspection Reports for the HO2 lower equipment hatch to determine whether the azimuth, elevation, levelness, and sleeve thicknesses were in accordance with the Updated Final Safety Analysis Report (UFSAR).

The inspectors reviewed five CB&I daily welding material distribution logs used between the dates of October 23 and November 16, 2012, for the S1 to S2 circumferential weld. The inspectors determined whether the actual welding material control identification and heat input control data (including the quality control inspector initial and welding engineer final review signature) were in accordance with ASME Section IX and the applicable CB&I welding procedures for the applicable qualified range for:

- electrode burn-off rate;
- bead size; and
- heat input (amps, volts, and travel speed).

The inspectors observed in-process machine FCAW on vertical weld joint J (between shell plates E9 to E12) for the S5 course of the middle ring. The inspectors determined whether the following aspects were within the parameters specified in CB&I welding procedure E91TG-H4, Revision 7:

- surface cleanliness;
- weld filler metal size;
- American Welding Society (AWS) classification and designation on the spool;
- amperage;
- voltage;
- bead size (for heat input control);
- shielding gas;
- multiple pass weld surface profile; and
- joint alignment

The inspectors observed semi-automatic FCAW and manual shielded metal arc welding (SMAW) for the S2 to S3 circumferential weld at locations where protruding penetration nozzles interfered with another welding machine to determine whether welding activities were in accordance with the associated CB&I welding procedures.

The inspectors reviewed CB&I drawing numbers 2, 4, 15, and 29 to determine whether the dimensions (including physical measurement of thicknesses) and tolerances of the P23, P25, and P44 penetration insert plate and sleeves were in accordance with WEC design specifications SV3-MV50-V1-018 and APP-ML10-Z0-002 and the UFSAR.

The inspectors reviewed three IHI weld checklist and weld lists (similar to weld travelers) for full penetration corner weld joints between the insert plates and sleeves for the HO2 and HO3 hatches, and P25 penetration. The inspectors performed this review to determine if the weld filler metals and welders were traceable and if inspection hold points for root opening, groove angle, misalignment, fit-up and tack, back chipping, and final visual examinations were completed and accepted in accordance with ASME Section III, Subsection NE.

#### *Inspections/Nondestructive Examinations:*

The inspectors reviewed 10 IHI magnetic particle examination records and 4 IHI ultrasonic examination records for the Category D corner joint groove welds between the insert plates and sleeves for the HO2 lower equipment hatch, HO3 lower personnel airlock hatch, and P25 main feedwater penetration. The inspectors determined whether

nondestructive examinations were performed and accepted in accordance with the applicable ASME Section III-Subsection NE-5000, ASME Section II-Part A, SA-435 Specification for Straight-Beam Ultrasonic Examination of Steel Plates, and WEC Material Specification APP-MV50-Z0-037 for SA-738 Grade B plates.

The inspectors reviewed six CB&I X-ray films and radiographic examination (RT) reports with location marker sketches (including film density and geometric unsharpness) that were signed by a Level II Examiner for the following Category A longitudinal (vertical) and Category B circumferential welded butt joint groove welds on the Unit 2 containment vessel lower ring:

- S3 vertical weld joint M (RT report VCS-U2-2012-RT-140);
- S2 vertical weld joint L (RT report VCS-U2-2012-RT-105);
- S1 to S2 circumferential weld joint (RT reports VCS-U2-2012-132 and -137 between vertical welds S1G and S1H); and
- S1 vertical weld joints E and F (RT report VCS-U2-2012-RT-099 and -100, respectively).

This review was to determine whether X-ray radiography was performed and accepted in accordance with ASME Section III, Subsection NE-5000.

The inspectors reviewed several rejected X-ray films for the circumferential weld between the S1 to S2 courses to determine whether weld repairs and X-ray re-shots were performed and accepted in accordance with ASME Section III, Subsection NE.

b. Findings

No findings were identified.

1A03 (Unit 2) ITAAC No. 96 / Family 06F

a. Inspection Scope

During the week of January 7, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 2 ITAAC Number 96 (2.2.01.04a.ii):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The components identified in Table 2.2.1-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	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.	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 NRC inspection procedure 65001.F, Section 02.03, to perform these inspections on the Unit 2 containment vessel.

The inspectors reviewed procedure qualification records (PQR) I-11Q6G and T-11R3G that supported WPS IT-1116G because they were used by IHI to weld the P25 penetration sleeve to the insert plate B2-B14. The inspectors determined if the welding procedure qualification was in accordance with the fracture toughness requirements of ASME Section III, Subsection NE.

The inspectors reviewed 15 CMTRs consisting of 7 shell plates, 5 insert plates, and 3 sleeves to determine if Charpy V-notch and drop weight impact testing of pressure retaining materials was performed in accordance with the fracture toughness requirements of ASME Section III-Subsection NE, and WEC containment vessel design and material specifications for the following items:

- S5 shell course plates of the middle ring;
- S2 and S3 shell course plates of the lower ring;
- HO2 lower equipment hatch;
- HO3 lower personnel airlock hatch; and
- P25 main feedwater inlet penetration insert plate and sleeve.

b. Findings

No findings were identified.

1A04 (Unit 2) ITAAC No. 761 / Family 01F

a. Inspection Scope

During this inspection period, the inspectors observed construction activities associated with Unit 2 ITAAC Number 761 (3.3.00.02a.i.b):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.	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.	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 performed direct inspection of construction activities associated with the installation of rebar in the Unit 2 CR10 module. The inspectors used the guidance in the following NRC inspection procedures:

- IP65001.F, and
- IP65001.02, "Inspection of ITAAC-Related Installation of Structural Concrete".



The inspection focused on activities associated with the design and construction of the rebar layers 6 and 7 underneath the containment vessel. The inspectors reviewed documents and observed installation of reinforcing steel to verify the following:

- implementing procedures, specifications, and drawings adequately address the requirements of American Concrete Institute (ACI) 349-01;
- structural concrete construction was being accomplished under controlled conditions and in conformance with design requirements;
- applicable documentation for selected design changes was complete and accurate;
- contractors performing safety-related work have approved implementing procedures that describe administrative and procedural controls, approved work processes, and inspection requirements; and
- placement of reinforcing steel was performed in accordance with the applicable specifications, codes, drawings, and procedures.

The inspectors reviewed a sample of construction drawings and specifications associated with the rebar beneath the containment vessel to determine whether construction activities were in conformance with regulatory requirements and licensee commitments. The inspectors reviewed design documents, Engineering and Design Coordination Reports (E&DCRs), and other design changes to determine whether design deviations were appropriately identified and addressed in a manner that would support closure of the ITAAC. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1A05 (Unit 2) ITAAC Nos. 761, 762, and 763 / Family 01F

a. Inspection Scope

Between February 25-26 and March 7-11, 2013, the inspectors performed a field inspection of construction activities associated with Unit 2 ITAAC Numbers 761, 762, and 763. The inspectors performed a field inspection of construction activities associated with these ITAAC for the Unit 2 nuclear island basemat within the following areas:

- shield building area (ITAAC Number 761);
- non-radiologically controlled area of the auxiliary building (ITAAC Number 762); and
- radiologically controlled area of the auxiliary building (ITAAC Number 763).

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
<p>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.</p>	<p>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.</p>	<p>761: 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.</p>
		<p>762: 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.</p>
		<p>763: 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.</p>

The inspectors applied the guidance in NRC inspection procedures 65001.02 and 65001.A, "ITAAC Attributes for As-Built Inspection." The inspectors conducted inspections of reinforcing steel installation and concrete placement, reviewed applicable design drawings 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 verified if:

- structural concrete design and construction was accomplished under controlled conditions and in accordance with applicable specifications, drawings, and approved procedures using qualified personnel;
- key building critical dimensions and materials satisfied design specifications, requirements, and relevant ITAAC;
- structural concrete work and related licensee quality control activities were being performed in accordance with design specifications and approved procedures;
- deviations from the design due to as-built conditions were identified and documented appropriately; and
- records reflected that completed work met design specifications and acceptance criteria.

The inspectors performed document reviews, observations, and independent measurements on sample areas of the basemat concrete and reinforcing steel for the proposed Unit 2 nuclear island structures. The reinforcing steel inspected included:

- horizontal reinforcing steel;
- shrinkage and temperature reinforcement;
- wall dowels;
- mechanical reinforcing steel splices;
- shear reinforcement for the auxiliary building portions.

