UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30303-1257

May 7, 2013

Mr. B. L. Ivey
Vice President, Regulatory Affairs
Southern Nuclear Operating Company
P.O. Box 1295
Bin B022
Birmingham, AL 35201

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 - NRC INTEGRATED INSPECTION REPORTS 05200025/2013-002 and 05200026/2013-002

Dear Mr. Ivey:

On March 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vogtle Electric Generating Plant Units 3 and 4. The enclosed inspection report documents the inspection results which were discussed on April 4, 2013, with Mr. Howard Mahan, Vogtle 3 & 4 Licensing Manager, 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 NRC Public Document Room or from the Publicly Available Records (PARS) component of

NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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

Docket Nos.: 05200025, 05200026
License Nos: NPF-91, NPF-92

Enclosure: Inspection Report 05200025/2013-002 and 05200026/2013-002
w/Attachment: Supplemental Information

cc w/encl: (See next page)

NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

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Letter to B. L. Ivey from Michael E. Ernstes dated May 7, 2013

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 - NRC INTEGRATED INSPECTION REPORTS 05200025/2013-002 and 05200026/2013-002

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200025 5200026
License Numbers:	NPF-91 NPF-92
Report Numbers:	05200025/2013002 05200026/2013002
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Electric Generating Plant Unit 3 Vogtle Electric Generating Plant Unit 4
Location:	Waynesboro, GA
Inspection Dates:	January 1 through March 31, 2013
Inspectors:	C. Abbott, Resident Inspector, DCP S. Alexander, Construction Inspector, DCI A. Artayet, Senior Construction Inspector, DCI D. Failla, Construction Inspector, DCI J. Fuller, Senior Resident Inspector, DCP D. Harmon, Construction Inspector, DCI C. Huffman, Resident Inspector, DCP E. Michel, Senior Construction Inspector, DCI C. Oelstrom, Construction Resident Inspector, DCP J. Seat, Construction Inspector, DCI J. Vasquez, Construction Inspector, DCI
Approved by:	M. Ernstes, Chief Construction Projects Branch 4 Division of Construction Projects

SUMMARY OF FINDINGS

Inspection Report 05200025/2013002, 05200026/2013002; 01/01/2013 - 03/31/2013; Vogtle Electric Generating Plant Units 3 and 4, 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

Vogtle Electric Generating Plant Unit 3 began this inspection period constructing reinforcing bar for the nuclear island base mat. On March 12, 2013, the licensee began placing first nuclear concrete and completed placement on March 14, 2013. Work continued on Unit 4 to prepare the foundation for the construction of reinforcing bar for the nuclear island base mat.

1. CONSTRUCTION REACTOR SAFETY

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

1A01 (Unit 3) ITAAC No. 091 / Family: 06F

.1 Regional ITAAC Inspection

a. Inspection Scope

During the week of January 7, 2013, the inspectors observed construction activities associated with Unit 3 ITAAC number 091 (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 inspection procedures used to perform this inspection were 65001.F, section 02.03, and 65001.11, section 02.03. The inspectors reviewed documentation from Ishikawajima Harima Heavy Industries Co., Ltd. (IHI) for the personnel and equipment hatches (penetrations H03 and H02 respectively comprising the insert plate and sleeve) to verify that their design and construction met the requirements of American Society of Mechanical Engineers (ASME) Code Section III. Specifically the inspectors:

- visually examined welds on the components to verify they met ASME Code Section III surface requirements;
- selected and interpreted a sample of radiographic film to verify the welds did not have rejectable indications;
- reviewed a sample of radiography technique and interpretation sheets to verify they met the requirements of ASME Code Section III;
- reviewed a sample of weld filler metal certified material test reports (CMTRs) to verify they met the requirements of ASME Code Section II;
- reviewed a sample of CMTRs associated with materials (pipe and plate) used to make the components to verify they met the requirements of ASME Code Section II;

- reviewed a sample of welder qualification records to verify that the welders were qualified in accordance with the requirements of ASME Code Section IX; and
- reviewed the ASME N-2 data reports to verify that they met the requirements of the ASME Code Section III.

The inspectors measured select dimensions of the equipment hatch and personnel airlock insert plate and sleeve to determine that the dimensions complied with the Updated Final Safety Analysis Report (UFSAR).

b. Findings

No findings were identified.

.2 Resident ITAAC Inspection

a. Inspection Scope

During this inspection period, the inspectors directly inspected construction activities associated with Unit 3 ITAAC number 091 (2.2.01.02a):

The inspectors reviewed the following Chicago Bridge and Iron (CB&I) receiving inspection reports (RIRs) to determine that CB&I performed an adequate receipt inspection of the CMTRs and code data reports supplied by the material supplier:

- RIR number U3-114 for the Vogtle Unit 3 B3-B14-1 Insert Plate; Fabricated Code Part with Penetrations P23 (38" Main Steam Line Out [Loop 1]), P25 (20" Main Feed Water Line in [Loop 1]), and P44 (6" Startup Feed Water [Loop 1]); and
- RIR number U3-096 for the Vogtle Unit 3 B3-B13-1 Insert Plate; Fabricated Code Part with Penetrations P24 (38" Main Steam Line Out [Loop 2]), P26 (20" Main Feed Water Line in [Loop 2]), and P45 (6" Startup Feed Water [Loop 2]).

The inspectors also reviewed the related N-2 ASME Code Data Reports for the above components (Part numbers IN-4762 [B3-B14-1] and IN-4761 [B3-B13-1]), to determine that the code data reports met the requirements of ASME Section III. The inspectors performed an independent review of the CMTRs for the insert plate and for the penetration sleeves to determine that the materials met the requirements of the following:

- UFSAR;
- [Insert Plates, P23, P24, P25, P26] SA-738 Grade B, "Specification for the Pressure Vessel Plates, Heat-Treated, Carbon-Manganese-Silicon Steel, for Moderate and Lower Temperature Service," 2001 Edition with 2002 addenda;
- [P44, P45] SA-350 Grade LF2 Cl.1, "Specification for Carbon and Low Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components," 2001 Edition with 2002 addenda;
- [Insert Plates, P23, P24, P25, P26] APP-MV50-Z0-037, "AP1000 Containment Vessel: SA-738 Grade B Plates," revision 2;
- [P44, P45] APP-MV50-Z0-036, "AP1000 Containment Vessel: SA350 Gr. LF2 Cl.1 Penetration Forgings for Class MC Components," revision 1; and
- 10 CFR Part 50, Appendix B.

Specifically, the following CMTRs were reviewed to determine that chemical and mechanical properties (including applicable impact testing, grain size and carbon equivalency), heat treatment, and required nondestructive examination met the above requirements:

- B3-B14-1 Insert Plate: Heat 5-3669 / GJ153 A, CMTR number 6004-3;
- P23 and P24: Heat 4-8087 / HE194A, CMTR number 5909-1;
- P25 and P26: Heat 4-8087 / HE194B, CMTR number 5910-1;
- P44: Heat JOL4527 / AF47901, CMTR number G20818-041CM;
- B3-B13-1: Heat 5-2247 / F1343 A, CMTR number 6004-1; and
- P45: Heat JOL4527 / AF48001, CMTR number G20818-042CM.

b. Findings

No findings were identified.

1A02 (Unit 3) ITAAC No. 093 / Family: 06B

.1 Regional ITAAC Inspection

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 093 (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 non□destructive examination of pressure boundary welds.

The inspectors used inspection procedures 65001.B, section 02.04, and 65001.11, section 02.02. The inspectors observed welding on the Unit 3 containment lower ring course S2 to S3 to determine that welding met the applicable quality and technical requirements. Specifically, the inspectors reviewed the fit-up and tack of the weld joint and observed initial welding to determine that the welds met the requirements of CB&I procedure CMS 830 15 PR 45158, “Visual Inspection – Welds ASME Section III, Division 1 Subsection NE,” Revision 0 and CB&I procedure E91TG H4, “Semiautomatic Flux Core Welding,” Revision 7. The inspectors examined the fit-up and tack to verify that:

- the weld joint was adequately protected from wind and rain;
- the surfaces to be welded were adequately smooth, uniform, and free of deleterious materials;
- preheat and interpass temperatures were adequately monitored and controlled;
- weld root spacing was within the tolerances specified on the drawing;

- tack welds to be incorporated into the final weld were free of defects and met the requirements of the ASME Boiler and Pressure Vessel Code, 2001 edition through 2002 addenda) Section III;
- welding variables (volts and wire feed speed) were within the limits of the welding procedure and were regularly checked by quality control (QC); and
- defects found in-process by QC were tracked and controlled.

Also, the inspectors performed a vertical slice document review of welds joining the personnel and equipment hatch insert plates to containment (penetrations H03 and H02, respectively) to verify that those pressure boundary welds met the requirements of the ASME Code Section III. Specifically the inspectors:

- reviewed documentation to verify that the welds were traceable to the welder, welding procedure, nondestructive examination records, and weld filler metal CMTRs;
- reviewed a sample of the welders' qualifications to verify they met the requirements of ASME Code Section IX;
- reviewed a sample of weld filler metal CMTRs to verify they met the requirements of ASME Code Section II; and
- reviewed a sample of weld radiograph technique sheets and interpretations to verify they met the requirements of ASME Code Section III.

The inspectors visually examined the personnel and equipment hatch insert plate welds and selected a sample of radiograph film and performed independent interpretation to verify that the welds did not have rejectable indications.

The inspectors walked down the storage for welding material and interviewed the welding material issue attendant to determine that the material was stored and issued in accordance with procedures. The inspectors reviewed a sample of radiography technique sheets and film from the personnel and equipment hatches to verify the radiography met the requirements of ASME Code Section III.

b. Findings

No findings were identified.

.2 Regional ITAAC Inspection

a. Inspection Scope

During this inspection period, the inspectors performed a direct inspection of construction activities associated with ITAAC Number 093 (2.2.01.03a).

The inspectors reviewed root cause analysis 12-221-M040, Reheat Induced Linear Indications after Completion of Post Weld Heat Treatment, dated November 21, 2012. The inspectors determined that the evaluation and actions taken to prevent recurrence of cracking in the vertical welds for the S1 (lowest course) shell plates of the containment vessel were performed and documented in accordance with the requirements of ASME Section III, Subsection NE, and 10 CFR 50, Appendix B. The inspectors also interviewed licensee and Engineering, Procurement, and Construction

(EPC) consortium staff and reviewed the SNC SV0-GS-GF-900024, Request for Information, Revision 001 which supported the root cause and interview questions.

