

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

April 30, 2015

Michael Yox  
Regulatory Affairs Director  
Southern Nuclear Operating Company  
7835 River Road, Bldg. 140, Vogtle 3&4  
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 – NRC  
INTEGRATED INSPECTION REPORTS 05200025/2015001, and  
05200026/2015001

Dear Mr. Yox:

On March 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vogtle Electric Generating Plant (VEGP) Units 3 and 4. The enclosed inspection report documents the inspection results, which the inspectors discussed on March 31, 2015, with Mr. Mark Rauckhorst, Vogtle 3 & 4 Construction Vice President, 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.

Two NRC-identified findings of very low safety significance (Green) were identified during this inspection. These findings were determined to involve violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCV) in accordance with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest either NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector office at the VEGP Units 3 and 4.

If you disagree with the cross-cutting aspect assigned to either finding, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector office at the VEGP Units 3 and 4.

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).

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

Sincerely,

**/RA/**

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

Docket Nos.: 5200025, 5200026  
License Nos: NPF-91, NPF-92

Enclosure: NRC Inspection Report 05200025/2015001  
and 05200026/2015001  
w/Attachment: Supplemental Information

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).

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 and 05200026/2015001  
 w/Attachment: Supplemental Information

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 ADAMS:  Yes      ACCESSION NUMBER: ML15124A857       SUNSI REVIEW COMPLETE       FORM 665 ATTACHED

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Letter to M. Yox from Michael E. Ernstes dated April 30, 2015

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 – NRC  
INTEGRATED INSPECTION REPORTS 05200025/2015001, and  
05200026/2015001

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

Docket Numbers: 5200025  
5200026

License Numbers: NPF-91  
NPF-92

Report Numbers: 05200025/2015001  
05200026/2015001

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Vogtle Unit 3 Combined License  
Vogtle Unit 4 Combined License

Location: Waynesboro, GA

Inspection Dates: January 1, 2015 through March 31, 2015

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L. Castelli, Senior Construction Inspector, DCI  
J. Fuller, Senior Resident Inspector, DCP  
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K. Steddenbenz, Construction Inspector, DCI  
S. Temple, Resident Inspector, DCP  
J. Vasquez, Construction Inspector, DCI

Accompanying Personnel: K. Mott, Electronics Engineer, NRO  
S. Smith, Vendor Inspector, Electrical Vendor Inspection

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

Enclosure



## SUMMARY OF FINDINGS

Inspection Report (IR) 05200025/2015001, 05200026/2015001; 01/01/2015 through 03/31/2015; Vogtle Unit 3 Combined License; Vogtle Unit 4 Combined License, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)-Related Work Inspections, and Construction Inspection Program: Inspection of Construction and Operational Programs.

This report covers a three-month period of inspection by resident inspectors and announced Inspections, Tests, Analysis, and Inspection Criteria (ITAAC) inspections by both regional and resident inspectors. Two NRC-identified findings of very low safety significance associated with non-cited violation were identified consistent with the NRC Enforcement Policy, Section 2.3 and the temporary enforcement guidance outlined in enforcement guidance memorandum number EGM-11 006. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 2519, "Construction Significance Determination Process". Construction Cross Cutting Aspects are determined using IMC 0613, "Power Reactor Construction Inspection Reports." The Nuclear Regulatory Commission's (NRC's) program for overseeing the construction of commercial nuclear power reactors is described in IMC 2506, "Construction Reactor Oversight Process General Guidance and Basis Document."

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

#### Cornerstone: Construction/Installation

- Green. The inspectors identified an ITAAC finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment, and Services," for the licensee's failure, through their contractor Chicago Bridge and Iron (CB&I), to perform adequate inspections of safety-related overlay plates at supplier facilities and failure to perform adequate examinations of overlay plates upon delivery, to assure the plates conformed to the procurement documents. The licensee entered this issue in their corrective action program as condition report number 899313.

The finding was associated with the Procurement / Fabrication Cornerstone. The inspectors determined the performance deficiency was more than minor because it was associated with the process and material control attributes of the Procurement / Fabrication Cornerstone and adversely affected the cornerstone objective of ensuring that the licensee's programs and processes were adequately developed and implemented for procurement and fabrication activities. The finding was determined to represent an ITAAC finding because it was material to the acceptance criteria of Vogtle Unit 3 ITAAC 763, in that, if left uncorrected, the licensee could not show that the acceptance criteria of this ITAAC was met. The inspectors determined that the failure of these overlay plates to meet AWS D1.1:2000 welding requirements represented a nonconformance with the approved structural design, which if left uncorrected, represented a deviation from the design that would not have been reconciled by the licensee. The inspectors determined that the finding was of very low safety significance (Green) because the licensee demonstrated, with reasonable assurance, that the design function of the applicable structure or system would not have been impaired by the deficiency. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution (Resolution) because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance.