These document reviews, observations, and measurements were performed to verify if:

- contractors had approved implementing procedures, which addressed the requirements of applicable ACI codes, prescribed adequate methods of quality control (QC) inspection, and specified appropriate quantitative and qualitative acceptance criteria;
- QC inspectors were qualified to perform their assigned work
- reinforcing steel installation was controlled and performed in accordance with the applicable specifications, codes, drawings, and procedures;
- reinforcing steel was located properly in the structures, secured, free of excess rust, and had proper clearances;
- QC inspections were performed to verify correct placement of reinforcing steel;
- the concrete batch plant and delivery vehicles were qualified by the National Ready Mix Concrete Association program;
- the batch plant was producing the specified mix, using the proper qualified and approved constituents;
- concrete constituent testing was performed by qualified personnel utilizing calibrated equipment;
- concrete subgrade, form work, and reinforcing steel were free of foreign materials and excess rust;
- concrete was placed and consolidated by properly trained individuals using the proper equipment;
- fresh concrete tests; including slump, air content, temperature, and unit weight; were performed by qualified personnel and equipment; at the appropriate intervals; and
- proper finishing, curing, and temperature monitoring techniques and equipment were utilized.

The inspectors reviewed applicable design specifications, E&DCRs, nonconformance reports, and corrective action reports associated with the basemat rebar installation to determine if:

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

b. Findings

No findings were identified.

1A06 (Unit 2) ITAAC No. 763 / Family 01F

a. Inspection Scope

During this inspection period, the inspectors observed construction activities associated with Unit 2 ITAAC Number 763 (3.3.00.02a.i.d):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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.	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.	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 performed a direct inspection of construction activities associated with Unit 2 auxiliary building module (CA20) located in the modular assembly building. Using NRC inspection procedures 65001.B and 65001.F, the inspectors observed in-process welding of submodule CA20-04 to CA20-05, reviewed documents and interviewed licensee personnel to:

- determine whether licensee records established an adequate basis for the acceptance of ITAAC with design and fabrication attributes;
- determine whether fabrication activities were performed by qualified personnel;
- determine whether records reflect that completed work meets design specifications and acceptance criteria;

- verify that design and fabrication was being completed in accordance with applicable specifications, drawings, and approved procedures as described below.

The inspectors observed gas metal arc welding performed on the plate seam between CA20-04 and CA20-05 using an automated welder to determine whether the welding parameters, including heat input, weld voltage, and amperage were within the allowable ranges permitted by procedure WPS 2-1.1M71. The inspectors reviewed welder qualifications for the personnel performing the welding. Welder qualifications and weld procedures were reviewed to ensure compliance with the requirements of AWS D1.1-2000. The inspectors reviewed a CMTR for the Lincoln Electric Company weld wire that was receipt inspected and installed in the CA20-04 to CA20-05 seam weld to determine if the chemical composition and mechanical properties, including applicable strength and impact testing, met the requirements of the Shaw (CB&I) weld filler metal specification DMD-M-NS-52880SNi1-00 and AWS D1.1-2000.

b. Findings

No findings were identified.

1A07 (Unit 2) ITAAC Nos. 765, 766, and 767 / Family 01A

a. Inspection Scope

Between February 25-26 and March 7-11, 2013, the inspectors performed a field inspection of construction activities associated with Unit 2 ITAAC Numbers 765 (3.3.00.02a.ii.b), 766 (3.3.00.02a.ii.c), and 767 (3.3.00.02a.ii.d). The inspectors performed a field inspection of construction activities associated with these ITAAC for the Unit 2 nuclear island basemat within the following areas:

- shield building area (ITAAC Number 765);
- non-radiologically controlled area of the auxiliary building (ITAAC Number 766);  
and
- radiologically controlled area of the auxiliary building (ITAAC Number 767).

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
<p>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.</p>	<p>An inspection of the as-built concrete thickness will be performed.</p>	<p>765: A report exists that concludes that the as-built concrete thicknesses of the shield building sections conform to the building sections defined in Table 3.3-1.</p>
		<p>766: 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.</p>
		<p>767: 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.</p>

The inspectors applied the guidance in NRC inspection procedures 65001.02 and 65001.A. The inspectors conducted inspections of the concrete pre-placement, placement, and post-placement activities; reviewed applicable design drawings 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 verified if:

- structural concrete design and construction was accomplished under controlled conditions and in accordance with applicable specifications, drawings, and approved procedures using qualified personnel;
- key building critical dimensions and materials satisfied design specifications, requirements, and relevant ITAAC;
- structural concrete work and related licensee quality control activities were being performed in accordance with design specifications and approved procedures;
- deviations from the design due to as-built conditions were identified and documented appropriately; and
- records reflected that completed work met design specifications and acceptance criteria.

The inspectors performed observations and independent measurements, including preliminary basemat thickness measurements, on sample areas of the basemat for the proposed Unit 2 nuclear island structures. Specifically, the inspectors reviewed various work package documents, and observed basemat concrete production and placement activities to verify if:

- contractors had approved implementing procedures, which addressed the requirements of applicable ACI codes, prescribed adequate methods of QC inspection, and specified appropriate quantitative and qualitative acceptance criteria;
- the concrete batch plant and delivery vehicles were qualified by the National Ready Mix Concrete Association program;
- the batch plant was producing the specified mix, using the proper qualified and approved constituents;
- concrete constituent testing was performed by qualified personnel utilizing calibrated equipment;
- concrete subgrade, form work, and reinforcing steel were free of foreign materials and excess rust;
- concrete was placed and consolidated by properly trained individuals using the proper equipment;
- fresh concrete tests; including slump, air content, temperature, and unit weight; were performed by qualified personnel and equipment; at the appropriate intervals;
- embed plates and temporary construction aids used to determine finished concrete elevation, were placed such that the specified concrete thickness would be achieved; and
- proper finishing, curing, and temperature monitoring techniques and equipment were utilized.

In addition, the inspectors reviewed applicable design specifications, E&DCRs, nonconformance reports, and corrective action reports associated with the basemat concrete construction to determine if:

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

b. Findings

No findings were identified.

1A08 (Unit 3) ITAAC No. 91 / Family 06Fa. Inspection Scope

During the week of January 7, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 3 ITAAC Number 91 (2.2.01.02a):

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 inspection procedures to perform these inspections on the Unit 3 containment vessel:

- 65001.F, Section 02.03;
- 65001.06, Sections 02.01 and 02.02; and
- 65001.11, Sections 02.01 through 02.05.

The inspectors reviewed seven CMTRs to determine whether the following materials used for the bottom head were in accordance with the applicable requirements of ASME Section II-Part A, ASME Section III-Subsection NE, and WEC containment vessel design and material specifications:

- two plates for the BH3 course;
- three knuckle plates for the BH2 course;
- column stub A3-C41 (temporarily welded to BH3 plate C19); and
- 1 inch diameter S3L Nelson anchor studs.

The inspectors reviewed CMTRs for solid wires and SAW flux to determine whether consumables were in accordance with the requirements of ASME Section II-Part C and Section III-Subsection NE.

The inspectors reviewed a certificate of compliance for blank nuts (used to fasten weld joint alignment fit-up tools) to determine if these temporary attachments were identified and welded to the pressure boundary of the bottom head in accordance with ASME Section III, Subsection NE.

The inspectors reviewed CB&I welder performance qualification test records for a welder that used the SMAW and SAW processes to weld on the BH2 knuckle plate butt weld joints Z and AA to determine whether the welder was qualified and certified in accordance with the requirements of ASME Section IX.

The inspectors reviewed an ASME N-2 data report form certified by IHI for Unit 3 to determine whether the BH3 course plates C19-1 welded to C19-2 for the bottom head



were fabricated in accordance with the requirements of ASME Section III, Subsection NE, and the WEC design and material specifications.

b. Findings

No findings were identified.

1A09 (Unit 3) ITAAC No. 93 / Family 06B

a. Inspection Scope

During the week of January 7, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 3 ITAAC Number 93 (2.2.01.03a):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
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 nondestructive examination of pressure boundary welds.

The inspectors used the following NRC inspection procedures to perform these inspections on the Unit 3 containment vessel:

- 65001.B, Sections 02.01 through 02.06;
- 65001.F, Section 02.03;
- 65001.06, Sections 02.01 and 02.02; and
- 65001.11, Sections 02.01 through 02.05.

*Procurement and Receipt Inspection:*

The inspectors reviewed five CMTRs on the following pressure retaining items that were receipt inspected from IHI:

- BH2 bottom head course knuckle plates A3-B9, A3-B13, and A3-B24; and
- BH3 bottom head course C19-1 and C19-2.

The inspectors determined if chemical composition and mechanical properties (including Charpy V-notch impact tests), grain size, carbon equivalency, Brinell hardness, heat treatment, and degassing process were in accordance with the requirements of the ASME Section II-Part A, ASME Section III-Subsection NE, and WEC containment vessel design and material specifications:

The inspectors reviewed the following CMTRs for two different AWS classification solid wires (including one SAW flux) to determine whether consumables were in accordance with the requirements of ASME Section II, Part C, and Section III, Subsection NE:

- ESAB, SFA-5.23, ENi4 of both 3/32 inch and 5/64 inch diameter solid wire for SAW;
- ESAB, Flux 10.72 for SAW; and
- Nippon Steel, SFA-5.28, ER80S-G (Heat OP7522) of 0.047 inch diameter for GMAW.