Specifically, the inspectors reviewed the chemical analysis and mechanical properties for the S1 shell plates of the containment vessel to determine that the chemical composition, tensile and yield strengths, fracture toughness, carbon content, heat treatment (quenching and tempering, fine grain practice, and simulated postweld heat treatment) were in accordance with the requirements of WEC APP-MV50-Z0-037, AP1000 Material Specification, and ASME Section III, Subsection NE. The inspectors also reviewed yield strength and heat treatment data for plates used throughout the containment vessel for comparison with the S1 course.

The inspectors reviewed laboratory test certificate T209744 for base metal chemical analysis of a metallurgical specimen removed from one of four cracked welds in the S1 lowest course of the containment vessel discovered after completion of postweld heat treatment on April 26, 2012. The inspectors determined that the nitrogen testing was performed in accordance with the requirements of American Society of Testing and Materials (ASTM) E415, Standard Test Method for Atomic Emission Vacuum Spectrometric Analysis of Carbon and Low-Alloy Steel, and ASME Section II, Part A, SA-738 Grade B material specifications.

b. Findings

No findings were identified.

1A03 (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 096 (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 picked two shell plates (D2 & D9) from the Unit 3 containment lower ring course S4 and reviewed the associated CMTRs (6039-2 & 6039-6, respectively) to verify that the containment pressure retaining materials conformed with the fracture toughness requirement of the ASME Code Section III.

b. Findings

No findings were identified.

1A04 (Unit 3) ITAAC Nos. 637, 638, 639, and 640 / Family: 08A

a. Inspection Scope

During this inspection period, the inspectors observed construction activities associated with Unit 3 ITAAC Numbers 637 (2.6.06.01.i), 638 (2.6.06.01.ii), 639 (2.6.06.01.iii), and 640 (2.6.06.01.iv).

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The EGS provides an electrical grounding system for: (1) instrument/computer grounding; (2) electrical system grounding of the neutral points of the main generator, main step-up transformers, auxiliary transformers, load center transformers, auxiliary and onsite standby diesel generators; and (3) equipment grounding of equipment enclosures, metal structures, metallic tanks, ground bus of switchgear assemblies, load centers, motor control centers, and control cabinets. Lightning protection is provided for exposed structures and buildings housing safety-related and fire protection equipment. Each grounding system and lighting protection system is grounded to the station grounding grid.	An inspection for the instrument/computer grounding system connection to the station grounding grid will be performed.	637: A connection exists between the instrument/computer grounding system and the station grounding grid. 638: A connection exists between the electrical system grounding and the station grounding grid. 639: A connection exists between the equipment grounding system and the station grounding grid. 640: A connection exists between the lighting protection system and the station grounding grid.

The inspectors observed the completed installation of the grounding leads to the foundation rebar prior to concrete placement. The inspectors reviewed a sample of grounding leads in the foundation to determine that the actual installation conformed to drawings APP-1210-EG-001 and APP-1210-EG-002. The inspectors verified that the requirement of drawing APP-EGS-E9-001 to have "as-built" drawings of this portion of the grounding system was satisfied by the combination of original drawings with incorporated markups and Engineering and Design Coordination Reports (E&DCRs).

The inspectors verified that all below grade grounding connections were of the exothermic weld type. The inspectors verified the connection of the grounding leads to the foundation rebar system by exothermic connection to the carrying bar and

continuous contact of the conductive rebar grid throughout the foundation. The inspectors verified ground insert installation as required by drawing APP-EGS-E-013, detail G13. The inspectors verified ground cable connection was completed as required by drawing APP-EGS-E9-035, detail G35.

b. Findings

No findings were identified.

1A05 (Unit 3) ITAAC Nos. 761, 762, and 763 / Family 01F

a. Inspection Scope

Between February 27 - March 1 and March 11-14, 2013, the inspectors performed a field inspection of construction activities associated with Unit 3 ITAAC Numbers 761 (3.3.00.02a.i.b), 762 (3.3.00.02a.i.c), and 763 (3.3.00.02a.i.d). The inspectors performed a field inspection of construction activities associated with these ITAAC for the Unit 3 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
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.	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. 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. 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.

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 that:

- 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 3 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 that:

- contractors had approved implementing procedures, which addressed the requirements of applicable American Concrete Institute (ACI) codes, prescribed adequate methods of 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 that:

- 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 3) ITAAC Nos. 762 and 763 / Family: 01F

Headed Shear Reinforcement Anchorage and Spacing in Auxiliary Building Basemat and Walls

a. Inspection Scope

During the week of February 11, 2013, the inspectors performed on-site inspection of design activities associated with Unit 3 ITAAC Numbers 762 and 763.

The inspectors used NRC inspection procedure 65001.F, Section 02.02, to perform this inspection. The inspectors focused on design activities associated with the construction of the Unit 3 basemat and walls within the auxiliary building.

The inspectors reviewed documents and interviewed licensee personnel to verify whether implementing procedures, specifications, and drawings adequately addressed the requirements of applicable ACI standards. The inspectors reviewed design documents, E&DCRs, and corrective action documents to determine that design deviations were appropriately identified and addressed in a manner that would support closure of the ITAAC.

b. Findings

Introduction: The inspectors identified an unresolved item (URI) related to the anchorage and spacing of the headed shear reinforcement used throughout the basemat and specified for walls within the auxiliary building.

Description: Section 3.8.4.4.1 of the UFSAR stated, in part, that the design and analysis procedures for the Seismic Category I structures were in accordance with ACI 349 for concrete structures.

Section 12.6.2 of ACI 349-01 required that mechanical anchorages be designed in accordance with Appendix B – Steel Embedments. Additionally, Section 3.8.5.5 of the UFSAR stated, in part, that the design and construction of anchors conformed to the procedures and standards of Appendix B to ACI 349-01.

Section 11.5.3 of ACI 349-01 required, in part, that stirrups or other bars used as shear reinforcement be anchored at both ends to develop the design yield strength of the reinforcement.

Section 11.5.4.1 of ACI 349-01 required, in part, that the spacing of shear reinforcement placed perpendicular to the axis shall not exceed “d/2” in non-prestressed members. The variable “d” was defined in Section 11.0 of ACI 349-01 as the “distance from extreme compression fiber to centroid of longitudinal tension reinforcement…”

Following a review of documents and discussions with licensee personnel, the inspectors questioned whether the headed shear reinforcement system placed within the basemat, and specified for walls within the non-radiologically controlled area of the auxiliary building, met the spacing and anchorage requirements of ACI 349-01, and if affected structures could perform their design safety functions. The licensee provided the inspectors with DCP-DCP-003549, Assessment Associated with Application of Shear Reinforcement in the AP1000 Nuclear Island Structures for PI-12-38, and SV0-GS-GEY-900006-001, SNC Construction Engineering Review of Vogtle 3 Shear Reinforcement Design Issues, to address these questions.

This issue of concern is unresolved pending the inspectors’ review and evaluation of the licensee’s assessment of the headed shear reinforcement system design. (URI 05200025/2013002-01, Headed Shear Reinforcement Anchorage and Spacing in Auxiliary Building Basemat and Walls). This URI affects both ITAAC 762 and 763.

1A07 (Unit 3) ITAAC No. 762 / Family: 01F

a. Inspection Scope

During this inspection period, the inspectors performed a direct inspection of construction activities associated with Unit 3 ITAAC Number 762.

The inspectors reviewed embedment plate material test reports supplied by the fabricator to determine that the records confirmed the requisite material characteristics, performance tests, nondestructive tests, and other specification requirements. The records reviewed were for the embedment plates that are located in the non-radiological area of the Unit 3 auxiliary building. Specifically, the embedment plates at elevation 66’-6", used to connect the Class 1E DC and uninterruptible power supply system battery rack to the concrete floors located in the following rooms:

- room number 12101, Division A battery room
- room number 12102, Division C battery room 1
- room number 12103, spare battery room
- room number 12104, Division B battery room 1
- room number 12105, Division D battery room

The inspectors determined whether the embedment plate material was designed and constructed to meet seismic category I technical requirements in design specification SV3-SS01-Z0-003, “Embedded and Miscellaneous Steel, Westinghouse Safety Class C,” Revision 2. This specification required embed plate material to conform to ASTM A36 and that the headed studs attached to the embedded plates conformed to

both American Welding Society (AWS) D1.1, "Structural Welding Code - Steel," and ASTM A108, “Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.”

The inspectors reviewed CMTRs to determine that the mechanical properties for the type 2 stud materials met the required ultimate tensile strength, yield strength, and percent elongation requirements as specified in AWS D1.1, Table 7.1, “Mechanical Property Requirements for Studs.” The inspectors also reviewed CB&I quality assurance inspection report number Q445-12-1375, “Steel Embedments,” to determine that CB&I performed an adequate receipt inspection of these embed plates in accordance with the CB&I inspection plan number F-Q445-11.

By direct inspection, the inspectors verified that the items on-site matched the procurement documents. The inspectors reviewed purchase orders to determine that both regulatory and quality requirements were included in the procurement documents. The inspectors also determined whether the embedment plates were properly identified for traceability of the items. Specifically, the inspectors sampled the installed embed plates to determine that the identification markings were in accordance with the following Westinghouse design drawings and embedment plate coordination charts for the respective rooms:

- SV3-1211-CE-001, “Auxiliary Building Area 1 Battery Racks Embedment Plate Location Room 12104 – Plan at El 66’-6”,” Revision 2
- SV3-1211-CE-002, “Auxiliary Building Area 1 Battery Racks Embedment Plate Location Room 12105 – Plan at El 66’-6”,” Revision 2
- SV3-1212-CE-001, “Auxiliary Building Area 2 Battery Racks Embedment Plate Location Room 12101 – Plan at El 66’-6”,” Revision 2
- SV3-1212-CE-002, “Auxiliary Building Area 2 Battery Racks Embedment Plate Location Room 12102 – Plan at El 66’-6”,” Revision 2
- SV3-1212-CE-003, “Auxiliary Building Area 2 Battery Racks Embedment Plate Location Room 12103 – Plan at El 66’-6”,” Revision 2
- SV3-1211-CEX-001, “Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12104 Coordinate Chart,” Revision 1
- SV3-1211-CEX-002, “Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12105 Coordinate Chart,” Revision 1
- SV3-1212-CEX-001, “Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12101 Coordinate Chart,” Revision 1
- SV3-1212-CEX-002, “Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12102 Coordinate Chart,” Revision 1
- SV3-1212-CEX-003, “Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12103 Coordinate Chart,” Revision 1

The inspectors reviewed APP-1200-CEC-002, “Auxiliary Building – Design Anchoring for Battery Racks at Reference Elevation 66’ and 82’ in Areas 1 and 2,” Revision 0, to determine that the embedded anchor head sizes and diameters complied with this calculation.

b. Findings

No findings were identified.