Specifically, the licensee failed to take effective corrective actions for previously identified deficiencies with the source and receipt inspection process [P.3]. (Section 1A13)

- Green. The inspectors identified a construction finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to accomplish safety-related, required quality control inspections in accordance with CB&I QC inspection plan F-S561-004. The licensee entered the issue in their corrective action program as condition report number 10039935.

The finding was associated with the Construction/Installation Cornerstone. The inspectors determined the performance deficiency was more than minor because the issue represented a substantive failure to implement an adequate quality oversight function, in that these routine welding inspections were not performed by the licensee's contractor for over six months. The finding was determined to be a construction finding because it was not associated with a specific ITAAC. The inspectors determined that the finding was of very low safety significance (Green) because the finding could not be directly associated with a system or structure. This finding has a cross-cutting aspect in the area of Human Performance, Procedure Adherence because the licensee failed to ensure that individuals followed specific procedures [H.8]. (Section 1P03)

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

No findings were identified.

## REPORT DETAILS

### Summary of Plant Construction Status

During this inspection period, for Unit 3, construction continued on the auxiliary building walls and floors from elevations 66'6" to 100'0", concrete pours inside and outside of the containment vessel (CV), the assembly of modules CA01, and CA03, and the assembly and preparation of the CV middle, and upper rings. For Unit 4, construction continued on the auxiliary building walls and floors from elevations 66'6" to 100'0", and of the CV lower ring.

### 1. CONSTRUCTION REACTOR SAFETY

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

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

1A01 (Unit 3) ITAAC Number 2.2.01.02b (92) / Family: 03F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.02b (92):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The piping identified in Table 2.2.1-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.	Inspection will be conducted of the as-built piping as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built piping identified in Table 2.2.1-2 as ASME Code Section III.

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

- 65001.03-02.01 - Purchase and Receipt of Materials
- 65001.03-02.06 - Nondestructive Examination (NDE)
- 65001.03-02.07 - Review of Records
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.04 - General QA Review

The inspectors reviewed records associated with the flued head spent fuel pool cooling system mechanical penetration assembly to be used on the containment vessel to verify that it met the requirements of the American Society of Mechanical Engineers (ASME) code. Specifically the inspectors reviewed certified material test reports (CMTRs), heat treatment reports, ultrasonic (UT), liquid penetrant (PT), and dimensional inspection reports for the assemblies for penetration P22 to verify that the:

- material met the chemical and physical requirements of the ASME Code;
- assembly had received the required heat treatment; and
- completed assembly was free from rejectable defects.

b. Findings

No findings were identified.

1A02 (Unit 3) ITAAC Number 2.2.03.08c.vi.02 (190) / Family: 06A

a. Inspection Scope

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

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The PXS provides RCS makeup, boration, and safety injection during design basis events.	vi) Inspections of each of the following tanks will be conducted: 2. Accumulators	The calculated volume of each of the following tanks is as follows: 2. Accumulators $\geq 2000 \text{ ft}^3$

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

- 65001.06 - Inspection of ITAAC-Related Installation of Mechanical Components
- 65001.06-02.01 - General Installation
- 65001.06-02.04 - Testing and Verification
- 65001.06-02.05 - Problem Identification and Resolution
- 65001.A - As-Built Attributes for structures, systems, and components (SSCs) associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed direct inspection of onsite activities, reviewed calculations, and reviewed acceptance information associated with the accumulators for Vogtle Unit 3 to determine whether the volume of both accumulators met the minimum volume of 2000 ft<sup>3</sup> established in the Vogtle Unit 3 Combined License (COL), Appendix C, Table 2.2.3-4, “Inspections, Tests, Analyses, and Acceptance Criteria.”

The inspectors observed a Westinghouse subsidiary perform the volume verification of the accumulators to determine whether:

- the as-built tank volume and dimensions were in accordance with the final design, the ITAAC, and COL;
- the activities were conducted in accordance with the licensee’s quality assurance program requirements;
- the correct, up-to-date work procedures were available and used;
- personnel using special tools or equipment to perform measurement activities were qualified and knowledgeable;
- appropriate measures were taken to prevent damage to the tanks during work;

- equipment was properly maintained and calibrated;
- equipment accuracy was within procedural specifications;
- field data was correctly recorded and translated into permanent records;
- hold points were observed as required; and
- any unsatisfactory test results and conditions adverse to quality were entered into the corrective action program.