*Procedure Reviews:*

The inspectors reviewed CB&I WPS ENi4/OK10.72 to determine whether Revision 4 affected the essential variables of the welding procedure (previously reviewed by the NRC) in accordance with the requirements of ASME Section IX.

The inspectors reviewed IHI WPS I-113G, Revision 4 to determine whether the welding procedure was qualified in accordance with the requirements of ASME Section III, Subsection NE and Section IX for welding the BH3 course plate C19-1 to C19-2.

*Welder/Operator Qualifications:*

The inspectors reviewed three CB&I welder and welding operator performance qualification records for identification number 2859370 for the SMAW and SAW processes, respectively, to determine whether qualifications and certifications were in accordance with the requirements of ASME Section IX to weld on the BH2 course Category A longitudinal weld joints AA and Z.

*Production Controls:*

The inspectors reviewed four CB&I weld travelers for the following welds on the Unit 3 bottom head to determine whether the weld filler metals and welders/welding operators were traceable, the inspection hold/witness points for fit-up and tack, and final visual examinations were completed in accordance with the requirements of the CB&I NQAM and ASME Section III, Subsection NE:

- weld joints AA and Z for the BH2 course knuckle plates B9, B13, and B24;
- column Stub C41 weld to BH3 plate A3-C19; and
- anchor studs 18-1 through 18-3 welded to the BH3 plate A3-C19.

*Inspections/Nondestructive Examinations:*

The inspectors reviewed two CB&I X-ray films and radiographic examination reports with location marker sketches (including film density and geometric unsharpness) that were signed by a Level II examiner for the following Category A longitudinal welded butt joint groove welds on the Unit 3 containment vessel bottom head to determine whether X-ray radiography was performed and accepted in accordance with ASME Section III, Subsection NE-5000:

- weld joints AA and Z for the BH2 course knuckle plates B9, B13, and B24.

b. Findings

No findings were identified.

1A10 (Unit 3) ITAAC No. 95 / Family 06C

a. Inspection Scope

During the week of January 7, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 3 ITAAC Number 95 (2.2.01.04a.i):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The components identified in Table 2.2.1-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	A hydrostatic or pressure test will be performed on the components required by the ASME Code Section III to be tested.	A report exists and concludes that the results of the pressure test of the components identified in Table 2.2.1-1 as ASME Code Section III conform with the requirements of the ASME Code Section III.

The inspectors used NRC inspection procedure 65001.C, Inspection of the ITAAC-Related Construction Test Program, Section 02.03 to perform these inspections on the Unit 3 containment vessel.

The inspectors reviewed two CB&I vacuum box test records for Category A longitudinal weld joints AA and Z on the BH2 course of the bottom head (joining knuckle plates A3-B13 to A3-B9 and A3-B24, respectively) to determine whether vacuum testing was performed in accordance with ASME Section III, NE-6000.

b. Findings

No findings were identified.

1A11 (Unit 3) ITAAC No. 96 / Family 06F

a. Inspection Scope

During the week of January 7, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 3 ITAAC Number 96 (2.2.01.04a.ii):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The components identified in Table 2.2.1-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	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.	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 NRC inspection procedure 65001.F, Section 02.03, to perform these inspections on the Unit 3 containment vessel.

The inspectors reviewed IHI WPS I-113G, Rev. 4 to determine whether the welding procedure qualification was in accordance with the fracture toughness requirements of ASME Section III, Subsection NE for welding the BH3 course plates C19-1 to C19-2.

The inspectors reviewed five CMTRs consisting of two BH3 course plates and three BH2 knuckle plates to determine whether Charpy V-notch impact tests of pressure retaining materials were performed in accordance with the fracture toughness requirements of ASME Section II-Part A, ASME Section III, Subsection NE, and WEC containment vessel design and material specifications.

b. Findings

No findings were identified.

1P01 Quality Assurance Implementation, Appendix 5, Inspection of Criterion V – Instructions, Procedures, and Drawings (35007)

a. Inspection Scope

The inspectors observed activities associated with Unit 3 nuclear island fill concrete placement. The inspectors observed operations of the batch plant to establish compliance with WEC design specification APP-CC01-Z0-026, "Safety Related Mixing and Delivering Concrete." The inspectors observed in-process testing for slump, air content, unit weight, density, and concrete temperature associated with this placement to determine compliance with WEC design specification APP-CC01-Z0-027, "Safety Related Concrete Testing Services." The inspectors observed the preparation and transportation of the concrete test cylinders and interviewed personnel performing in-process field testing to determine if the proper controls were being implemented as specified by applicable procedures.

b. Findings

No findings were identified.

1P02 Quality Assurance Implementation, Appendix 10, Inspection of Criterion X – Inspection (35007)

a. Inspection Scope

The inspectors observed in-process magnetic particle testing of auxiliary building submodule CA20-04 following work performed under Nonconformance and Disposition Report VS2-CA20-GNR-000003 and conducted the following:

- verified the inspection was performed by a Shaw (CB&I) qualified nondestructive examination Level II inspector;
- verified the inspector had and followed the current version of procedure QAD 9.63, "Magnetic Particle Examination";
- verified the magnetic particle type, temperature meter, light meter and magnetic yolk used were in accordance with QAD 9.63; and
- verified that results were documented and complete on nondestructive examination report V2-13-W-M-037.

b. Findings

No findings were identified.

1P03 Quality Assurance Implementation, Appendix 11, Inspection of Criterion XI – Test Control (35007)

.1 T-Headed Shear Reinforcing Bar

a. Inspection Scope

The inspectors reviewed implementing documents to determine whether the documents addressed the Quality Assurance Program Description (QAPD) requirements and UFSAR commitments for control of testing for shear reinforcement production testing. Specifically, the inspectors reviewed testing procedures and sampling procedures for the T-headed shear reinforcement for the six feet thick portion of the basemat to determine whether the licensee's documents established adequate measures to provide for the following:

- type of test to be performed;
- when testing is required and sequencing of tests within an activity;
- acceptance limits;
- specified acceptance criteria; and
- identification of potential sources of uncertainty and error.

The following documents were reviewed to determine whether they established adequate measures as outlined in the previous paragraph:

- CB&I (formerly Shaw) procedure CSI 3-44-2, Mechanical Splicing of Reinforcing Steel; and
- CB&I (formerly Shaw) E&DCR VS2-CR01-GNR-000025, FNC – NI Terminator testing for heats.

The inspectors evaluated a sample of test results for the T-headed shear reinforcement for the six feet thick portion of the basemat to determine the following:

- type of test and/ or method;
- item tested;
- tester;
- measuring and test equipment (M&TE) used during test;
- test criteria used to determine acceptance;
- results; and
- evaluation of acceptability.

b. Findings

No findings were identified.

.2 Methyl Ethyl Ketone Rub Test

a. Inspection Scope

The inspectors observed the performance of the methyl ethyl ketone rub test on the Unit 2 containment vessel bottom head to determine if the proper documentation was readily available to personnel performing the tests, and that proper testing methods were being used. The inspectors examined a sample of testing results from multiple test areas to determine whether testing results were within the proper range and that inspection results were properly documented. The inspectors directly observed the following testing and inspection activities conducted by the licensee:

- dry film thickness measurement before and after performing the methyl ethyl ketone rub test; and
- performance of the methyl ethyl ketone rub test.

The inspectors reviewed implementing documents to determine whether they were developed to address the QAPD requirements and UFSAR commitments for conducting testing and inspections of the Unit 2 containment vessel bottom head coating cure. Specifically, the inspectors reviewed work instructions and procedures to determine whether the licensee's documents established adequate measures to provide for the following:

- examinations and measurements for each work operation, where necessary;
- methods/documents used to perform testing and were documented adequately;
- frequency and/or timing of inspections;

- acceptance criteria; and
- monitoring of testing and inspection methods.

b. Findings

No findings were identified.

.3 Implementing Document Review

a. Inspection Scope

The inspectors verified that the licensee's and the Engineering, Procurement, and Construction (EPC) consortium's quality assurance (QA) implementing documents for the control of testing were consistent with the NRC-approved QAPD and commitments in the UFSAR, including the appropriate version of NQA-1, as applicable. The inspectors reviewed the implementing documents to determine if the documents included provisions, as applicable, for:

- type of test to be performed, including proof tests performed prior to installation;
- purpose of the test;
- when testing was required and sequencing of tests within an activity;
- testing prerequisites;
- mandatory hold points, such as independent verification/witness by quality control staff, quality assurance staff, or an Authorized Nuclear Inspector;
- acceptance limits and criteria consistent with applicable design documents;
- collection and documentation of testing results;
- evaluation of test results by assigned independent personnel;
- identification of potential sources of uncertainty and error; and
- ensuring that test records were complete, accurate, and contained all required provisions of the test.

b. Findings

No findings were identified.