1A08 (Unit 3) ITAAC No. 763 / Family: 01F

.1 Resident ITAAC Inspection

a. Inspection Scope

During this inspection period, the inspectors observed construction activities associated with Unit 3 ITAAC Number 763.

The inspectors reviewed the CMTRs for a sample of safety-related embed plates installed in the nuclear island basemat (auxiliary area basemat from 1-7.3 and I-N, excluding shield building, from elevation 60'6" to 66'6") and were associated with the CA20 module. The inspectors determined that the embed plate material met the applicable quality and technical requirements. The inspectors performed this inspection to verify these embeds were designed and constructed to meet seismic category I technical requirements in design specification SV3-SS01-Z0-003.

The inspectors reviewed CB&I quality assurance inspection report number Q445-12-0203, "Receipt Inspection of Steel Embedments," and Q445-12-1085, "Replacement Rebar," to determine that CB&I performed an adequate receipt inspection of these embed plates in accordance with the CB&I inspection plan number M-Q445. Specifically, the inspectors reviewed the following CMTRs for materials associated with CB&I equipment ID number APP-12171-CE-PF801 (Joseph Oat Serial Number J2694-6A1) to determine that the materials conformed to the applicable ASTM specifications and paragraph 21.2.5 of ACI 349-01, "Code Requirements for Nuclear Safety-Related Concrete Structures":

- A36 carbon steel plate heat numbers 0506668 and 2M395;
- A615 rebar heat numbers K113904 and K113910; and
- A706 rebar heat number K121532.

The inspectors also performed a direct visual inspection of embedment APP-12171-CE-PF801 to verify that it was installed in the proper location and had the proper markings. This embedment was installed in the nuclear island basemat to support the seismic category I CA20 module. The inspectors also reviewed CB&I nonconformance and disposition report V-ND-12-0162, "Rebar for CA20 Embed Plate Anchorage," to determine that the nonconforming material was properly identified and controlled. Furthermore, the inspectors reviewed the disposition to the N&D to verify that the nonconformance was brought into conformance with the original requirements and that the items were re-examined in accordance with applicable procedures and the original acceptance criteria.

The inspectors reviewed work package SV3-1000-CEW-CV1063, "Replacement of Threaded Number 9 Rebar on CA20 Embed Plates," to determine that the licensee adequately reworked the embed plates as required by the disposition of N&D V-ND-12-0162.

b. Findings

No findings were identified.

.2 Resident ITAAC Inspection

a. Inspection Scope

During this inspection period, the inspectors performed a direct inspection of construction activities associated with Unit 3 ITAAC Number 763.

The inspectors performed a visual inspection of the following as-fabricated auxiliary building (CA20) submodules:

- CA20-08A;
- CA20-08B;
- CA20-11;
- CA20-13;
- CA20-15;
- CA20-21;
- CA20-24;
- CA20-72; and
- CA20-73.

The inspectors examined these submodules at the construction site to determine that:

- the as-fabricated condition matched the applicable design drawings with respect to layout and dimensions;
- the design requirements and the as-fabricated condition are in accordance with licensing basis code commitments; and
- the welding met code and quality requirements.

The inspectors observed in-process welding of submodule CA20-03 to verify that:

- the welding procedure was readily available;
- the welding parameters were in accordance with the procedure;
- the welding filler metal classification and size met the procedure;
- the welding technique met the procedure;
- the weld joint was sufficiently protected from wind, rain, or other inclement conditions; and
- the weld joint was sufficiently clean and free of harmful contaminants such as grease and paint.

The inspectors observed repairs to submodules CA20-01, CA20-03, and CA20-05 as a result of issues identified in Westinghouse, LLC (WEC) issue report 12-230-M004. The inspectors reviewed PCI procedure PI-904901-02, "Vogtle Unit 3 Outside Corner Weld Rework Machining, Sub-module CA20-01," revision 0 for adequacy and observed in-process work to verify procedure compliance. The inspectors observed weld pre-production testing as governed by AWS D1.1 and repair work for submodule CA20-04. The inspectors reviewed Mistras magnetic particle examination report V-13-MT-302-047 as evidence of non-destructive examination to demonstrate weld acceptability.

The inspectors reviewed the following specifications, stud procedure qualifications (PQR) and inspection plan to determine that licensing basis commitments for weld acceptability had been met:

- PQR 1-1-165;
- PQR 1-1-166;
- inspection plan F-S540-001, "Stud Welding Structural Module Shear Stud Welding," Revision 2;
- GWS-6, "Stud Welding - General Welding Specification," Revision 0; and
- APP-VW01-Z0-001, "Structural Module Shear Stud Welding Specification," Revision 2.

The inspectors observed in-process welding and nondestructive examination activities for weld number CV1428-1, a safety-related/seismic category I weld between CA20 floor submodules CA20-43 and CA20-44. The inspectors noted that this CA20 floor section was associated with column lines from 2 to 3 and J-2 to K-2 at elevation 90'-6" as described in the UFSAR, Table 3.3-1, "Definitions of Wall Thicknesses for Nuclear Island Buildings, Turbine Building, and Annex Building."

The inspectors reviewed the welding procedure specifications (WPS) associated with the weld to determine that the WPSs were properly qualified in accordance with Section 4, "Qualification," of the AWS Structural Welding Code AWS D1.1: 2000 edition. Specifically, the inspectors reviewed WPS2-1.1T70, revision 0 (Manual - Gas Tungsten Arc Welding) and the supporting procedure qualification records (D-2010-35, D-2010-32, and D-2010-34). The inspectors verified that the WPS was properly qualified within the limits of the procedure qualification records and that the WPS properly specified the applicable essential variables. The inspectors verified that the welding positions allowed by the WPS were appropriate given the positions welding during the procedure qualification process. Furthermore, the inspectors verified that the proper qualification tests (tensile, guided bend, radiographic, and visual) were performed during the procedure qualification process as required by AWS D1.1:2000.

The inspectors also reviewed WPS2-1.1M01, revision 0 (Semi-automatic Gas Metal Arc Welding). The inspectors reviewed this pre-qualified WPS for conformance to Section 3, "Pre-qualification of WPS," of AWS D1.1:2000. The inspectors verified the following attributes for this WPS:

- the base metal / filler metal combination was in accordance with Table 3.1, "Pre-qualified Base Metal - Filler metal combinations for matching strength," of the AWS D1.1:2000 Code;
- the minimum pre-heat was in accordance with Table 3.2, "Pre-qualified minimum pre-heat and interpass temperature," of the AWS D1.1:2000 Code;
- the amperage and voltage range was within the range specified by the filler metal manufacturer;
- the maximum fill pass thickness was in accordance with Table 3.7, "Pre-qualified WPS Requirements," of the AWS D1.1:2000 Code; and
- the travel speed and shielding gas flow rate were specified on the WPS

The inspectors verified that the above welding procedures were in the work control package and available to the welder during production welding activities.

Furthermore, the inspectors reviewed the welder performance qualification tests for two welders who welded on CV1428-1 to determine that these welders were qualified in accordance with the AWS D1.1:2000 code requirements and CB&I (formerly Shaw) procedure WQ-1, "Qualification of Welders and Welding Operators," revision1. The

inspectors verified that these welders were qualified to weld using WPS2-1.1M01 and WPS2-1.1T70.

During the in-process welding of weld CV1428-1, and through the review of the welding records, the inspectors verified that the following attributes were satisfied:

- the work was conducted in accordance with a traveler (weld data sheet) that provided for the proper sequencing of the work and that this weld data sheet properly referenced the applicable procedures, drawings, specifications; the weld data sheet established adequate hold points as required by the quality inspection plan;
- the weld joint was sufficiently protected from inclement conditions such as high wind;
- surfaces to be welded were smooth, uniform, and free from significant surface discontinuities such as cracks or seams, and free from paint, oil, rust, scale, slag, grease, moisture or other harmful foreign materials that would be detrimental to welding;
- weld joint geometry, including root opening and fit-up tolerances were in accordance with the applicable WPS;
- temperature of the base material at the joint prior to welding met the minimum preheat requirements specified in the welding procedure; and
- maximum interpass temperature was checked to ensure that it did not exceed the value specified in the welding procedure;
- other welding variables specified in the WPS were routinely verified by quality control;
- the weld was traceable to the welder;
- the filler metal and backing bar used in the joint were traceable and were qualified materials in accordance with the AWS D1.1:2000 Code; and
- tack welds between the backing bar and base material were fabricated using qualified welders using qualified welding procedure specifications.

The inspectors observed the CB&I QC fit-up inspection of this weld to determine that the QC inspection was performed in accordance with Shaw Quality Inspection Plan number F-S561-04, "Structural Weld Inspection; AWS D1.1, D1.6, Structural Modules - CA20," revision 3. The inspectors also reviewed the QC inspector's qualification and certification records to verify that the inspector was qualified in accordance with the CB&I procedure QAD-2.15, Qualification and Certification of Inspection and Test Personnel," revision 1.

The inspectors reviewed the magnetic particle and ultrasonic examination records (magnetic particle log number V-13-MT-302-097 and ultrasonic log number V-13-UT-310-007) for weld CV1428-1 to determine that these records were sufficient to furnish evidence of activities affecting quality (required quality control inspections). The inspectors reviewed these records to verify that the records contained the information required, in part, by paragraph 7.5.1 of SV3-CA20-S5Y-00004, "Auxiliary Building Areas 5 & 6 Module CA20 Submodules General Notes - IV," revision 1.