The inspectors reviewed the results of the volumetric testing to determine whether:

- testing was conducted in accordance with approved procedures;
- accuracy of the test equipment was documented and accounted for in the test results; and
- test results were complete, accurate, and documented that the as-built tank volume met the design specifications and acceptance criteria.

The inspectors reviewed the dimensions specified in the COL, Appendix C, 2.2.3-4 for the accumulator ITAAC. The inspectors assessed the method and controls used by the licensee to verify that the as-built dimensions conformed to the licensing basis to determine whether the methodology used was appropriate and would produce sufficient records to document that completed work met the design specifications and acceptance criteria.

The inspectors reviewed a sample of nonconformances associated with the accumulators to verify:

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

b. Findings

No findings were identified.

1A03 (Unit 3) ITAAC Number 2.3.06.02b (356) / Family: 03F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.3.06.02b (356):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The piping identified in Table 2.3.6-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.	Inspection will be conducted of the as-built piping as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built piping identified in Table 2.3.6-2 as ASME Code Section III.

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

- 65001.03-02.01 - Purchase and Receipt of Materials
- 65001.03-02.06 - Nondestructive Examination
- 65001.03-02.07 - Review of Record
- 65001.F-02.02 - Fabrication Records Review
- 65001.F-02.04 - General QA Review

The inspectors reviewed records associated with a sample of two flued head normal residual heat removal system mechanical penetration assemblies to be used on the containment vessel to verify that they met the requirements of the ASME code. Specifically the inspectors reviewed CMTRs, heat treatment reports, UT, PT, and dimensional inspection reports for the assemblies for penetrations P19 and P20 to verify that:

- materials met the chemical and physical requirements of the ASME Code;
- assemblies had received the required heat treatment; and
- completed assemblies were free from rejectable defects.

b. Findings

No findings were identified.

1A04 (Unit 3) ITAAC Number 2.5.02.13 (552) / Family: 10F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.13 (552):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
<p>The use of commercial grade computer hardware and software items in the PMS is accomplished through a process that specifies requirements for:</p> <p>a) Review of supplier design control, configuration management, problem reporting, and change control. b) Review of product performance. c) Receipt acceptance of the commercial grade item. d) Acceptance based on equipment qualification and software validation in the integrated system.</p>	<p>Inspection will be performed of the process defined to use commercial grade components in the application.</p>	<p>A report exists and concludes that the process has requirements for: a) Review of supplier design control, configuration management, problem reporting, and change control. b) Review of product performance. c) Receipt acceptance of the commercial grade item. d) Acceptance based on equipment qualification and software validation in the integrated system.</p>

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

- 43004-02.01 - Technical Evaluations
- 43004-02.02 - Controls for Acceptance of a Commercial Grade Item
- 43004-02.03 - Commercial Grade Dedication Plan
- 65001 - Inspections of Inspections, Tests, Analyses, and Acceptance Criteria Related Work

ITAAC Acceptance Criteria Verification

The inspectors reviewed documents and records identified by the licensee to support closure of ITAAC 2.5.02.13 and reviewed the scope and results of previous NRC inspections (Inspection Report 99900404/2014-202 (ML14112A168)). The review was performed to verify that the inspected activities appropriately support ITAAC closure.

Specifically, the NRC inspection team reviewed the ITAAC principal closure document (PCD), APP-GW-GLR-616 “AP1000 Design Certification ITAAC 2.5.02.13: The Process used in the Commercial Grade Dedication of PMS Components” Technical Report, Revision 0, December 2014, and the associated implementing documents that were established for accomplishing the use of commercial grade computer hardware and software in the Protection and Monitoring System (PMS). The purpose of the PCD was to provide a road map to the documentation that fulfilled the Inspection and Acceptance Criteria for the ITAAC and therefore confirmed that the Design Commitment was verified to be met.

The inspection included interviews with responsible licensee personnel and reviews of procedures, commercial dedication instructions (CDI), and other process control documents necessary for controlling use of commercial grade components in the PMS.

The inspection included determining whether the applicable implementing documents established controls for:

- reviews of supplier design control, configuration management, problem reporting, and change control;
- reviews of product performance;
- receipt acceptance of the commercial grade items; and
- acceptance based on equipment qualification and software validation in the integrated system.