1P04 Quality Assurance Implementation, Appendix 12, Inspection of Criterion XII – Control of Measuring and Test Equipment (35007)

.1 Implementing Document Review

a. Inspection Scope

The inspectors verified that the licensee's and the EPC consortium's QA implementing documents for the control of M&TE were consistent with the NRC-approved QAPD and commitments in the UFSAR, including the appropriate version of NQA-1 and ASME NCA-3800, as applicable. Additionally, the inspectors reviewed the implementing documents to determine if the documents included requirements that:

- only calibrated M&TE would be used when the licensee determined that the use of such M&TE was necessary;

- M&TE was calibrated at appropriate frequencies
- M&TE was adjusted and maintained against reference calibration standards having traceability to nationally recognized standards;
- calibrated M&TE was appropriately labeled or tagged
- out-of-calibration M&TE was tagged and segregated to ensure it would not be used;
- a documented evaluation would be performed to identify and evaluate inspections and tests performed with M&TE found to be out of calibration to determine acceptability;
- calibrated M&TE, including standards used for calibrating M&TE, was handled and stored to maintain accuracy; and
- documentation of calibration was complete and accurate.

b. Findings

No findings were identified.

.2 Review of Implementation of M&TE Controls

a. Inspection Scope

The inspectors examined M&TE used in the field to perform safety-related work. Specifically, the inspectors examined the following equipment used for Unit 3 nuclear island backfill concrete placements and non-destructive examination of auxiliary building submodule CA20-04 weld repairs:

- ID 52191 - pressure pot;
- ID 54991 – scale;
- ID 54744 - digital thermometer;
- ID 16803 - digital light meter; and
- ID 76721 - infrared thermometer.

The inspectors reviewed the M&TE to determine if:

- the equipment was calibrated within the program specified calibration interval;
- the accuracy was within the program specified limits; and
- documentation and test/inspection results were traceable to the M&TE being verified.

b. Findings

No findings were identified.



1P05 Quality Assurance Implementation, Appendix 14, Inspection of Criterion XIV – Inspection, Test, and Operating Status (35007)

a. Inspection Scope

The inspectors verified that the licensee's and the EPC consortium's quality assurance implementing documents for the inspection, test, and operating status of materials, parts, equipment and components were consistent with the NRC-approved QAPD and commitments in the UFSAR, including the appropriate version of NQA-1, as applicable. The inspectors reviewed the implementing documents to determine if the documents included the following provisions:

- status of inspection and test performed on an individual item was indicated either on the item or on documentation traceable to item;
- inspected/tested item was identified to indicate that it passed required inspection(s) and/or test(s);
- inspected/tested item was identified to indicate that, if it failed the required inspection(s) and/or test(s), a nonconformance or corrective action was initiated;
- inspected/tested item was identified to preclude inadvertent bypassing of required inspection(s) and/or test(s);
- item was properly designated to prevent inadvertent operation; and
- authority for application and removal of tags, markings, labels, and stamps that indicated test, inspection, or operating status was specified.

b. Findings

No findings were identified.

1P06 Quality Assurance Implementation, Appendix 16, Inspection of Criterion XVI – Corrective Action (35007)

.1 Daily Corrective Action Program Review

a. Inspection Scope

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

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

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

b. Findings

No findings were identified.

.2 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

On a routine basis, the inspectors screened a sample of issues entered into the licensee and the EPC consortium's corrective action programs to determine whether conditions adverse to quality were controlled in accordance with each company's quality assurance program and whether potential adverse trends were appropriately identified and corrected by the licensee or their contractors. The inspectors screened corrective action records associated with both Units 2 and 3. Specifically, the inspectors:

- attended weekly management review committee meetings at the site;
- reviewed a sample of licensee and EPC consortium corrective action documents; and
- held discussions with licensee and EPC consortium personnel responsible for the screening and correction of the issues.

b. Findings

No findings were identified.

.3 Selected Issues for Follow-Up Inspection

a. Inspection Scope

As a result of root cause analysis CAP-RCA-12-062-M069, WEC completed report APP-GW-GLR-159, "C2LB Review Report." This report identified conditions adverse to quality which were subsequently entered into WEC's corrective action program. The inspectors reviewed APP-GW-GLR-159 and selected a sample of 12 issue reports that resulted from the report.

The inspectors reviewed the documents referenced above to determine if:

- the issues were handled in accordance with the applicable QAPD requirements and 10 CFR Part 50, Appendix B;
- 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: (1) the cause was determined; (2) corrective actions were taken to prevent recurrence; and (3) the cause and

corrective actions taken were documented and reported to appropriate levels of management;

- conditions were appropriately screened;
- the organizations properly evaluated and reported the condition (e.g., 10 CFR50.55(e), 10 CFR Part 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.

1P07 Quality Assurance Implementation, Appendix 18, Inspection of Criterion XVIII – Audits (35007)

a. Inspection Scope

The inspectors verified that the licensee's and the EPC consortium's QA implementing documents for conducting audits was consistent with the NRC-approved QAPD and commitments in the UFSAR, including the appropriate version of NQA-1, as applicable. The inspectors reviewed the implementing documents to determine if the documents included adequate provisions for audit planning and scheduling, documenting audit results, and follow-up on audit findings where the licensee identified areas of deficiency, nonconformance or weakness. Specifically, the inspectors reviewed the documents to determine if they included provisions for:

- maintaining a schedule of proposed audits that ensured coverage of applicable aspects of quality-affecting activities;
- developing audit plans;
- verifying compliance with the specified aspects of the QA program and to determine effectiveness of the QA program;
- auditor qualification requirements;
- auditor independence of the activity to be audited;
- documenting the results of audit including a summary of deficiencies and nonconformances, compliance with the QA program, and effectiveness of the auditee's QA program;
- audit reviews by management having responsibility for the audited areas; and
- follow-up audit of areas of deficiency, nonconformance or weakness when determined to be necessary including the establishment of criteria for making determination.

b. Findings

No findings were identified.

#### 4. OTHER ACTIVITIES (OA)

##### 4OA5 Other Activities

##### .1 Inspection of Unresolved Item (URI) 05200027/2012005-001, Design Control and Open Items for the Basemat (Closed)

##### a. Inspection Scope

During this inspection period, the inspectors interviewed licensee and contractor personnel and reviewed documents related to the issues identified in URI 5200027/2012005-001.

This URI was previously opened because the inspectors could not verify that three design changes were either adequately controlled or met the licensing basis. Open item DI-OI-034617 was identified on certain drawings as an open item and on other drawings as a hold item. Hold and open items were internal to WEC, leaving it unclear how field engineering or quality control personnel could understand the impacts of the items posted against the construction documents used in the field. The inspectors reviewed E&DCRs VS2-0000-000314, 112, and 118 that showed holds being placed on drawings. These E&DCRs are posted against the affected drawings.

For Seismic Category I structures, one of the load combinations required seismic and thermal loads to be combined in the structural analysis. WEC indicated that seismic forces and ambient thermal loads did not need to be directly combined as a load combination in the structural analysis. This appeared to be inconsistent with the structural design requirements of UFSAR Table 3.8.4-2. The inspectors reviewed calculation APP-1200-CCC-119 which demonstrated that the load combination was analyzed and is consistent with UFSAR.

A design change was made to revise the flood heights of the auxiliary building to 14 feet. The inspectors questioned whether the change in flood height was adequately reviewed by all affected organizations for impacts, especially with relationship to the safety related equipment located in the bottom level of the non-radiological controlled area of the auxiliary building. Based on the information provided, the inspectors determined that the flood height elevation of 14 feet only pertained to the radiological controlled area of the auxiliary building and had been reviewed by all affected organizations. Flooding for the non-radiological area of the auxiliary building was being reviewed by WEC in design change proposal APP-GW-GEE-4149 at the time of the inspection. Based on the design change proposal, flood levels would be kept below the 12-inch limit, consistent with UFSAR, and therefore would not impact safety related equipment in this area.

The inspectors concluded that the design control process was followed, items were properly closed, and the licensing basis for the nuclear island structures was met. URI 05200027/2012005-001 is closed.

##### b. Findings

No findings were identified.