The inspectors reviewed the qualification certification records for the QC inspectors who performed these inspections to determine that the inspectors were qualified in accordance with the subcontractor's written practice and The American Society for Nondestructive Testing SNT-TC-1A, 1992 Edition. The inspectors reviewed the

subcontractor's magnetic particle and ultrasonic nondestructive testing procedures (100-MT-302, "Magnetic Particle Examination in Accordance with AWS Structural Steel Welding Code," revision 2; and 100-UT-310, "Ultrasonic Examination of Welds in Accordance with AWS Structural Welding Code D1.1," revision 5) to determine that these procedures met the applicable quality and technical requirements. The inspectors also reviewed the qualification and certification records for the testing equipment, consumables, and measuring and test equipment utilized during the magnetic particle and ultrasonic examinations of weld CV1428-1 to determine that these items were properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within required limits.

Specifically, the inspectors reviewed records for the following items: Yoke serial number (S/N) 22714, MT weight plate S/N 10979, light meter S/N 1797708, MT inspection powder lot number 17595, magnetic field indicator, surface thermometer S/N 277233, Olympus UT flaw detector S/N 110188009, UT transducer S/N 789641, and UT couplant.

The inspectors reviewed the CMTRs for the welding material used to fabricate weld CV1428-1 to determine that the material met the applicable quality and technical requirements established by the AWS D1.1:2000 Code; SFA-5.18, "Specification for Carbon Steel Electrodes and rods for Gas Shielded Arc Welding"; and CB&I weld filler material specification TR-5.18-70S-X, "ER70S-X Carbon Steel Bare Wire/Rods or Electrodes," revision 0. Specifically, the inspectors reviewed CMTRs for Heat 1030F and 1030V for conformance to the aforementioned technical requirements. The inspectors also verified that this safety-related welding material was supplied under the requirements of 10 CFR Part 21.

The inspectors performed an independent visual inspection of weld CV1428-1 to determine that the final weld met the requirements of Table 6.1, "Visual Inspection Acceptance Criteria," of AWS D1.1:2000; Section 5.24.4, "Groove or Butt Welds" of AWS D1.1:200, and the acceptance criteria defined by CB&I Nuclear Services Quality Inspection Plan number F-S561-04, "Structural Weld inspection; AWS D1.1, D1.6, structural Modules - CA20," revision 3. Specifically, the inspectors observed the surface condition of the finished welds, measured the amount of reinforcement, and measured any locations of undercut to determine that the as-welded condition was acceptable per the aforementioned technical requirements.

The inspectors reviewed the CMTRs and associated RIR for the base materials for submodules CA20-43 and CA20-44 to determine that the materials met the applicable quality and technical requirements. Specifically, the inspectors reviewed the following RIRs for heat numbers S12615 (heat number for A36 plate material used for CA20-43) and S12617 (heat number for A36 plate material used for CA20-44), to determine conformance with ASTM A36-08, "Standard Specification for Carbon Steel Structure": RIR-10-111, RIR-10-113, RIR-10-117, RIR-10-186, RIR-10-134, RIR-10-142, RIR-10-143, RIR-10-151, and RIR-10-159 . The inspectors also reviewed the CMTR for the backing bar used (Heat JI4757) for weld CV1428-1 to also determine conformance with ASTM A36. The inspectors verified that this safety-related material (plates and backing bar) was supplied under the requirements of 10 CFR Part 21 and 10 CFR Part 50, Appendix B.

The inspectors reviewed nonconformance report 11-304 to determine that the nonconformance was properly analyzed and corrected in accordance with the applicable quality and technical requirements. This report documented a deviation from the AWS D1.1:2000 code related to qualification of welding procedures. The inspectors reviewed the supporting technical justification for the acceptability of the submodules and verified that engineering disposition was subjected to design control measures commensurate with those applied to the original design. The inspectors also reviewed the as-built records for submodules CA20-43 and CA20-44 to verify that those records properly reflected the accepted deviation.

b. Findings

No findings were identified.

1A09 (Unit 3) ITAAC Nos. 765, 766, and 767 / Family 01A

a. Inspection Scope

Between February 27 - March 1 and March 11-14, 2013, the inspectors performed a field inspection of construction activities associated with Unit 3 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 3 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
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 as-built concrete thickness will be performed.	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. 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. 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.

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 that:

- 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 3 nuclear island structures. Specifically, the inspectors reviewed various work package documents, and observed basemat concrete production and placement activities to verify that:

- 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 that:

- 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.

1A10 (Unit 4) ITAAC No. 091 / Family: 06F

a. Inspection Scope

During the week of January 17, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 4 ITAAC Number 091 (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 inspection procedures used to inform this inspection were 65001.11, sections 02.02, 02.03, 02.05; and 65001.F, sections 02.03, 02.04. The inspectors reviewed documentation for Unit 4 containment vessel insert plate to sleeve welds for penetrations P11, the fuel transfer tube, and P19, Reactor Coolant System to Residual Heat Removal System pump outlet, to determine that they were fabricated in accordance with design specifications, procedures, and ASME Code. Specifically the inspectors:

- visually examined welds on the components to determine that they met ASME Code surface requirements;
- reviewed a sample of radiography technique and interpretation records to determine that ASME Code requirements were met;
- reviewed a sample of weld filler metal CMTRs to determine that ASME Code requirements were met;
- reviewed a sample of CMTRs associated with materials (pipe and plate) used to make the components to determine that ASME Code requirements were met;
- reviewed a sample of welder qualification records to determine that welders who made the components were qualified in accordance with ASME code requirements; and
- reviewed the ASME N-2 data reports to determine that ASME Code requirements were met.

The inspectors reviewed in-field measurements of P11 and P19 dimensions to determine that they met the design drawing requirements.

b. Findings

No findings were identified.

1A11 (Unit 4) ITAAC No. 093 / Family: 06B

.1 Regional ITAAC Inspection

a. Inspection Scope

During the week of January 17, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 4 ITAAC Number 093 (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 non□destructive examination of pressure boundary welds.

The inspection procedures used to perform this inspection were 65001.B, sections 02.04, 02.05; 65001.F, sections 02.03, 02.04; and 65001.11, section 02.05. The inspectors reviewed weld traveler U4-BH2/BH3 to determine that the Unit 4 containment vessel bottom head weld between the BH2 and BH3 plates was documented in accordance with work process documentation procedures. The inspectors walked down the storage for welding material and interviewed the welding material issue attendant to determine that the material was stored and issued in accordance with procedures.

The inspectors reviewed documentation for containment vessel weld to penetration P11, the fuel transfer tube, and P19 insert plates to determine that they were made in accordance with design specifications, procedures, and the ASME Code.

The inspectors reviewed radiographic film and examination reports for two vertical welds of the bottom head to determine that the film and reports met procedural and ASME Code requirements. The welds joints selected were C8 to C9 and C24 to C25.

The inspectors reviewed a sample of CB&I corrective action documents to determine that problems found during fabrication of the containment vessel bottom head were entered into the corrective action program and dispositioned in accordance with procedures.

b. Findings

No findings were identified.

.2 Resident ITAAC Inspection

a. Inspection Scope

During the week of January 24, 2013, the inspectors performed a direct inspection of construction activities associated with Unit 4 ITAAC Number 093. The inspectors reviewed the final radiographic testing (RT) film and reports for the following welds:

- Vogtle Unit 4, fuel transfer tube insert plate (Unit 4, BH3-C33-P11) to containment vessel bottom head weld (RT report U4-054); and
- Vogtle Unit 4 nozzle P22 assembly (Unit 4, BH3-A4-C36) to Unit 4 containment vessel bottom head (RT report U4-046)

For the above welds, the inspectors performed an independent review of the RT film and test report to determine that the completed welds met the acceptance standards specified by Subsection NE-5320, “Radiographic Acceptance Standards,” of ASME Section III, Article NE-5000, “Examination,” of the 2001 edition of the ASME Code,

Section III, Subsection NE, “Metal Containment,” including the 2002 Addenda. Specifically, the inspectors reviewed the above reports to determine that the weld and RT records met the requirements of CB&I RT procedure CMS-830-15-PR-45154, “Radiographic Examination ASME Section III, Division 1 – Subsection NE,” Revision 1.

The inspectors also reviewed the personnel certification records for the two Level II inspectors who signed the above RT reports. The inspectors reviewed these certification records to determine that the inspectors were qualified in accordance with the CB&I nondestructive examination personnel training, qualification and certification program.

b. Findings

No findings were identified.

1A12 (Unit 4) ITAAC No.: 874

a. Inspection Scope

During this inspection period, the inspectors performed a direct inspection of construction activities associated with Unit 4 ITAAC Number 874 (E.2.5.04.05.05.01):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
Backfill material under Seismic Category 1 structures is installed to meet a minimum of 95 percent modified Proctor compaction.	Required testing will be performed during placement of the backfill materials.	A report exists that documents that the backfill material under Seismic Category 1 structures meets the minimum 95 percent modified Proctor compaction.

The inspectors performed a detailed review of the following nonconformance and disposition reports (N&Ds): SV4-CC02-GNR-000001, -000003, and -000005. The inspectors noted that disposition of these N&Ds included a repair to the Unit 4, nuclear island, lower mudmat. As a result of this repair, the seismic category I backfill was disturbed by the licensee's contractor; therefore, the inspectors reviewed seismic category I backfill release cards and compaction test reports to determine that the seismic category I backfill met both the material and compaction requirements. The inspectors specifically determined whether documentary evidence provided that:

- the disturbed backfill was compacted and tested in accordance with specification SV0-XE01-Z0-002, “Nuclear Island Excavation and Backfill,” Revision 5;
- test records documented compaction results in accordance with ASTM D1557, “Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort;”
- test records documented moisture content results in accordance with ASTM D2216, “Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass;”
- QC inspection report C131-13-0022 documented satisfactory results; and

- the stockpile used was an approved source per QC inspection report C137-11-0811

b. Findings

No findings were identified.

1P01 Quality Assurance Implementation, Appendix 3, Inspection of Criterion III – Design Control (35007)

a. Inspection Scope

The inspectors reviewed E&DCR SV0-G100-GEF-000012, to determine that the change was performed in accordance with 10 CFR Part 50, Appendix B, Criterion III; Supplement 3S-1, "Supplementary Requirements for Design Control," of ASME NQA-1-1994, "Quality Assurance Requirements for Nuclear Facility Applications"; and the applicable quality assurance program design control implementing procedures. The inspectors noted that this E&DCR requested the ability to drill 3-inch holes into the nuclear island mudmat to allow for the installation of anchor bolts for construction aids that supported the drain piping that was embedded in the basemat. The inspectors verified these changes received the proper level of engineering review, in accordance with applicable CB&I design control procedures, and that the affected design documents were appropriately identified. The inspectors also reviewed the licensing impact screening checklist to verify that any possible impacts to the current licensing basis had been identified and evaluated. Furthermore, the inspectors verified that if any licensing basis documents were affected, the licensee properly updated those documents.

b. Findings

No findings were identified.