#### Commercial Grade Services

The inspectors performed reviews of ITAAC 2.5.02.13 (parts a, b, and c) completion documentation associated with the use of commercial grade services. The inspectors reviewed the Westinghouse procedures and CDI, which had been identified in the PCD as applicable to the use of "build-to-print" fabrication services. The inspection scope also included a review of commercial controls that had not been identified in the PCD. Specifically, procurement specifications issued for "build-to-print" fabrication services were reviewed in order to verify the applicable attributes of ITAAC 2.5.02.13 were addressed. The review of the process for use of commercial grade fabrication services included a determination whether the guidance for conduct of commercial grade surveys and dedications of fabricated commercial grade items were accomplished in accordance with applicable regulations contained in 10 CFR Part 50 Appendix B and 10 CFR Part 21.

#### AC160 Nuclear Critical Components

The inspectors performed reviews of ITAAC completion documentation associated with ITAAC 2.5.02.13 (parts a, b, and, c) in regards to the use of the AC160 Components. The AC160 Controller assemblies consist of processors, communications and input/output modules which were used to perform safety related tasks for the PMS. The AC160 hardware is a product line purchased from ABB as a commercial grade product. As it relates to the use of commercial grade components in the PMS, the inspectors reviewed the Westinghouse procedures and CDI which had been identified in the PCD as applicable to the AC160 Nuclear Critical Components. Specifically, the AC160 hardware procurement specification was reviewed in order to verify the applicable attributes of ITAAC 2.5.02.13 were addressed. Commercial grade surveys, test reports and inspection procedures were reviewed to ensure that the governing procedures prescribed a process that would be acceptable to meet the requirements for the use of commercially acquired AC160 hardware and was accomplished in accordance with applicable regulations contained in 10 CFR Part 50 Appendix B and 10 CFR Part 21.

#### Acceptance Based on Equipment Qualification

The inspectors reviewed ITAAC 2.5.02.13 (part d) completion documentation to verify that the use of commercial grade computer hardware and software items in the PMS was accomplished through a process that specified requirements for acceptance based on equipment qualification (EQ). The inspectors reviewed the PCD, which states in part, that EQ verification is accomplished using design reviews, alternate calculations, or qualification tests as described in Westinghouse procedures. The inspectors noted that the PCD cited Westinghouse procedures, NA 7.4, NA 7.6, NA 4.38, WEC 3.3.3, WEC



7.2, and CDI-2625 as the road map and processes used to complete the ITAAC commitment for acceptance based on equipment qualification. As it relates to the use of acceptance based on EQ in the PMS, the inspectors reviewed the Westinghouse procedures and CDI-2625. The inspectors noted that procedure NA 7.6, "Certificates on Conformance," is the final step in the process for verifying that environmental qualification was completed.

#### Acceptance based on Software Validation in the Integrated System

The inspectors reviewed ITAAC completion documentation associated with ITAAC 2.5.02.13 (part d), in regards to software validation in the integrated system. The inspectors reviewed the PCD, Software Program Manual (SPM), Common Q Platform Topical Report, Software Verification and Validation Plan (SVVP), System Test Plan (STP), and the independent verification and validation (IV&V) Testing Process to verify they met the requirements of ITAAC 2.5.2.13. The PCD defines the PMS software items as software related to the AC160 controller and the Flat Panel Display Personal Computer node box. The PCD also states that the integrated system validation includes the commercial off-the-shelf software used in the PMS. The SPM provided an overview of the PMS integrated system software validation process and listed IV&V tasks of the validation process. The details of this IV&V process were provided in SVVP. In addition, the inspectors reviewed the requirements of U.S. NRC RG 1.68, Institute of Electrical and Electronics Engineers (IEEE) Std. 1012, and ITAAC 2.5.2.13 to the SPM and SVVP to ensure consistency and validity.

The inspectors evaluated the SPM and SVVP and STP documents to verify that the integrated system validation process contained:

- the requirements that the fully integrated PMS system contain the actual system hardware and software
- the requirements that the PMS integrated system test are performed in an environment that is real, or as close to real as can reasonably be created;
- the test requirements to determine whether the system meets its functional requirements (i.e., functional operations, system level performance, external interfaces, internal interfaces, testability, and other requirements); and
- the requirements for the system integration test to provide cross-channel integrated systems testing for the PMS and to address the PMS requirements documented in the PMS functional and system design specifications.

In addition, the inspectors reviewed the IV&V Testing Process documents for Common Q Safety Systems, to assess the PMS system integration tests. Specifically, the inspectors observed that the PMS system integration tests would test the PMS integrated system functional requirements for:

- integration of all of the cabinets in the safety system;
- system-level functional and performance requirements requiring interaction from different divisions;
- communications between cabinets in different divisions;
- redundancy and fault tolerance incorporated in the systems design; and
- system time response.

b. Findings

No findings were identified.