40A6 Meetings, Including Exit.1 Exit Meeting Summary

On April 17, 2013, the inspectors presented the inspection results to Mr. R. Jones 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

### Licensee and Contractor Personnel

B. Bedford, WEC ITAAC Manager  
J. Cole, WEC Licensing  
G. Cook, WEC Containment Vessel Oversight  
R. Driscoll, WEC Quality Assurance Manager  
J. Ewing, WEC CFL  
P. Fleming, CB&I Project Manager  
W. Hutchins, WEC Licensing Manager  
K. Kronewetter, CB&I Civil/ Structural Engineer  
B. McIntyre, WEC Director, Site Project Licensing & Regulatory Support  
A. Moore, SCE&G QA Supervisor  
A. Paglia, SCE&G Licensing Manager  
A. Rice, SCE&G Licensing Engineer  
F. Salter, SCE&G Licensing Engineer  
G. Sanders, SCE&G Licensing Engineer  
K. Savastano, SCE&G Construction Engineer  
B. Stokes, SCE&G General Manager of Engineering  
R. Thompson, SCE&G ITAAC Supervisor  
A. Torres, SCE&G General Manager of Construction  
B. Walsh, CB&I Quality Manager  
R. Word, SCE&G Manager, Organizational Development & Performance

### NRC personnel

M. Ernstes, Chief, Construction Projects Branch 4, Division of Construction Projects

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Closed

05200027/2012005-001	URI	Design Control and Open Items for the Basemat (Section 4OA5.1)
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## DOCUMENTS REVIEWED

### Section 1A01, 1A02, 1A03:

#### Drawings and Specifications (Unit 2):

CB&I, Dwg. No. 2, Sheet 1, Rev. 4, General Notes / List of Nozzles  
 CB&I, Dwg. No. 2, Sheet 2, Rev. 1, General Notes / List of Nozzles  
 CB&I, Dwg. No. 4, Rev. 3, Course S1 and S2 Orientation  
 CB&I, Dwg. No. 15, Rev. 3, Field Vessel Tolerances  
 CB&I, Dwg. No. 21, Sheet 1, Rev. 1, Lower Equipment Hatch H02 - Field Details  
 CB&I, Dwg. No. 24, Sheet 1, Rev. 1, Lower Personnel Hatch H03 - Field Details  
 CB&I, Dwg. No. 29, Rev. 2, Steam & Feed Insert P23/P25/P44 - Field Details  
 CB&I, MS-SA-738B-2765, Rev. 5, Material Specification For SA 738 Grade B Steel Plate  
 (above Stiffener EL 131 feet - 9 inches)  
 IHI, Dwg. No. 224B010, Rev. 4, Detail Drawing of Lower Personnel Airlock Insert Plate  
 Assembly  
 IHI, Dwg. No. 225B014, Rev. 0, Detail Drawing of Lower Equipment Hatch Insert Assembly  
 IHI, Dwg. No. 026R301, As-built Template of Lower Personnel Airlock Insert Plate Assembly  
 IHI, Dwg. No. 026R303, As-built Template of Lower Equipment Hatch General Assembly  
 IHI, Dwg. No. 026H652, Rev. 1, Purchase Specification of Welding Material SFA-5.28 ER80S-G  
 (for GMAW)  
 IHI, Dwg. No. 026H654, Rev. 0, Purchase Specification of Welding Material SFA-5.28 ER80S-G  
 (for GTAW)  
 WEC, Design Specification APP-ML10-Z0-002, Containment Vessel Piping Penetrations with  
 Flued Heads  
 WEC, Design Specification SV3-MV50-V1-018, Containment Vessel Mechanical Sleeve Rings

#### Certified Material Test Reports (Unit 2):

CMTR 5921-1, Heat 4-8087, Lot K3089B, JFE Steel Corporation for P25 sleeve  
 CMTR 6033-1, Heat 5-3669, Lot GT077A, JFE Steel Corporation SA738-B Part-No. F12-A-J1 of  
 4 inch thickness for HO2 insert plate, dated October 13, 2010  
 CMTR 6033-6, Heat 5-3669, Lot GT076A and B, JFE Steel Corporation SA738-B Part-No. F12-  
 A-J4 and J3, respectively, of 4 inch thickness for HO2 insert plates, dated October 28, 2010  
 CMTR 6033-7, Heat 5-3669, Lot HX351A, JFE Steel Corporation SA738-B Part-No. F12-A-J2  
 and J5 of 4 inch thickness for HO2 insert plate, dated October 28, 2010  
 CMTR 6033-8, Heat 6-1392, Lot LG057A, JFE Steel Corporation for HO2 penetration sleeve  
 Part-No. F12-AA-1A and -2A of 4 inch thick  
 CMTR 6075-4, Heat 5-5154, Lot JK156A, JFE Steel Corporation for B2-B11 S2 shell plate  
 vertical weld joint L  
 CMTR 6075-5, Heat 5-5154, Lot JS213A, JFE Steel Corporation for B2-B12 S2 shell plate  
 vertical weld joint L  
 CMTR 6075-10, Heat 5-5157, Lot JP318A, JFE Steel Corporation SA738-B for S2 shell plate  
 B2-B5 of 1.75 inch thickness for weld joint N of HO2, dated November 12, 2010  
 CMTR 6081-3, Heat 6-0122, Lot K7006A, JFE Steel Corporation for B2-C5 S3 shell plate  
 vertical weld joint M  
 CMTR 6081-10, Heat 5-5816, Lot KV443A, JFE Steel Corporation for B2-C10 S3 shell plate  
 vertical weld joint M  
 CMTR 6135-3 for Heat 6-1392 Lot B2398A, JFE Steel Corporation for insert plate part-no. E12-  
 AE-J1 of HO3 Lower Personnel Airlock

CMTR 6135-4 for Heat 6-1392 Lot BK356A, JFE Steel Corporation for penetration sleeve part-no. E12-AE-1 of HO3 Lower Personnel Airlock  
 CMTR 6295-7, Heat 5-7236, Lot BX119A, JFE Steel Corporation for B2-E9 S5 shell plate of vertical weld joint J  
 CMTR 6295-9, Heat 4-5895, Lot BL330A, JFE Steel Corporation for B2-E12 S5 shell plate of vertical weld joint J  
 CMTR 6055-1, Heat 6-8563, Lot HS105A, JFE Steel Corporation for P23/P25/P44 insert plate B2-B14  
 CMTR RINJQ-229-2-5, Heat No. OP7521, Nippon Steel & Sumikin Welding Company, SFA-5.28, ER80S-G, dated 5/31/2012

Welding Procedure Specifications (Unit 2):

CB&I, WPS E91TG-H4, Rev. 7  
 IHI, WPS IT-1116G, Rev. 0

Welder/Welding Operator Qualification Records (Unit 2):

CB&I, Welder Performance Qualification Record for Welder Stamp 2871467, WPQ FC MACH 3GU4G; Test WPS E71T-1, Rev. 2  
 CB&I, Welder Qualification Log, dated 12/4/2012, with Continuity Report generated 10/15/2012  
 CB&I, VC Summer Qualified Welder List, updated 12/5/2012  
 IHI, WPQ for GTAW and GMAW/FCAW for each welder ID-Numbers W1925, W1964, W2273, W2431 (GTAW only), W2433, W2435, W2337, W2458, W2556, W2565, and W2567.

Weld Travelers and Weld Checklists (Unit 2):

CB&I, Weld Traveler B2A-S1-E-HO2 for S1 plate B2-A5 to the HO2 (lower equipment/maintenance hatch) insert plate of weld joint E  
 CB&I, Weld Traveler B2A-S1-F-HO2 for S1 plate B2-A5 to the HO2 insert plate of weld joint F  
 CB&I, Weld Traveler B2B-S2-N-HO2 for F12 for HO2 Insert Assembly welded to the S2 shell plate B2-B5.  
 CB&I, Weld Traveler B2B-S2-L for S2 plates B2-B11 to B2-B12 of the S2 vertical weld joint L  
 CB&I, Weld Traveler B2-S1-S2 (including 31 Spread Sheets) for shell plates B2-A to B2-B circumferential weld joint S1 to S2  
 CB&I, Weld Traveler B2C-S3-M for S3 plates B2-C5 to B2-C10 of the vertical weld joint M  
 IHI, Weld Checklist and Weld List for weld joint WF12-A-N for the HO2 penetration sleeve to the insert plate  
 IHI, Weld Checklist and Weld List for weld joint WE12-AE-N for the HO3 penetration sleeve to insert plate  
 IHI Weld Checklist and Weld List for weld joint WB2-P25-N for the P25 penetration sleeve to insert plate B2-B14

Nondestructive Examination Records (Unit 2):