1P02 Quality Assurance Implementation, Appendix 7, Inspection of Criterion VII – Control of Purchased Material, Equipment, and Services (35007)

a. Inspection Scope

The inspectors reviewed a sample of three QC assessments and inspections to determine that the licensee adequately implemented the requirements of 10 CFR Part 50, Appendix B, Criterion VII and Section 7, “Control of Purchased Material, Equipment, and Services,” of the licensee’s Nuclear Development Quality Assurance Manual. Specifically, the inspectors reviewed the following quality control assessments and inspections:

- NDQA-2012-S52, “Surveillance of NQA-1-1994 Level D Storage Areas On-Site," performed July 9-11, 2012. This assessment was performed by the licensee to confirm whether CB&I's Level D storage areas met the requirements of CB&I's quality-related storage procedure.

Additionally, the inspectors reviewed two CB&I QC assessment and inspections. This review was to determine that CB&I had adequately implemented the requirements of 10 CFR Part 50, Appendix B, Criterion VII, Section 9, “Control of Special Processes," of the

CB&I Nuclear Quality Assurance Program (SWSQAP 1-74A, Revision B), and Shaw QAD 7.2, "Review of Seller's Nondestructive Examination Procedures," Revision D. Specifically, the inspectors reviewed the following QC assessments and inspections:

- CB&I surveillance report number S-132175-2012-030, dated June 14, 2012. This surveillance documented CB&I's review / observation of a magnetic particle examination of a safety-related, seismic category I weld associated with the auxiliary building (CA20) module.
- CB&I surveillance report number S-132175-2012-020, dated August 10, 2012. This surveillance documented CB&I's review / observation of concrete batching, mixing, delivery, field testing, concrete aggregate periodic testing, and engineering acceptance for pre-qualification of safety-related concrete mix design - "B2" 4000 psi concrete at 56 days.

The inspectors reviewed these three QC assessments and inspections to determine that CB&I adequately assessed the effectiveness of the control of quality by their subcontractors at intervals consistent with the importance, complexity, and quantity of the product or services. The inspectors also reviewed these reports to determine that:

- the report was an adequate record of an activity affecting quality;
- the report was completed in accordance with CB&I's quality assurance program implementing procedures; and
- any issues identified by CB&I quality control were appropriately identified, documented, and corrected in accordance with the project quality requirements.

b. Findings

No findings were identified.

1P03 Quality Assurance Implementation, Appendix 10, Inspection of Criterion X – Inspection (35007)

a. Inspection Scope

The inspectors reviewed the following CB&I quality control inspection reports for concrete pre-placement activities:

- QC inspection report numbers C112-02-12-0002, C112-02-12-0003, and C112-02-12-0096.

The inspectors reviewed the above inspection reports to determine that CB&I performed the inspections in accordance with the SWSQAP 1-74A, revision B, and CB&I Nuclear Services Quality Inspection Plan number F-C112-02, Revision 1 - change 1. The inspectors reviewed these reports to verify that the quality records included the following attributes:

- observation or type of method used to perform inspection;
- item inspected and date of inspection;
- identification of person conducting inspection;
- measuring and test equipment used during inspection;

- reference to inspection criteria, sampling plan, or reference documents used to determine acceptance;
- results or description of inspection performed;
- evaluation of acceptability and identification of person determining acceptability;
- results indicating acceptability of characteristics inspected; and
- resolution of corrective actions for noted nonconformance or deficiency.

The inspectors also reviewed these records to ensure that they were properly authenticated, that any corrections did not obscure original information, and that they were transmitted from temporary storage to main storage within the designated time frame.

b. Findings

No findings were identified.

1P04 Quality Assurance Implementation, Appendix 13, Inspection of Criterion XIII – Handling, Storage and Shipping (35007)

a. Inspection Scope

The inspectors observed storage areas for auxiliary building modules to determine that appropriate measures had been taken to ensure compliance with CB&I procedures and the requirements set forth in NQA-1-1994. The inspectors also walked down selected areas of the warehouse facility. Specifically, the inspectors observed the storage conditions for the ASME pressurizer surge line to determine that postings, area conditions and access control were appropriate for the designated storage classification.

b. Findings

No findings were identified.

1P05 Quality Assurance Implementation, Appendix 15, Inspection of Criterion XV – Nonconforming Materials, Parts, or Components (35007)

a. Inspection Scope

The inspectors performed direct observations, interviewed personnel, and reviewed documents to determine that the licensee had effectively implemented its quality assurance program implementing documents for the control of nonconforming material, parts, and components. The inspectors reviewed N&D reports associated with both units 3 and 4. The inspectors toured the on-site and off-site warehouse facilities to confirm that the licensee had established areas for segregating and controlling non-conforming items. The inspectors selected a sample of nonconforming items in storage to determine whether the items were segregated or marked to preclude inadvertent use, further processing, delivery, or installation. For each nonconforming item, the inspectors reviewed the associated documentation of the nonconformance to verify that it contained a technically adequate description of the problems with the item.

The inspectors selected 10 evaluations of nonconforming items. The inspectors reviewed the evaluations to verify that the evaluations contained technically adequate explanations for the resulting dispositions of the nonconforming items.

During the review of the above N&D reports, the inspectors determined that the reports properly identified the nonconforming items and if the systems for initiating, processing, and closing nonconformances were followed. The inspectors specifically determined that:

- reportability screening and evaluations under 10 CFR Part 21 and 10 CFR 50.55(e) were performed;
- engineering provided adequate technical justification for "repair" and "use as is" dispositions;
- controls were implemented to preclude inadvertent usage of nonconforming items and that nonconforming items were marked/tagged and segregated; and
- the quality organization reviewed and concurred with inspection requirements specified in the engineering disposition through their inspection process.

For N&Ds SV3-CR01-GNR-00019, -000020, -000024, and -000037; the inspectors directly observed testing of the shear reinforcement (T-heads), which was part of the engineering justification for the resolution of these nonconforming conditions. The inspectors determined that the assembly and testing of the T-heads was performed in accordance with procedure CSI-3-42-2 "Reinforcing Steel Installation," as well as ASTM A970, "Standard Specification for Headed Steel Bars for Concrete Reinforcement," and ASTM A370, "Standard Test Methods and Definitions for Mechanical Testing of Steel Products." The inspectors specifically determined that:

- T-head reinforcement and tapered threaded heads (terminator) were inspected by QC prior to assembly and testing;
- craft and QC personnel were trained to the manufacturer's installation instructions;
- the torque wrench used to assemble terminator to t-head was calibrated prior to use;
- the tension testing machine used to determine the tensile properties of the terminator to T-head assembly was calibrated prior to use;
- test specimens were placed in the tension testing machine securely; and
- test results were documented in accordance with applicable site instructions

During this inspection, the inspectors also examined a sample of CMTRs to determine that the T-head reinforcement was procured in accordance with WEC design requirements. Specifically, the CMTRs were compared to WEC design specification SV3-CR01-Z0-011, "Specification for Furnishing Safety-Related Reinforcing Steel," Revision 2, which required reinforcement to be procured in accordance with ASTM A706, "Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement." The inspectors reviewed the CMTRs to determine that the records confirmed the requisite material characteristics, performance tests, nondestructive tests, and other specification requirements. The inspectors also verified if the mechanical and chemical property testing of the t-head reinforcement was in accordance with the applicable sections of ASTM A706.

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. The inspectors attended weekly management review committee meetings at the site and held discussions with licensee and EPC consortium personnel responsible for the screening and correction of the issues to determine that:

- the licensee and the EPC consortium was identifying equipment, human performance, and program issues at an appropriate threshold and were entering the issues into their respective corrective action programs;
- the licensee and the EPC consortium appropriately classified the issues and took appropriate short-term corrective actions;

- conditions adverse to quality were controlled in accordance with each company's quality assurance program; and
- potential adverse trends were appropriately identified and corrected by the licensee or their contractors.

The inspectors also observed the following meetings:

- licensee corrective action review board meeting held on January, 11, 2013 to determine that the meeting was conducted in accordance with licensee procedure ND-AD-002, "Corrective Action Program," revision 17.
- CB&I corrective action review board meeting held on March 18, 2013, which was convened to review the CB&I Corrective Action trend Report: Vogtle 3-4 Results, dated December 31, 2012.
- Interface of Corrective Action Program Corrective Action Review Board meeting held March 26, 2013, which was convened to review several root cause evaluations performed by the licensee's contractors.

b. Findings

No findings were identified.

.3 Selected Issues for Follow-Up Inspection

a. Inspection Scope

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 that 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 9 licensee condition reports (CRs) and 12 CB&I corrective action records (CARs).

The inspectors reviewed the corrective action documents referenced above to determine 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

4OA5 Other Activities

.1 Inspection of Unresolved Item (URI) 05200025/2012002-01, Oversight of Subcontractors Part 21 and 50.55(e) Programs (Closed)

This URI documented that both CB&I (formerly Shaw) and WEC had not adequately adopted their 10 CFR Part 21 and 10 CFR 50.55(e) program procedures to evaluate deviations to determine that they were reportable to the NRC. As documented in the URI, the inspectors identified that the licensee's contractors failed to perform an evaluation for two documented deviations. This URI was opened pending the completion of the licensee's and their contractors' reportability evaluations on the inspector identified unevaluated deviations, and those identified during the licensee's extent of condition reviews. Prior to, and subsequent to documentation of the URI, the inspectors identified other examples where the licensee's contractor failed to initiate evaluations for deviations and, in some cases, complete those evaluations within the 60 days specified by 10 CFR 50.55(e).