1A05 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family: 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.a (760):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	A report exists which reconciles deviations during construction and concludes that the as-built containment internal structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

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

- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records

The inspectors observed in-process welding and quality control inspections for the Vogtle Unit 3 CA01-32 submodule. Specifically, the inspectors reviewed welding activities associated with the following weld seams between the pressurizer lower lateral support brackets and the north and west walls of the pressurizer compartment from elevation 107'-2" to 160'-0":

- CV5014-3;
- CV5014-1;
- CV5014-6;
- CV5014-8; and
- CV5014-10.

During the review of in-process welding, for the welds listed above, the inspectors verified that the following welding parameters were within the ranges allowed by the welding procedure specification (WPS): filler metal size and classification, voltage,

travel speed, wire feed speed, shielding gas composition, and shielding gas flow rate. The inspectors also observed the final UT examination of welds CV5014-1 and CV5014-3, to determine whether the examination was performed in accordance with the contractor's procedure and the American Welding Society (AWS) D1.6:1999 code.

The inspectors reviewed welding procedure specification number WPS 5-1.10HT03 revision 8 and supporting procedure qualification records (SP238 and SP242-1) to determine whether the procedure was qualified in accordance with AWS D1.1: 2000.

The inspectors observed the in-process PT examination of field weld number CV5015-3 (rework number RW1), which was associated with the Vogtle Unit 3 CA01-32 submodule, to determine whether the PT exam was performed in accordance with the AWS D1.6:1999 Code and MISTRAS procedure number 100-PT-304, "Liquid Penetrant Examination in Accordance with AWS Structural Welding Code," Rev. 6. The inspectors verified that the penetrant consumables were not expired and were the proper type specified by the procedure. The inspectors noted that this examination was performed in order to verify that the previously identified crack was completely removed. The inspectors also reviewed the in-process weld data sheet for this weld to determine whether the status of the weld was properly recorded and that the required hold point had been clearly established according to the quality control inspection plan number F-S561-004, Rev. 13 Change 1.

The inspectors observed the in-process fit-up and root pass welding of the following welds, which were also associated with the Vogtle Unit 3 pressurizer lower lateral support brackets:

- CV5014-11;
- CV5014-12;
- CV5014-13;
- CV5014-14;
- CV5014-15; and
- CV5014-16.

For the welds listed above, the inspectors observed the construction welding superintendent perform his visual inspection to verify that the root pass was acceptable. The NRC inspectors also performed an independent visual inspection of the root pass to verify it was free from cracks or other discontinuities.

b. Findings

No findings were identified.

1A06 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family: 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.a (760).

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

- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.06-Records

The inspectors reviewed welding activities associated with structural module welds on CA01 and CA05 to verify activities were in conformance with applicable Code requirements. Specifically, the inspectors reviewed applicable drawings, weld data records, WPSs, and supporting procedure qualification records (PQRs) associated with the weld seam between submodules CA01-08 and CA01-09 (the north wall of the east steam generator compartment), the four weld seams associated with CA01-19 (the submodule connecting the west steam generator compartment, reactor vessel cavity, and refueling cavity), and embed plates welded to the base of CA05.

The inspectors observed the erection, fit-up, and in-process welding of submodule CA01-08 to CA01-09 to verify it was conducted in accordance with the applicable work package, associated procedures and instructions were followed, and established hold points were appropriately signed off. The inspectors also witnessed the weld seam being preheated to verify the minimum temperature requirement was met and the temperature gage was properly calibrated. In addition, the inspectors reviewed a weld data sheet and welding material requisition from the associated work package to determine whether the correct WPS, base material, filler material, and joint type were selected.

As specified on the weld data sheets, the inspectors reviewed two WPSs to verify they were available, up to date, accurate, and in conformance with the requirements of AWS D1.1:2000. Specifically, the inspectors reviewed the WPSs and 11 supporting PQRs to verify the specific ranges of parameters indicated on the WPS were adequately qualified by the essential variables recorded on the PQRs, such as welding process and position, base material and filler metal, the use of backing, electrical source and transfer mode, shielding gas composition and flow rate, as well as welding parameters including amperage, voltage, and travel speed. The inspectors also reviewed the applicable testing demonstrated on the PQRs to verify the test specimen received acceptable results for visual inspection, radiographic testing, tensile testing, and bend testing.