CB&I, VCS-U2-2012-RT-099, Radiographic Examination Report and X-ray films for S1 vertical weld joint E between HO2 insert plate and shell  
 CB&I, VCS-U2-2012-RT-100, Radiographic Examination Report and X-ray films for S1 vertical weld joint F between HO2 insert plate and shell  
 CB&I, VCS-U2-2012-RT-105, Radiographic Examination Report for S2 vertical weld joint L  
 CB&I, VCS-U2-2012-RT-132, Radiographic Examination Report for S1 to S2 girth circumferential weld joint between the S1G and S1H vertical weld joints  
 CB&I, VCS-U2-2012-RT-137, Radiographic Examination Report for R1 repair on the S1 to S2 girth circumferential weld joint  
 CB&I, VCS-U2-2012-RT-140, Radiographic Examination Report for S3 vertical weld joint M



IHI, MT-004-BP-WF12-A-N, Magnetic Particle Examination Record before PWHT of part-no. WF12-A-N penetration sleeve to insert plate weld for HO2

IHI, MT-004-AP-WF12-A-N, Magnetic Particle Examination Record after PWHT of part-no. WF12-A-N penetration sleeve to insert plate weld for HO2

IHI, UT-004-BP-F12-AA-1A and 2A, Ultrasonic Examination Record before PWHT of part-no. WF12-A-N penetration sleeve to insert plate weld, including Ultrasonic Instrument Calibration Record for HO2

IHI, UT-004-AP-F12-AA-1A and 2A, Ultrasonic Examination Record after PWHT for part-no. WF12-A-N penetration sleeve to insert plate weld, including Ultrasonic Instrument Calibration Record for HO2

IHI, MT-004-RP-WE12-AE-N, Magnetic Particle Examination Record for root pass of lower personnel airlock to insert weld for HO3

IHI, MT-004-BG-WE12-AE-L, Magnetic Particle Examination Record for back groove of lower personnel airlock insert sleeve for HO3

IHI, MT-004-RP-WE12-AE-N, Magnetic Particle Examination Record for back groove of lower personnel airlock insert for HO3

IHI, MT-004-BR-WE12-AE-N, Magnetic Particle Examination Record for back groove root pass of lower personnel airlock insert for HO3

IHI, MT-004-BP-WE12-AE-N, Magnetic Particle Examination Record before PWHT of lower personnel airlock insert for HO3

IHI, MT-004-AP-WE12-AE-N, Magnetic Particle Examination Record after PWHT of lower personnel airlock insert for HO3

IHI, MT-004-BP-WB2-P23, P25-N to B2-B14, Magnetic Particle Examination Record before PWHT for P25

IHI, MT-004-AP-WB2-P25-N to B2-B14, Magnetic Particle Examination Record after PWHT for P25

IHI, UT-004-BP-WB2-P25-N to B2-B14, Ultrasonic Examination Record before PWHT for P25 penetration sleeve to insert plate B2-B14 weld, including Ultrasonic Instrument Calibration Record CAL-BP-WB2-P25-N-01

IHI, UT-004-AP-WB2-P25-N to B2-B14, Ultrasonic Examination Record after PWHT for P25 penetration sleeve to B2-B14 insert plate weld, including Ultrasonic Instrument Calibration Record CAL-AP-WB2-P25-N-01

Miscellaneous (Unit 2):

CB&I, Dimensional Inspection Report, 164621-830-05-FM-000104 for the H02 lower equipment hatch

CB&I, Receipt Inspection Report, U2-LEH-001 for HO2 lower equipment hatch sleeve (barrel) thickness

CB&I, Receipt Inspection Report No. U2-S1-004, for HO3 S1 shell plate B2-A4 with lower personnel (airlock hatch) sleeve (barrel) thickness

CB&I, Daily Welding Material Distribution Log (5 different daily logs recording S1 to S2 weld amperage, voltage, and travel speed with calculated heat input data)

Brooks Welding, Certificate of Compliance (C of C), Heat DL1110268803, dated 08/26/2011, with Nucor Corporation Mill Certification R131802, for SA-36 1/2 inch thick by 4 inch wide by 20 feet long carbon steel run-on/off tabs

ASME Data Reports (Unit 2):

IHI, ASME Data Report Form N-2 for S-2 course shell plate nuclear part B2-B5 [welded to the insert plate at the upper portion of the HO2 lower equipment hatch] (S/N IN-4826)

IHI, ASME Data Report Form N-2 for Lower Equipment Hatch HO2 insert plate to penetration sleeve (S/N IN-4795)

IHI, ASME Data Report Form N-2 for insert plate B2-B14 to penetrations P23/P25/P44 (S/N IN-4829 and National Board No. 2738

**Section 1A04:**

Specifications:

VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Revision 3

Drawings:

VS2-1010-CR-161, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 6 Reinforcement Plan, Revision 1

VS2-1010-CR-162, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 6 Reinforcement Details, Revision 1

VS2-1010-CR-171, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 7A, B, C, D and E Key Plan, Revision 1

VS2-1010-CR-172, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 7 South-West Quadrant, Revision 1

VS2-1010-CR-173, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 7 South-East Quadrant, Revision 1

VS2-1010-CR-174, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 7 North-East Quadrant, Revision 1

VS2-1010-CR-175, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 7 North-West Quadrant, Revision 1

VS2-1010-CR-176, Nuclear Island Basemat Concrete Reinforcement Area Below Containment Vessel Layer 7 Reinforcement Details, Revision 1

Design Changes:

APP-1010-GEF-031, Layer 6 Bar Installation Sequence Change, Revision 0

APP-1010-GEF-024, Rebar Discrepancies in Layers 6, 8 and 9 of the Nuclear Island Basemat, Revision 0

APP-1010-GEF-029, Reinforcement Changes Under the CVBH, Revision 0

VS2-1010-GEF-000015, Reinforcement Layer 7a, 7b and 7c, Revision 0

**Section 1A05:**

Procedures:

NCSP 3-42-1, Reinforcing Steel Installation

Drawings:

APP-0000-C9-001, AP1000 Concrete General Notes, Rev. 6

APP-0000-C9-002, AP1000 Concrete General Notes, Rev. 4

APP-1000-CR-001, Nuclear Island Basemat Bottom Reinforcement, Rev. 6

APP-1000-CR-002, Nuclear Island Basemat Top Reinforcement, Rev. 8

APP-1000-CR-003, Nuclear Island Basemat Shear Reinforcement, Rev. 11

APP-1000-CR-010, Nuclear Island Basemat Interface with Containment Area Reinforcement, Rev. 5

APP-1000-CR-901, Nuclear Island Basemat Reinforcement Sections, Rev. 10

APP-1000-CR-904, Nuclear Island Section Details, Rev. 6

APP-1000-CR-910, Nuclear Island Basemat Interface with Containment Area Rebar Sections and Details EL 66'-6", Rev. 4

APP-1010-CR-001, Nuclear Island Basemat Dowel Plan at EL. 66'-6" Shield Building North-East Quadrant, Rev.1

APP-1010-CR-002, Nuclear Island Basemat Dowel Plan at EL. 66'-6" Shield Building South-East Quadrant, Rev. 2

APP-1010-CR-003, Nuclear Island Basemat Dowel Plan at EL. 66'-6" Shield Building South-West Quadrant, Rev. 2

APP-1010-CR-004, Nuclear Island Basemat Dowel Plan at EL. 66'-6" Shield Building North-West Quadrant, Rev. 2

APP-1010-CR-008, Nuclear Island Dowel Plan at EL. 66'-6" Auxiliary Building Area 4, Rev. 2

APP-1010-CR-010, Nuclear Island Basemat Dowel Plan at EL 66'-6" Auxiliary Building Area 6, Rev. 2

APP-1010-CR-011, Nuclear Island Basemat Sections & Details, Rev. 3

APP-1010-CR-012, Auxiliary Building Skin Reinforcement Splices, Rev. 0

APP-1200-CR-992, Auxiliary Building Concrete Reinforcement Typical Detail

APP-1210-CR-901, Auxiliary Building Basemat Reinforcement Sections NS and Detail EL. 66'-6", Rev. 6

APP-1210-CR-902, Auxiliary Building Basemat Reinforcement Sections EW and Detail EL. 66'-6", Rev. 5

APP-1210-CR-903, Auxiliary Building Reinforcement Details Pit and Sump Area EL 66'-6", Rev. 7, Rev. 7

APP-1211-CE-001, Auxiliary Building Area 1 Battery Racks Embedment Plate Locations Room 12104 – Plan at EL 66'-6", Rev. 6

APP-1212-CE-003, Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12101 – Plan at EL 66'-6", Rev. 6

APP-1211-CE-002, Auxiliary Building Area 1 Battery Racks Embedment Plate Locations Room 12105 Plan EL. 66'-6", Rev. 6

APP-1215-CE-005, Auxiliary Building Area EL. 66'-6" CA-20 Basemat Interface Embedment and Recess Locations, Rev. 10