The inspectors reviewed 12 CB&I CARs and 12 N&Ds to determine that they were processed in accordance with the CB&I quality assurance program and the conditions documented in the CAR were properly screened and evaluated for possible Part 21 or 50.55(e) reporting. The inspectors identified multiple examples of the licensee's contractors' failure to evaluate deviations and failures to comply as required by 10 CFR 50.55(e)(3). The inspectors also identified multiple examples of the licensee's failure to submit interim reports to the NRC for evaluations that could not be completed within 60 days from discovery of the deviation or failure to comply as required by 10 CFR 50.55(e)(3)(ii). The inspectors noted that CB&I completed evaluations for all the discrepancies identified and determined that none of the deviations or failures to comply were reportable to the NRC.

The inspectors concluded that, contrary to the requirements in 10 CFR 50.55(e), the licensee failed to adopt procedures to evaluate deviations and failures to comply and to provide interim reports when evaluations could not be completed within 60 days. The licensee initiated CR 194324 and CB&I initiated CAR 2012-0270 to correct this violation. The inspectors determined that the licensee implemented adequate corrective actions to correct the violation and performed an adequate extent of condition to identify other examples of this violation. The inspectors determined that the licensee's and CB&I's corrective actions were sufficient to restore compliance with 10 CFR 50.55(e).

As described in Section 1P01.1.i of inspection report 05200025/2013007, the inspectors determined that the licensee failed to adopt procedures to evaluate deviations and failures to comply and to provide interim reports when evaluations could not be completed within 60 days as required by 10 CFR 50.55(e)(3). A violation against 10 CFR 50.55(e)(3) was documented in the inspection report. During this current inspection period, the inspectors determined the failure to properly adopt procedures to meet this regulation constituted an additional example of VIO 05200025/2013007-01 and

is therefore not being cited individually. No additional response to violation 05200025/2013007-01 is required. Corrective actions for these additional examples were completed by SNC and CB&I, and have been reviewed by the NRC. No additional findings were discovered while reviewing this URI. This URI is closed.

40A6 Meetings, Including Exit

.1 Exit Meeting Summary

On April 4, 2013, the inspectors presented the inspection results to Howard Mahan, Vogtle 3 & 4 Licensing Manager, 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

D. Baker - PCI/Westinghouse Module Repair Supervisor
S. Brannon - SNC Modules Coordinator
G. Couture – WEC Licensing
W. Crisler – CBI Project Quality Director
M. Edmondson - SNC Supplier Compliance Manager
S. Hand, CB&I Quality Manager - Nuclear
B. Harrison - SNC Supplier Compliance
B. Holt – CBI Site Management
S. Lucas CBI QA
D. McCawb – SNC Engineering
W. Lynn – SNC Engineering
W. Poppell – CBI Field Engineering
J. Rees – CBI Field Engineering
R. Usher – CBI
M. Yox – SNC Licensing

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened		
05200025/2013002-01	URI	Anchorage and spacing of the headed shear reinforcement (Section 1A06)
Closed		
05200025/2012002-01	URI	Oversight of Subcontractors Part 21 and 50.55(e) Programs (Section 4OA5.1)
Discussed		
05200025/2013007-01	VIO	Failure to Adopt Adequate Procedures to Identify Significant Breakdowns in Quality Assurance Programs (Section 4OA5.1)

DOCUMENTS REVIEWED

Section 1A01.1:

IHI Welder qualification records for welder ID 430
IHI weld filler metal CMTRs: RINJQ 225 3 1, RINJQ 225 3 2, RINJQ 225 3 4, RINJQ 225 5 1
IHI RT Reports: RT 003 WF13 AA CL; RT 003 WF13 A J1, 2, 4, 5; RT 003 WF13 A J3; RT 003 WE13 AE L
IHI CMTRs: 5973 3, 5973 7, 5973 6, 5973 7, 5971 2, 5971 3
IHI radiographs for Personnel Hatch H 03
ASME N-2 Code data reports for H 02 and H 03

Section 1A01.2:

CB&I Receipt Inspection Reports: U3-114 and U3-096
Westinghouse Material Specification APP-MV50-Z0-036, "AP1000 Containment Vessel: SA350 Gr. LF2 Cl.1 Penetration Forgings for Class MC Components," revision 1
Westinghouse Material Specification APP-MV50-Z0-037, "AP1000 Containment Vessel: SA-738 Grade B Plates," revision 2
N-2 ASME Code Data Reports: IN-4762 [B3-B14-1] and IN-4761 [B3-B13-1]
Certified Material Test Reports: CMTR number 6004-3, CMTR number 5909-1, CMTR number 5910-1, CMTR number G20818-041CM, CMTR number 6004-1, G20818-042CM

Section 1A02.1:

CB&I Weld filler metal CMTR for lot 1075G
CB&I Travelers: U3 S1 F13/S1, U3 S1 A4/A15, U3 S1 A3 /A4 W,
CB&I radiography reports: U3 111, U3 112, U3 069, U3 120
IHI Radiographs for Equipment Hatch H 02
CB&I Welder qualification records (by welder ID): 2878491, 855578

Section 1A02.2:

WEC Root Cause Analysis 12-221-M040, Reheat Induced Linear Indications after Completion of Post Weld Heat Treatment, dated 11/21/2012
SNC SV0-GS-GF-900024, Request for Information to Dale Lewis of Westinghouse Electric Company, Rev 001

Section 1A03:

IHI CMTRs 6039-2, 6039-6

Section 1A04:

APP-1210-EG-001, "Auxiliary Building Grounding Plan Areas 1, 2 & 3 (EL. 66'-6")," Rev. 4
APP-1210-EG-002, "Auxiliary Building Grounding Plan Areas 4, 5 & 6 (EL. 66'-6")," Rev. 2
APP-EGS-E9-013, "Grounding Installation Detail - Ground Insert Installation," Rev. 2
APP-EGS-E9-035, "Grounding Installation Detail - Ground Cables Connection Installation," Rev. 0

Section 1A05:

Procedures:
NCSP 3-42-1, Reinforcing Steel Installation

Drawings:
APP-0000-C9-001, AP1000 Concrete General Notes, Rev. 7
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. 4
APP-1000-CR-010, Nuclear Island Basemat Interface with Containment Area Reinforcement, Rev. 5
APP-1000-CR-901, Nuclear Island Basemat Reinforcement Sections, Rev. 9
APP-1000-CR-904, Nuclear Island Section Details, Rev. 5
APP-1000-CR-910, Nuclear Island Basemat Interface with Containment Area Rebar Sections and Details EL 66'-6", Rev. 5
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-005, Nuclear Island Basemat Dowel Plan at EL 66'-6'' Auxiliary Building Area 1, Rev. 2
APP-1010-CR-006, Nuclear Island Basemat Dowel Plan at EL 66'-6'' Auxiliary Building Area 2, 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 Dowel Plan Area 6, Rev. 2
APP-1010-CR-012, Auxiliary Building Skin Reinforcement Splices, Rev. 0
APP-1210-CR-901, Auxiliary Building Basemat Reinforcement Sections NS and Detail EL. 66'-6", Rev. 4
APP-1210-CR-902, Auxiliary Building Basemat Reinforcement Sections EW and Detail EL. 66'-6", Rev. 4
APP-1211-CE-001, Auxiliary Building Area 1 Battery Racks Embedment Plate Locations Room 12104 – 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-1212-CE-003, Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12101 – Plan at 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
SV3-1000-CR-003, Nuclear Island Basemat Shear Reinforcement, Rev. 4

SV3-1210-CR-903, Auxiliary Building Reinforcement Details Pit and Sump Area EL 66'-6'', Rev. 4
SV3-1210-CR-907, Auxiliary Building Reinforcement Details Pit and Sump Area EL 66'-6'', Rev. 4
SV3-1210-CR-908, Auxiliary Building Reinforcement Sections & Details Pit and Sump Area EL 66'-6'', Rev. 1

Specifications:
APP-CR01-Z0-011, Furnishing of Safety Related Reinforcing Steel, Westinghouse Safety Class C NUCLEAR SAFETY RELATED, Rev 4
APP-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel Westinghouse Safety Class-C Nuclear Safety Related, Rev. 2
APP-SS01-Z0-003, Embedded and Miscellaneous Steel, Rev. 3

E&DCRs:
APP-1000-GEF-035, Location of Reinforcement in Auxiliary Building Walls J & K, Rev. 0
APP-1010-GEF-024, FNC – Dowels at Construction Joint in Wall 7.3, Rev. 0
APP-1010-GEF-039, Relocation of Basemat Dowels to Resolve Interferences with Horizontal Reinforcement, Rev. 0
APP-1210-GEF-063, Vertical Location of #9 Bars in Sump & Elevator Pit
APP-1210-GEF-069, FNC Basemat Pit and Sump Reinforcement Details, Rev. 0
APP-1210-GEF-072, Basemat Pit & Sump Re-entrant Corner Reinforcement, Rev. 0
APP-1215-GEF-020, Removal of Concrete Recess Under CA20 Walls, Rev. 0
SV0-CR01-GEF-000071, #4 temperature steel (Crack Control) interferes with the various embeds, Rev. 0
SV0-CR01-GEF-000115, Clarification # of Wall Dowels on 1, Rev. 0
SV0-CR01-GEF-000116, Inside Wall Dowels at Pits, Rev. 0
SV0-CR01-GEF-000127, #14 conflicts with Wall Dowels, Rev. 0
SV0-CR01-GEF-000131, Clarification as to whether the #9 Additional Layer 5 rebar located at Q-line is required to develop into the radius at an angle or bend. Rev. 0
SV0-CR01-GEF-000135, This E&DCR supersedes SV0-CR01-GEF-000131 because of poor wording of the disposition, Rev. 0
SV3-CR01-GEF-000014, Class B Splices Staggering, Rev. 0
SV3-CC01-GEF-000015, Deletion of the WWF 6x6 D5xD5, Rev. 0
SV3-CR01-GEF-000041, #7 Crack Control Rebar Field Fit, Rev.0

Corrective Action Documents:
CAR-2013, CQC Signed off with walls not installed, 03/07/2013
CR 603249, Basemat design change communicated to SNC from WEC, 03/08/2013

Miscellaneous:
APP-1010-CCC-007, NI Basemat Reinforcement Details at Basemat Perimeter Sumps, and Elevator Pit, Rev. 1
APP-1200-CCC-114, Auxiliary Building Wall N Reinforcement Design, Rev. 2
APP-1200-CCC-115, Auxiliary Building Wall J-1 Reinforcement Design, Rev. 1
Purchase Order No. 132177-J400-00
Quality Inspection Plan, F-C112-002, Preplacement: Nuclear Island Concrete, Rev. 8
SV3-1000-CRW-CV0295, Installation of Reinforcing Steel Nuclear Island Basemat