Similarly, for the weld seams associated with CA01-19, the inspectors reviewed eight weld data sheets, 13 WPSs, and 29 supporting PQRs, to verify the weld records met the requirements of AWS D1.1:2000 and AWS D1.6:1999 for welding of carbon steel and duplex stainless steel respectively. The inspectors also reviewed four associated Westinghouse specifications and two engineering and design coordination reports (E&DCRs) to verify they were in accordance with applicable codes and regulations.

The inspectors also reviewed four weld data sheets, three WMRs, three WPSs, and six supporting PQRs associated with embed plates welded to the base of CA05 to verify the weld records met the requirements of AWS D1.1:2000. The inspectors observed in-process welding and verified that the welding parameters were within the ranges allowed

by the WPS, such as position, groove type, voltage, amperage, and filler metal size and classification.

b. Findings

No findings were identified.

1A07 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family: 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.a (760).

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

- 65001.01-02.01 - Procedures
- 65001.01-02.05 - Steel Structures
- 65001.F-02.03-Observation of Fabrication Activities
- 65001.B-02.01-Program and Procedures Review
- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.04-Production Controls

The inspectors observed in-process welding associated with assembly of containment internal structures module CA-01 to verify that welding was performed in accordance with the WPS and applicable AWS code requirements. Specifically, the inspectors observed welding of the exterior seam joining sub-modules CA01-27 and CA01-28 which form part of the south wall of the west steam generator compartment. The inspectors verified that the weld area was clean and free from adverse contaminants and that welding variables such as amperes, volts, wire feed speed, travel speed, transfer method, and progression were within the limits of the WPS. Additionally the inspectors reviewed the welding procedure specification and the associated procedure qualification records to verify that the WPS was written and qualified in accordance with the AWS code.

b. Findings

No findings were identified.

1A08 (Unit 3) ITAAC Number 3.3.00.02a.i.a (760) / Family: 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.a (760).

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

- 65001.01-02.05 - Steel Structures
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.03-Observation of Fabrication Activities
- 65001.F-02.04-General QA Review
- 65001.B-02.01-Program and Procedures Review
- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors observed on-going welding activities associated with assembly of structural module CA01 to verify activities were in conformance with applicable code requirements and design specifications. Specifically, the inspectors reviewed weld data records, WPSs, and supporting PQRs for the following welds:

- vertical seam weld joining CA01-17 to CA01-18 which form part of the west reactor vessel cavity wall;
- vertical seam weld joining CA01-18 to CA01-19 which form part of the west reactor vessel cavity wall;
- vertical seam weld joining CA01-02 to CA01-03 which form part of the east refueling cavity wall; and
- vertical seam weld joining CA01-06 to CA01-07 which form part of the south wall of the east steam generator compartment.

The inspectors observed machine welding of carbon steel groove butt joint weld no. CV4263 FW-2 between submodules CA01-18 and CA01-19 to verify activities were being conducted in accordance with applicable specifications. In addition, the inspectors reviewed welding operator qualification records and Lincoln-Electric® welding equipment no. 5 manufacture calibration records to verify they were up to date and in conformance with maintenance requirements.

The inspectors observed liquid PT of welds CV4165 L12-1 and CV4165 L12-2 between submodule sections CA01-17 and CA01-18 to verify that the welds met the requirements of the AWS D1.1:2000, Structural Welding Code – Steel. The inspectors also reviewed the quality assurance inspector's annual visual acuity and color contrast eye examinations and Level II PT certification to determine whether the inspector's certification met AWS D1.1 requirements. The inspectors also reviewed UT phased-array testing reports associated with weld nos. CV3195 L03-2, RW-3, CV3195 L03-2, RW-4, CV3195 L03-1, RW-3, and CV3195 FW02-1 located between sub-modules CA01-02 and CA01-03 to determine whether the welds met the acceptance criteria of AWS D1.1.

The inspectors observed in-process repairs for a cracked tack-weld located between submodules CA01-06 and CA01-07 and reviewed Condition Report No. 10035194 to determine if the licensee's actions were in compliance with the quality assurance program.

In addition, the inspectors reviewed several WPSs and a total of 12 supporting PQRs to verify the specific ranges of parameters indicated on the WPS were adequately qualified by the essential variables recorded on the PQRs, such as welding process and position, base material and filler metal, the use of backing, electrical source and transfer mode, shielding gas composition and flow rate, as well as welding parameters including amperage, voltage, and travel speed.

The inspectors also reviewed field issue/control room storage conditions of weld filler metal and certified material test reports to verify that mechanical properties and chemical analysis of weld filler metals were in accordance with the requirements of AWS D1.1. In addition, the inspectors reviewed a total of 6 welder/operator qualification records, to determine if they were up to date, visited on-site welder qualification facilities, and observed in-process weld bend specimen testing to determine if the performance qualification of welding personnel was in accordance with AWS D1.1.