APP-1215-CE-006, Auxiliary Building Area EL. 66'-6" CA-20 Basemat Interface Embedment and Recess Locations, Rev. 5

APP-1215-CE-007, Auxiliary Building Areas 5 & 6 EL. 66'-6" CA-20 Basemat Interface Embedment and Recess Details, Rev. 5

Specifications:

APP-SS01-Z0-003, Rev. 3, Embedded and Miscellaneous Steel

VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel Westinghouse Seismic Category I and II, Safety Class C "Nuclear Safety Related", Westinghouse Seismic Category III, Safety Class C, Rev. 2

E&DCRs:

VSG-CC01-GEF-000046, VS2/VS3 Specification Enhancements

VS2-CR01-000034, Rev. 0, FNC – Layer 4/5 Development Length Entering Containment

VS2-CR01-GNR-000033, Rev. 0, FNC- Embed support angle clearance  
 VS2-1000-GEF-000022, NI Layers 4 &5 Coupler Locations, Rev. 0

Corrective Action Documents:

CR-NND-13-00186, FNC – Concern With Dowels in the North Portion of the Auxiliary Building, 03/21/2013  
 CR-NND-13-00204, Basemat wall dowel development discrepancy, 03/21/2013  
 CR-NND-13-00221, Non-conformances, CARs, and E&DCRs that occurred just prior to and during the First Nuclear Concrete Placement in VC Summer Unit 2, 03/21/2013

Miscellaneous:

APP-1010-CCC-014, Evaluation of Walls with openings at Basemat for Additional Reinforcement

**Section 1A06:**

Codes and Specifications:

Weld Filler Material Specification, DMD-M-NS-52880SNi1-00, Revision 0

Drawings:

APP-GA-G1-001, AP1000 Module Design Criteria, Revision 2  
 APP-GW-S9-103, AP1000 Structural Modules General Notes - III, Revision 3

Miscellaneous:

CMTR Q445-12-0207, Q3 Lot 1063P, Lincoln Electric Company 1/8 x 18 Lincoln ER80S-Ni1 Weld Filler Metal  
 Shaw (CB&I), Welder Qualification Records for Welder ID-No. SJG6800 and SAG9657  
 WPS2-1.1M71, Machine GMAW of AWS Group I, II, and III (A572 Gr. 60) Steels, Revision 0  
 VS2-CA20-GEF-000012, DMD-M-NS-52880Ni1-00 DHT Test Relief, Revision 0

**Section 1A07:**

Procedures:

CSI 3-31-3, Concrete Batch Plant Operations, dated 04/10/2012  
 CSI 3-33-2, Concrete Field Testing and Curing Records, dated 06/28/2012  
 NCSP 3-31-1, Concrete Placement, dated 05/24/2012

Drawings:

APP-0000-C9-001, AP1000 Concrete General Notes, Rev. 6  
 APP-0000-C9-002, AP1000 Concrete General Notes, Rev. 4

Specifications:

VS2-CC01-Z0-026, Safety Related mixing and Delivering Concrete, Westinghouse Safety Class C “Nuclear Safety Related”, Rev. 3  
 VS2-CC01-Z0-027, “Safety Related Concrete Testing Services, Westinghouse Safety Class C ‘NUCLEAR SAFETY RELATED’,” Rev. 4  
 VS2-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel Westinghouse Seismic Category I and II, Safety Class C “Nuclear Safety Related”, Westinghouse Seismic Category III, Safety Class C, Rev. 2

ASTM C114-10, "Standard Test Methods for Chemical Analysis of Hydraulic Cement"  
 ASTM C1038/C1038M-10, "Standard Test Method for Expansion of Hydraulic Cement Mortar Bars Stored in Water"  
 ASTM C150/C150M-09, "Standard Specification for Portland Cement"  
 ASTM C31/C31M-10, "Practice for Making and Curing Concrete Test Specimens in the Field"

E&DRCs:

VS2-1000-GEF-000075, FNC-Cold Joint Contingency Plan, Rev. 0

Corrective Action Documents:

CAR 2013-0362, Procedure for Concrete Truck Testing Requirement Unclear for Multiple Batch Plant/Pump Application, 03/09/2013  
 CR-NND-13-00205, Following rejection of concrete truck delivery does the intent of the spec/code allow delivery to a second point of discharge (pump) without acceptance testing, 03/10/2013  
 CR-NND-13-00206, Material used for a failed Pressure Method Air Content Test for Batch 22684 was emptied into a skid steer bucket containing concrete being used for casting of test cylinders, 03/11/2013  
 CR-NND-13-00221, Non-conformances, CARs, and E&DCRs that occurred just prior to and during the First Nuclear Concrete Placement in VC Summer Unit 2, 03/21/2013  
 VS2-CC01-GNR-000037, Unit 2 Nuclear Island Basemat Concrete Test Failures, 03/18/2013

Miscellaneous:

AASHTO Accreditation Program Criteria Compliance Document for Shaw Power Group:  
 Jenkinsville, South Carolina  
 Batch Plant 01, Ticket #22204, 03/09/2013  
 Batch Plant 02, Ticket #22210, 03/09/2013  
 Batch Plant 02, Ticket #22208, 03/09/2013  
 Batch Plant 01, Ticket #22165, 03/09/2013  
 Batch Plant 01, Ticket #22164, 03/09/2013  
 Batch Plant 02, Ticket #22152, 03/09/2013  
 Batch Plant 02, Ticket #22150, 03/09/2013  
 Periodic Constituent Testing of #67 Coarse Aggregate, 12/20/2012  
 Periodic Constituent Testing of #67 Coarse Aggregate, 12/18/2012  
 Periodic Constituent Testing of Cement, 01/31/2013  
 Report No. A-13-00363, Sieve Analysis of Aggregate Data Record, dated 03/10/2013  
 Report No. A-13-00361, Total Moisture Content of Aggregates Data Record, dated 03/09/2013  
 Report No. A-13-00360, Total Moisture Content of Aggregates Data Record, dated 03/09/2013  
 RPT-VCSC-155, Periodic Constituent Testing of Cement, AMEC Project No. 6234-10-5260, dated 01/31/2013  
 CALC-VCSC-033, Mix B2- Test Results and Recommended Mix Proportions

**Section 1A08, 1A09, 1A10, 1A11:**

Certified Material Test Reports (CMTRs):

CMTR PNQS-11-017, Heat KB6433, Lot 1848311, Kobe Steel, Ltd., for BH2 knuckle plate A3-B9, dated 2011-08-09  
 CMTR PNQS-11-021, Heat KB6433, Lot 1848751, Kobe Steel, Ltd., for BH2 knuckle plate A3-B13, dated 2011-08-09  
 CMTR PNQS-11-032, Heat KB6435, Lot 1851571, Kobe Steel, Ltd., for BH2 knuckle plate A3-B24, dated 2011-08-09

CMTR PNQS-11-051, Heat KC7978, Lot 2161001, Kobe Steel, Ltd., for BH3 plate C19-1, dated 2011-08-26

CMTR PNQS-11-083, Heat KB6684, Lot 1903851, Kobe Steel, Ltd., for BH3 plate C19-2, dated 2011-08-26

CMTR PNQS-11-097, Heat KB6664, Lot 1904031, Kobe Steel, Ltd., for column stub A3-C41 welded to BH3 plate C19, dated 2011-08-26

CMTR 776877, Heat 093101, ESAB, SFA-5.23, ENi4 solid wire for both 3/32 inch and 5/64 inch diameter coils of 65 pounds, dated June 9, 2011, with supporting Stork Herron Testing Laboratories Reports LTE001-11-03-22505-1 and LTE001-11-04-22634-1

CMTR 770386, Lot ME022012, ESAB Flux 10.72, dated 06/14/2011

CMTR RINJQ-229-2-6, Heat OP7522, Nippon Steel & Sumikin Welding Company, SFA-5.28, ER80S-G of 0.047 inch diameter, dated 5/31/2012

CMTR 719279, Heat 10138320, Nelson Stud Welding, 1 inch diameter S3L Anchor Studs of A108 Grade 1015 material with Charter Steel Test Report 205431 and LTI Laboratory Testing Certified Test Report NSW004-11-10-34896-1, dated 10/7/2011 (including Nelson Stud Welding Bend Test for 5 samples)

Welding Procedure Specifications:

CB&I, WPS ENi4/OK10.72, Rev. 4  
IHI, WPS I-113G, Rev. 4

Weld Travelers:

CB&I, Weld Traveler A3B-BH2-2-Z for BH2 knuckle plates A3-B-24 to A3-B-13 of vertical weld joint Z

CB&I, Weld Traveler A3B-BH2-2-AA for BH2 knuckle plates A3-B-13 to A3-B-9 of vertical weld joint AA