Section 1A06:

Drawings:
SV3-1000-CR-003-R3, Nuclear Island Basemat Shear Reinforcement
SV3-1000-CR-003-R4, Nuclear Island Basemat Shear Reinforcement
SV3-1210-CR-903-R3, Auxiliary Building Reinforcement Details Pit and Sump Area El. 66'-6"
SV3-1210-CR-903-R4, Auxiliary Building Reinforcement Details Pit and Sump Area El. 66'-6"
SV3-1210-CR-907-R3, Auxiliary Building Reinforcement Details Pit and Sump Area El. 66'-6"
SV3-1210-CR-907-R4, Auxiliary Building Reinforcement Details Pit and Sump Area El. 66'-6"
SV3-1210-CR-908-R0, Auxiliary Building Reinforcement Sections and Details Pits Sump Area El. 66'-6"
SV3-1210-CR-908-R1, Auxiliary Building Reinforcement Sections and Details Pits Sump Area El. 66'-6"

Corrective Action Documents:
CR 517636, Shear Reinforcement (T-Headed) under Nuclear Island Basemat Elevator Pit(s)
CR 519809, FNC- U-3 Basemat Sump & Elevator Shear Reinforcing Lengths
CR 532772, FNC – VEGP Nuclear Island KB-13 Sump and Elevator Pits Current Design Challenged at VC Summer
CR 554151, Apparent ACI 349-01 Nonconformances of Rebar Design
CR 558496, FSAR Discrepancy on NI Basemat Shear Tie Spacing
CAR 2012-1203, Unit-3 Nuclear Island Basemat Sump and Elevator Pit Shear Reinforcing Bar Length Discrepancy

Miscellaneous:
DCP_DCP_003549, Assessment Associated with Application of Shear Reinforcement in the AP1000 Nuclear Island Structures for PI-12-38, dated 01/30/2013 (Westinghouse)
LTR-SRC-13-21, Closeout Request for PI-12-38, Application of Shear Reinforcement in AP1000 Nuclear Island Structures, dated 01/30/2013

Section 1A07:

Westinghouse design specification number SV3-SS01-Z0-003, "Embedded and Miscellaneous Steel, Westinghouse Safety Class C," revision 2
CB&I quality assurance inspection report number Q445-12-1375, "Steel Embedments"
SV3-1211-CE-001, "Auxiliary Building Area 1 Battery Racks Embedment Plate Location Room 12104 – Plan at El 66'-6"," Rev. 2
SV3-1211-CE-002, "Auxiliary Building Area 1 Battery Racks Embedment Plate Location Room 12105 – Plan at El 66'-6"," Rev. 2
SV3-1212-CE-001, "Auxiliary Building Area 2 Battery Racks Embedment Plate Location Room 12101 – Plan at El 66'-6"," Rev. 2
SV3-1212-CE-002, "Auxiliary Building Area 2 Battery Racks Embedment Plate Location Room 12102 – Plan at El 66'-6"," Rev. 2
SV3-1212-CE-003, "Auxiliary Building Area 2 Battery Racks Embedment Plate Location Room 12103 – Plan at El 66'-6"," Rev. 2
SV3-1211-CEX-001, "Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12104 Coordinate Chart," Rev. 1
SV3-1211-CEX-002, "Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12105 Coordinate Chart," Rev. 1
SV3-1212-CEX-001, "Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12101 Coordinate Chart," Rev. 1
SV3-1212-CEX-002, "Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12102 Coordinate Chart," Rev. 1

SV3-1212-CEX-003, “Auxiliary Building Area 2 Battery Racks Embedment Plate Locations Room 12103 Coordinate Chart,” Rev. 1
APP-1200-CEC-002, “Auxiliary Building – Design Anchoring for Battery Racks at Reference Elevation 66’ and 82’ in Areas 1 and 2,” Rev. 0

Section 1A08.1:

Westinghouse design specification number SV3-SS01-Z0-003, “Embedded and Miscellaneous Steel, Westinghouse Safety Class C,” revision 2
CB&I quality assurance inspection report number Q445-12-0203, “Receipt Inspection of Steel Embedments,” and Q445-12-1085, “Replacement Rebar,”
Certified Material Test Reports for A36 Carbon steel plate heat numbers 0506668 and 2M395, A615 Rebar heat numbers K113904 and K113910, and A706 Rebar heat number K121532
CB&I nonconformance and disposition report V-ND-12-0162, “Rebar for CA20 Embed Plate Anchorage”
CB&I work package number SV3-1000-CEW-CV1063, “Replacement of Threaded Number 9 Rebar on CA20 Embed Plates”

Section 1A08.2:

PI-904901-02, "Vogtle Unit 3 Outside Corner Weld Rework Machining, Sub-module CA20_01," Rev. 0
APP-CA20-S5-08001 "Module CA20 Submodule CA20_08 Isometric Views," Rev. 4
APP-CA20-S5-08002 "Module CA20 Submodule CA20_08 Break Down," Rev. 5
APP-CA20-S5-08003 "Module CA20 Submodule CA20_08 Structural Outline Horizontal Sections/Views (Sheet 1)," Rev. 6
APP-CA20-S5-08004 "Module CA20 Submodule CA20_08 Structural Outline Vertical Sections/Views," Rev. 4
APP-CA20-S5-08005 "Module CA20 Submodule CA20_08 Structural Outline Specific Details," Rev. 6
APP-CA20-S5-08006 "Module CA20 Submodule CA20_08 Structural Outline Horizontal Sections/Views (Sheet 2)," Rev. 0
APP-CA20-S5-11001 "Module CA20 Submodule CA20_11 Isometric Views," Rev. 4
APP-CA20-S5-11002 "Module CA20 Submodule CA20_11 Break Down," Rev. 4
APP-CA20-S5-11003 "Module CA20 Submodule CA20_11 Structural Outline Horizontal Sections/Views," Rev. 4
APP-CA20-S5-11004 "Module CA20 Submodule CA20_11 Structural Outline Vertical Sections/Views," Rev. 4
APP-CA20-S5-11005 "Module CA20 Submodule CA20_11 Structural Outline Specific Details," Rev. 4
APP-CA20-S5-13001 "Module CA20 Submodule CA20_13 Isometric Views," Rev. 4
APP-CA20-S5-13002 "Module CA20 Submodule CA20_13 Break Down," Rev. 4
APP-CA20-S5-13003 "Module CA20 Submodule CA20_13 Structural Outline Horizontal Sections/Views," Rev. 3
APP-CA20-S5-13004 "Module CA20 Submodule CA20_13 Structural Outline Vertical Sections/Views," Rev. 4
APP-CA20-S5-13005 "Module CA20 Submodule CA20_13 Structural Outline Specific Details," Rev. 4
APP-CA20-S5-15001 "Module CA20 Submodule CA20_15 Isometric Views," Rev. 4
APP-CA20-S5-15002 "Module CA20 Submodule CA20_15 Break Down," Rev. 4

APP-CA20-S5-15003 "Module CA20 Submodule CA20_15 Structural Outline Horizontal Sections/Views," Rev. 3
APP-CA20-S5-15004 "Module CA20 Submodule CA20_15 Structural Outline Vertical Sections/Views," Rev. 5
APP-CA20-S5-15005 "Module CA20 Submodule CA20_15 Structural Outline Specific Details," Rev. 4
APP-CA20-S5-21001 "Module CA20 Submodule CA20_21 Isometric Views," Rev. 5
APP-CA20-S5-21002 "Module CA20 Submodule CA20_21 Break Down," Rev. 5
APP-CA20-S5-21003 "Module CA20 Submodule CA20_21 Structural Outline Horizontal Sections/Views," Rev. 3
APP-CA20-S5-21004 "Module CA20 Submodule CA20_21 Structural Outline Vertical Sections/Views," Rev. 4
APP-CA20-S5-21005 "Module CA20 Submodule CA20_21 Structural Outline Specific Details," Rev. 4
APP-CA20-S5-24001 "Module CA20 Submodule CA20_24 Isometric Views," Rev. 3
APP-CA20-S5-24002 "Module CA20 Submodule CA20_24 Break Down," Rev. 3
APP-CA20-S5-24003 "Module CA20 Submodule CA20_24 Structural Outline Horizontal Sections/Views," Rev. 3
APP-CA20-S5-24004 "Module CA20 Submodule CA20_24 Structural Outline Vertical Sections/Views," Rev. 4
APP-CA20-S5-24005 "Module CA20 Submodule CA20_24 Structural Outline Specific Details," Rev. 2
APP-CA20-S5-72001 "Module CA20 Submodule CA20_72 Isometric Views," Rev. 4
APP-CA20-S5-72002 "Module CA20 Submodule CA20_72 Break Down," Rev. 4
APP-CA20-S5-72003 "Module CA20 Submodule CA20_72 Structural Outline Horizontal Sections/Views," Rev. 3
APP-CA20-S5-72004 "Module CA20 Submodule CA20_72 Structural Outline Vertical Sections/Views," Rev. 4
APP-CA20-S5-72005 "Module CA20 Submodule CA20_72 Structural Outline Specific Details," Rev. 1
APP-CA20-S5-73001 "Module CA20 Submodule CA20_73 Isometric Views," Rev. 4
APP-CA20-S5-73002 "Module CA20 Submodule CA20_73 Break Down," Rev. 4
APP-CA20-S5-73003 "Module CA20 Submodule CA20_73 Structural Outline Horizontal Sections/Views," Rev. 3
APP-CA20-S5-73004 "Module CA20 Submodule CA20_73 Structural Outline Vertical Sections/Views," Rev. 4
APP-CA20-S5-73005 "Module CA20 Submodule CA20_73 Structural Outline Specific Details," Rev. 1
Westinghouse IR 12-230-M004 (Submodule faceplate full penetration weld issue)
Westinghouse E&DCR APP-CA20-GEF-261, "SWD-17 Welds," Rev. 0
Mistras magnetic particle examination report V-13-MT-302-047
PQR 1-1-165 Shaw Stud Procedure Qualifications
PQR 1-1-166 Shaw Stud Procedure Qualifications
Inspection Plan F-S540-001, "Stud Welding Structural Module Shear Stud Welding," Rev. 2
GWS-6, "Stud Welding - General Welding Specification," Rev. 0
APP-VW01-Z0-001, "Structural Module Shear Stud Welding Specification," Rev. 2
CB&I welding procedure specification number WPS2-1.1T70, revision 0;
CB&I procedure qualification records: D-2010-35, D-2010-32, and D-2010-34;
Record of Welder Performance Qualification Test - AWS D1.1 Groove Weld (WPS2-1.1M01) for welder AJH2655;