The inspectors also reviewed documentation associated with tack-welds located between submodules CA03-08 and CA03-09 for the In-Containment Refueling Water Storage Tank. The inspectors reviewed weld traveler documents, drawings, visited submodule storage, and examined submodule panel fit-up conditions.

Additionally, the inspectors reviewed a sample of design output documents and E&DCRs associated with structural modules to verify that American Institute of Steel Construction (AISC) N690, AWS D1.1, AWS D1.6, and UFSAR welding requirements were being adequately implemented. The inspectors also reviewed a sample of nonconformance and disposition reports (N&Ds) associated with structural modules to verify that nonconforming conditions were being appropriately identified, evaluated, and dispositioned according to approved procedures and processes.

b. Findings

No findings were identified.

1A09 (Unit 3) ITAAC Number 3.3.00.02a.i.b (761) / Family: 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.b (761):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	A report exists which reconciles deviations during construction and concludes that the as-built shield building structures, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

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

- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 65001.02-02.02 - Laboratory Testing
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed a field inspection of construction activities associated with shield building sub-modules for Vogtle Unit 3 site. The inspectors conducted field measurements, reviewed documents, and interviewed licensee personnel to assess the implementation of the portion of the quality assurance (QA) program specific to design and fabrication activities. The inspectors reviewed various documents, such as design drawings, non-conformance and deviation reports, specifications and receipt inspection documents, to verify:

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



- if the as-built configuration was in accordance with the final design of the facility and met the associated ITAAC.

The inspectors performed independent measurements on the following samples of steel concrete composite structural sub-modules for the proposed Unit 3 shield building:

- reinforced concrete to steel concrete composite connection sub-modules 01N, 01K, and 01L at elevation (el.) 100'
- steel concrete composite sub-modules 04G and 04K at el. 123'-6"
- steel concrete composite sub-module 06K at el. 139'-6"

Specifically, the inspectors measured the following sub-module components: headed stud spacing and dimensions; module plate thickness; gusset plate dimensions and locations; and tie-bar spacing and dimensions. The inspectors also observed reinforcing steel placement, general module assembly, and welds.

The inspectors reviewed various documents, such as sub-module design drawings and specifications, to verify:

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

b. Findings

No findings were identified.

1A10 (Unit 3) ITAAC Number 3.3.00.02a.i.b (761) / Family: 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.b (761).

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

- 65001.01 – Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 – Procedures
- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 65001.01-02.07 – Identification and Resolution of Problems
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements

- 65001.F-02.02-Fabrication Records Review
- 65001.B-02.01-Program and Procedures Review
- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.B-02.04-Production Controls
- 65001.B-02.05-Inspection
- 65001.B-02.06-Records
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed records and observed as-built conditions associated with assembly of shield building structural modules. The inspectors reviewed weld data records of the following welds:

- vertical seam weld CV7487-3-JK-I at radius 69'-6" joining SC cylindrical wall panels 03J and 03K which are located in the north-west quadrant of the shield building from elevation 113'-6" to 123'-6"; and
- vertical seam welds CV7190-6-I and CV7190-6-O at radius 69'-6" joining reinforced concrete/steel composite connection panels 01M and 01N which are located in the north-west quadrant of the shield building from elevation 100'-0" to 103'-6".

The inspectors reviewed radiography examination reports of the welds listed above to verify the welds met the acceptance criteria of AISC N690 and AWS D1.1. In addition, the inspectors reviewed associated weld travelers and welder/operator qualification records, to verify they were current and the welder was qualified for the welding position required by the WPS. The inspectors also reviewed WPSs and supporting PQRs to verify the specific requirements and parameters indicated on the WPS were properly qualified on the respective PQRs.

Additionally, the inspectors reviewed a sample of design output documents and E&DCRs associated with shield building structural modules to verify that AISC N690, AWS D1.1 and UFSAR welding requirements were being adequately implemented. The inspectors also reviewed a sample of N&Ds associated with shield building structural modules to verify that nonconforming conditions were being appropriately identified and evaluated in accordance with approved procedures and processes.

b. Findings

No findings were identified.

1A11 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family: 01F

a. Inspection Scope

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

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	A report exists which reconciles deviations during construction and concludes that the as-built structures in the non-radiologically controlled area of the auxiliary building, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 - Procedures
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.02 - Laboratory Testing
- 65001.02-02.03 - Special Considerations
- 65001.02-02.06 - Record Review
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed direct inspection of construction activities associated with the non-radiologically controlled area of the Auxiliary Building for Vogtle Unit 3. Specifically, the inspectors observed construction activities associated with the exterior wall along column line I between column lines 7.3 and 10 from elevation 82'-6" to 100'-0".