CB&I, Weld Traveler A3C-BH3-2-CSW for Column Stub C41 weld to BH3 plate A3-C19

CB&I, Weld Traveler A3C-BH3-3-C19 for anchor studs 18-1 through 18-3 stud welded to BH3 plate A3-C19 with the In-Process Stud Layout drawing FS5001, Sheet 1, Rev. 2 and Spread Sheets

Nondestructive Examination Records:

CB&I, VCS-U3-2012-RT-021, Radiographic Examination Report (with sketch) and X-ray films for vertical weld joint Z between BH2 knuckle plates A3-B-24 and A3-B-13

CB&I, VCS-U3-2012-SFT-013, Report of Leak Test - Nuclear, vacuum box test of vertical weld joint Z between BH2 knuckle plates A3-B-24 and A3-B-13

CB&I, VCS-U3-2012-RT-022, Radiographic Examination Report (with sketch) and X-ray films for vertical weld joint AA between BH2 knuckle plates A3-B-13 and A3-B-9

CB&I, VCS-U3-2012-SFT-014, Report of Leak Test - Nuclear, vacuum box test of vertical weld joint AA between BH2 knuckle plates A3-B-13 and A3-B-9

IHI, RT-004-WA3-C19-1, Radiographic Examination Record after welding knuckle plate (A13-C19)

IHI, RT-004-WA3-C19-1, Leak Testing Record vacuum box test of A13-C19-1 and -2 for bottom head

Miscellaneous:

Trinity Forge Certificate of Compliance (C of C), Heat 110126, for ASI Alton Steel CMTR, dated 04/14/2011, for SA-516 1 1/2 inch X 1 1/2 inch X 20 feet long carbon steel blank nuts

ASME Data Reports:

IHI, ASME Data Report Form N-2 for BH3 bottom plate C19-1 welded to C19-2 nuclear part  
(S/N IN-4875 and National Board No. 2763)

**Section 1P01:**Specifications:

APP-CC01-Z0-026, Safety Related Mixing and Delivering Concrete, Revision 3  
APP-CC01-Z0-027, Safety Related Concrete Testing Services, Revision 3

**Section 1P02:**Procedures:

QAD 9.63, Magnetic Particle Examination AWS Code, Rev. 000

Nondestructive Examination Records:

CB&I (Shaw) NDE-MT Certification of Qualification for Level II, 1290631  
V2-13-W-M-037, Record of Magnetic Particle Examination, CA20-04 Repair of Cavity

Nonconformance and Disposition Reports:

VS2-CA20-GNR-000003, CA20-04 Removal of Temporary Welds Ground Beyond Flush, Rev. 0

**Section 1P03.1:**CB&I (Formerly Shaw) Procedures:

CSI 3-44-2, Mechanical Splicing of Reinforcing Steel

CB&I (Formerly Shaw) Miscellaneous:

E&DCR VS2-CR01-GNR-000025, FNC – NI Terminator testing for heats  
IR S511-13-0024, FNC- Nuclear Island Stick Build Shear Reinforcing Bar End Terminators  
MS-13-00019, Rev. 0, Tensile Test Data Record

Westinghouse Miscellaneous:

VSP-VSG-002238, Response to Request for Information (RFI) NND-13-0044: Headed  
Reinforcement Compliance with ASTM A970-09

**Section 1P03.2:**Specifications:

APP-GW-Z0-604, Application of Protective coatings to systems, Structures and Components for  
the AP1000 Reactor Plant, Rev 7

Miscellaneous:

Work Instruction WSS-3081-W1-003, Work Instruction for Performing Methyl Ethyl Ketone Rub  
Test, Rev 3  
E&DCR APP-MV50-GEF-100, MEK Rub Requirement, Rev 0

M&TE Calibration Records:

WSS (Williams Specialty Services) ID 109829 – Dry Film Thickness Gage

**Section 1P03.3:**Quality Assurance Program Documents/Procedures:

Shaw Standard Nuclear Quality Assurance Program Section 11 - Test Control, Rev. B

QSI 11.2, "Testing of Soils and Soil Related Materials," Rev. 1

QSI 11.1, "Testing of Reinforcing Bars, Mechanical Splices, and Sampling and Testing of concrete, and Concrete Related materials," Rev. 2

**Section 1P04.1:**Quality Assurance Program Documents/Procedures:

Shaw Nuclear Quality Assurance Program Section 12, "Control of Measuring and Test Equipment," Rev. B

Shaw Company Quality Assurance and Control Manual ASME Section III, Section 16, "Control of Measuring and Test Equipment," Rev. F

Shaw Calibration Manual, Rev. AK

MS 1.11, "Storage and handling of Measuring and Test Equipment," Rev. C

QAD 12.2, "Equipment, Tools, and instruments Requiring Verification of Specific Characteristics," Rev. A

QAD 12.1, "Verification of Measured Data," Rev. E

NCSP 3-10-3, "Measuring and Test Equipment Control," Rev. 3

QS 12.1, "Shaw Nuclear Calibration Program," Rev. G

Corrective Action Documents:

CR-NND-13-00240, Procedure QAD 12.1 Compliance to ASME Section III , 3/20/13

**Section 1P04.2:**M&TE Calibration Records:

ID 52191 - pressure pot;

ID 54991 – scale;

ID 54744 - digital thermometer;

ID 16803 - digital light meter; and

ID 76721 - infrared thermometer.

**Section 1P05:**Quality Assurance Program Documents/Procedures:

Shaw Standard Nuclear Quality Assurance Program Section 14, "Inspection, Test, and Operating Status," Rev. B

NCSP 2-7-1, "Post Acceptance Work Control," Dated 7/30/12

QS 14.2, "Inspection Report System," Revision K.2

QS 14.1, "Post Acceptance Work Control," Rev. C

QS 10.67, "Inspection Planning System," Rev. O

QAD 14.1, "Inspection Report System Type 'A' Inspection Report," Rev. B

**Section 1P06:**Procedures:

NND-AP-0002, Corrective Action and Trending Program, Rev. 13



NND-AP-0801, Corrective Action Interface, Rev 0  
 APP-GW-GAP-117, Implementation and Control of Inspections, Tests, Analyses, and  
 Acceptance Criteria (ITAAC), Rev 2  
 APP-GW-GAP-147, AP1000 Current Licensing Basis Review, Rev 1

Corrective Action Documents:

CAR 2012-1599  
 IR-12-221-M048  
 IR-12-185-M053  
 IR-12-199-M052  
 IR-12-209-M019  
 IR-12-157-M036  
 IR-12-164-M059  
 IR-12-180-M043  
 IR-12-187-M037  
 IR-12-203-M004  
 IR-12-238-M001  
 IR-12-167-M027  
 IR-12-187-M038  
 IR-12-221-M048  
 VS2-CA20-GNR-000049, CA20-05 Shear Stud Layout Non-Conformance, Rev 0  
 VS2-CA20-GNR-101, CA20-08A Rebar in Contact with Embedded Line WRE-PL-L505 (VCS-  
 ND-12-0286)

**Section 1P07:**

Quality Assurance Program Documents/Procedures:

QS 18.1, "Quality Audit Program," Rev. 1  
 QSI 18.1, "Quality Assurance Site Audits," Rev. 1  
 QAD 18.12, "Quality Assurance Surveillances," Rev. C  
 QAD 18.1, "Quality Assurance Audits," Rev. B  
 Standard Nuclear Quality Assurance Program Section 18, "Audits and Surveillances," Rev. B

**Section 4OA5:**

Miscellaneous:

VS2-0000-000314, Hold (3) due to DI-OI-034617  
 VS2-0000-000112, Hold due to DI-OI-034617  
 VS2-0000-000118, Hold (2) due to DI-OI-034617  
 APP-1200-CCC-119, Shield Building Cylindrical Wall Reinforcement Design

**ACRONYMS USED**

ACI	American Concrete Institute
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
CB&I	Chicago Bridge and Iron
CFR	Code of Federal Regulations
CMTR	Certified Material Test Reports
E&DCR	Engineering and Design Coordination Reports
EPC	Engineering, Procurement, and Construction
FCAW	Flux Core Arc Welding
GMAW	Gas Metal Arc Welding
GTAW	Gas Tungsten Arc Welding
ITAAC	Inspection, Tests, Analyses, and Acceptance Criteria
M&TE	Measuring and Test Equipment
NQAM	Nuclear Quality Assurance Manual
NRC	Nuclear Regulatory Commission
QA	Quality Assurance
QAPD	Quality Assurance Program Description
QC	Quality Control
SAW	Submerged Arc Welding
SMAW	Shielded Metal Arc Welding
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WEC	Westinghouse Electric Company, LLC
WPS	Welding Procedure Specification