Record of Welder Performance Qualification Test - AWS D1.1 Groove Weld (WPS2-1.1T70) for welder AJH2655;
Record of Welder Performance Qualification Test - AWS D1.1 Groove Weld (WPS2-1.1T70) for welder BDK2794;
Receiving Inspection Reports: RIR-10-111, RIR-10-113, RIR-10-117, RIR-10-186, RIR-10-134, RIR-10-142, RIR-10-143, RIR-10-151, and RIR-10-159
CMTRs for weld filler material (Heats 1030F and 1030V)
CB&I weld filler material specification TR-5.18-70S-X, "ER70S-X Carbon Steel Bare Wire/Rods or Electrodes," revision 0
CB&I weld filler material specification TR-5.18-70S-X-GTAW, "ER70S-X Carbon Steel Bare Wire/Rods," dated 3-7-2012
Magnetic particle log number V-13-MT-302-097;
Ultrasonic log number V-13-UT-310-007;
100-MT-302, "Magnetic Particle Examination in Accordance with AWS Structural Steel Welding Code," revision 2;
100-UT-310, "Ultrasonic Examination of Welds in Accordance with AWS Structural Welding Code D1.1," revision 5;
CB&I Nuclear Quality Assurance Directive (QAD) 2.15, "Qualification and Certification of Inspection and Test Personnel," revision 001
CB&I Nuclear Services Quality Inspection Plan number F-S561-04, "Structural Weld inspection; AWS D1.1, D1.6, structural Modules - CA20," revision 3
SV3-CA20-S5Y-00004, "Auxiliary Building Areas 5 & 6 Module CA20 Submodules General Notes - IV," revision 1
CB&I procedure WQ-1, "Qualification of Welders and Welding Operators," revision 1
NCR 11-304
CB&I Corrective Action Records (CARs): CAR 2013-0192, CAR 2013-0289, 2013-0170, 2013-0173

Section 1A09:

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. 7
APP-0000-C9-002, AP1000 Concrete General Notes, Rev. 4

Specifications:
APP-CC01-Z0-026, Safety Related Mixing and Delivering Concrete, Westinghouse Safety Class C Nuclear Safety Related, Rev. 4
APP-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel Westinghouse Seismic Category I, Safety Class C Nuclear Safety, Rev. 2

E&DCRs:
SV0-CC01-GEF-000047, Mass Changes to 026 Spec, Rev. 0
SV0-CC01-GEF-000069, LA Abrasion Requirement, Rev. 0
SV0-CC01-GEF-000101, Mass Changes to -026 Spec, Rev. 0
SV0-CC01-GEF-000117, E&DCR SV0-CC01-GEF-000095 adds a specific Surface Retarder (Topcast Salmon 200) with inadequate justification. Rev. 0

Corrective Action Documents:
CAR 2013-0397, Basemat Concrete Placement Deficiencies, 03/18/2013
CAR 2013-0406, Missing Training Records for Vibrator Operators, 03/18/2013
CR 605672, NRC observations re: U3 NI FNC Placement consolidation, 03/13/2013
CR 606462, NRC Minor Violation - Exceeding concrete placement specification requirements
CR 606501, NRC Observation - Lack of firm hold points in CQCs
CR 606510, U3 NI Basemat First Nuclear Concrete (FNC) Initial Lessons Learned

Section 1A10:

ASME N 2 Data Reports:
Part No. IN 4851, Penetration P11 N 2 Data Report
Part No. IN 4852, Penetration P19 N 2 Data Report

CMTRs:
6064 1, Heat No. 5 5152, Plate No. JA282A, (penetration P11)
RINJQ 225 5 2, Heat No. 9M7502, SFA 5.28 weld material (P11)
RINJQ 225 3 5 Heat No. 9K7973, SFA 5.28 weld material (P11)
G24313 002CM, Piece No. AG16201 (penetration P19), rev.3
6083 1, Heat No. 6 8563, Plate No. JC009A, (penetration P11 & P19 insert plate)

Magnetic Particle Reports:
MT 003 EP WA4 P11 () (L; N S; N P)
MT 003 RP WA4 P11 N
MT 003 BG WA4 P11 () (L; N)
MT 003 BP WA4 P11 N
MT 003 AP WA4 P11 N
MT 003 EP 4 P11 S 2

Ultrasonic Testing Reports:
UT 003 BP WA4 P11 N

Radiographic Examination Reports:
RT 003 WA4 P11 L

Section 1A11.1:

Receiving Inspection Reports:
RIR U4 076, Assembled Penetration Block (P11)

Liquid Penetrant Reports:
U4 019; U4 122; U4 124; U4 048

Radiographic Examination Reports:
U4 015
U4 050

Observation Reports:
OB VES 2012 397; OB VES 2012 392; OB VES 2012 246 Rev.1;OB VES 2012 396

Procedures:
CMS 830 15 PR 45154, CB&I Radiographic Examination, Rev.1

Section 1A11.2:

RT Report U4-046 and associated RT film
RT Report U4-054 and associated RT film
CB&I RT procedure CMS-830-15-PR-45154, “Radiographic Examination ASME Section III, Division 1 – Subsection NE,” Rev. 1

Section 1A12:

N&D SV4-CC02-GNR-000001;
N&D SV4-CC02-GNR-000003;
N&D SV4-CC02-GNR-000005
Specification SV0-XE01-Z0-002, “Nuclear Island Excavation and Backfill,” Rev. 5;
QC Inspection Report C131-13-0022
QC IR C137-11-0811

Section 1P01:

Engineering and Design Coordination Report number SV0-G100-GEF-000012, revision 0

Section 1P02:

NDQA-2012-S52, “Surveillance of NQA-1-1994 Level D Storage Areas On-Site," performed July 9-11, 2012
CB&I surveillance report number S-132175-2012-030, dated 6-14-12
CB&I surveillance report number S-132175-2012-020, dates 8-10-2012
CB&I Quality Assurance Directive (QAD) 7.2, "Review of Seller's Nondestructive Examination Procedures," revision D
CB&I Nuclear Quality Assurance Program (SWSQAP 1-74A, revision B)

Section 1P03:

Shaw Nuclear Services Quality Inspection Plan number F-C112-02, "Pre-placement; Nuclear Island Basemat Concrete, Revision 1 - change 1
QC inspection report number C112-02-12-0002
QC inspection report number C112-02-12-0003
QC inspection report number C112-02-12-0096

Section 1P05:

Nonconformance & Disposition Evaluations:
V-ND-12-0478
SV3-CR01-GNR-000019, “A970 Testing of T-Head Heat # Combinations,” Rev. 0
SV3-CR01-GNR-000020, “#9 Shear Test Bars,” Rev. 0
SV3-CR01-GNR-000024, “A970 Testing for Additional Terminator Lot #,” Rev. 0
SV3-CR01-GNR-000037, “Prequalification of #5 T-Heads,” Rev. 0
SV3-CA20-GNR-000030, "CA20-05 Stud Installation/Welding Inspection," Rev. 0

SV3-CA20-GNR-000028, "CA20-04 Sub-module Stud Installation," Rev. 0
SV4-CC02-GNR-000001, "Concrete Finish Exceeds Requirements," Rev. 0
SV4-CC02-GNR-000003, "Supersede SV4-CC02-GNR-000002," Rev. 0
SV4-CC02-GNR-000005, "Overcut Contraction Joint in NI 4," Rev. 0

Miscellaneous:
QC IR C137-11-0811, "Soils Testing - Review of Laboratory Test Results"
QC IR C131-13-0022, "Backfill"
CSI 3-42-2 “Reinforcing Steel Installation”

Section 1P06.1, 1P06.2, 1P06.3:

SNC procedure ND-AD-002, "Corrective Action Program," revision 17
CB&I Corrective Action trend Report: Vogtle 3-4 Results, dated December 31, 2012
CAR 2011-0249
CAR 2012-0609
CAR 2013-0170
CAR 2013-0289
CAR 2013-0192
CAR 2013-0315
CAR 2012-1356
CAR 2012-0006
CAR 2012-0177
CAR 2012-0104
CAR 2013-0074
CAR 2013-0099
CR 461676
CR 593264
CR 535413
CR 610400
CR 570515
CR 601572
CR 546169
CR 588827
CR 597146

Section 4OA5.1:

Corrective Action Documents:
CR 194324
CAR 2012-270
CAR 2010-10-07-861
CAR 2011-735
CAR 2011-0082
CAR 2011-0117
CAR 2011-0125
CAR 2011-0288
CAR 2011-0328
CAR 2011-0548
CAR 2011-0735
CAR 2011-0744

CAR 2012-0227
CAR 2012-0281
CAR 2012-0270

Nonconformance & Disposition Reports:
V-ND-12-0137
V-ND-09-0007
V-ND-12-0065
V-ND-12-0088
V-ND-12-0158
V-VD-12-0227
V-ND-11-0354
V-ND-11-0395
V-ND-11-0411
V-ND-11-0451
V-ND-12-0096
V-ND-12-0181

Procedures:
QS 16.2, “Notifying Clients of potentially reportable deficiencies under 10 CFR 50.55(e)”
QS 16.3, “Identifying and Reporting Defects and Failures to Comply under 10 CFR Part 21.”

ACRONYMS USED

10 CFR	Title 10, Code of Federal Regulations
ACI	American Concrete Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CB&I	Chicago Bridge and Iron
CMTR	Certified Material Test Report
E&DCR	Engineering and Design Coordination Report
IHI	Ishikawajima-Harima Heavy Industries Co., Ltd.
ITAAC	Inspections, Tests, Analysis, and Acceptance Criteria
N&D	Nonconformance & Disposition Reports
NRC	Nuclear Regulatory Commission
PQR	Procedure Qualification
QC	Quality Control
RIR	Receiving Inspection Reports
RT	Radiographic Testing
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WEC	Westinghouse Electric Company, LLC
WPS	Welding Procedures Specification