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

- met the requirements specified in the QA program and the UFSAR, including the reconciliation of construction deviations in critical dimensions and tolerances;
- correctly translated requirements from applicable codes and standards;
- described work controls, approved work processes, and inspection requirements;
- included appropriate quantitative and/or qualitative acceptance criteria for determining that the prescribed activities were accomplished satisfactorily;

- clearly prescribed acceptable methods of quality control inspection to ensure that the as-built condition met specified design requirements, drawings and material specifications;
- required measuring and test equipment to be calibrated and maintained in accordance with approved calibration procedures and vendor requirements; and
- provided qualification requirements for craft and quality control inspection personnel performing installation and testing activities.

The inspectors observed concrete pre-placement activities to determine whether pre-placement planning and training had been completed, including appropriate considerations for cold weather and mass concrete, and the pre-placement inspection was performed by quality control personnel before any concrete was placed. Prior to concrete placement, the inspectors independently evaluated whether preparation and cleanliness of the formwork had been completed. The inspectors observed concrete placement activities and reviewed a sample of in-process work packages to determine whether:

- the latest approved procedures, drawings, and other work instructions were available at the installation area and were followed throughout the concrete placement;
- the equipment used was suitable and sized for the work;
- each batch ticket was reviewed for verification of proper mix, transport time, placement location, and amount of temper water being added at the truck delivery point;
- mixing time and rotations were adequate, including after any additions were made;
- placement drop distances did not exceed specification requirements and did not result in segregation;
- vibrators were approved and calibrated;
- vibrators were handled and operated to ensure adequate consolidation and avoid voiding or honeycombing, including vertical operation and penetration through the new concrete into the previously placed layer;
- concrete was placed in lifts in accordance with the concrete placement plan;
- concrete was maintained within acceptable temperature ranges during the placement;
- inspection during placement was performed as required; and
- records were produced, reviewed, and indicate mix, location, time placed, water additions, temperature of the concrete mix, and ambient conditions.

During the placement, the inspectors observed in-process concrete testing to determine whether:

- concrete temperature, slump, air content, and unit weight were determined at the proper location and frequency as required by procedures, specifications, and American Society for Testing and Materials (ASTM) standards;
- sample collection and testing techniques conformed to the procedures, specifications, and ASTM standards;
- concrete strength test sample cylinders were made at the required location and frequency and were cured in accordance with specified requirements; and
- personnel performing sampling and testing were trained and qualified.

The inspectors observed laboratory testing activities for concrete cylinder compression breaks to determine whether:

- testing conformed to the test procedures and ASTM standards;
- materials and concrete being tested was controlled as required;
- the test procedures were available at the work location;
- testing was performed at required intervals and times;
- testing apparatus were calibrated and maintained; and
- personnel running the tests were qualified and knowledgeable.

The inspectors reviewed test results to determine whether:

- records were complete, accurate, and approved as required;
- test results were reviewed and evaluated against appropriate acceptance criteria;
- the records were retrievable; and
- any adverse trends or problems were identified at an appropriate threshold and documented in accordance with the approved into the corrective action program.

The NRC inspectors reviewed training and qualification records for the contractor personnel performing the laboratory testing activities to determine whether the work was performed by qualified individuals.

The inspectors observed curing activities to determine whether curing was in accordance with specifications and procedures with regard to the method, materials, duration, temperature, inspections, and records. The inspectors reviewed the final inspection results after form removal, test results, and other information related to the placement to determine whether the placement was subjected to an integrated review before acceptance, that the as-built documentation was complete, and that these activities were controlled and accomplished in accordance with the quality assurance program.

The inspectors interviewed licensee and contractor personnel to determine whether:

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

The inspectors reviewed a sample of in-process work packages and installation records in the field to determine whether:

- the records were reviewed and approved by the responsible organization;
- the recorded information was complete, accurate, and met the licensing basis and ITAAC requirements, and conformed to applicable specifications; and

- were correctly stored and maintained in such a manner as to demonstrate conformance with procedure requirements.

The inspectors reviewed a sample of nonconformances to verify:

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

b. Findings

No findings were identified.

1A12 (Unit 3) ITAAC Number 3.3.00.02a.i.c (762) / Family: 01F

a. Inspection Scope

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

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.F-02.01-Design Document Review
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed direct inspection of construction activities associated with the non-radiologically controlled area of the auxiliary building for Vogtle Unit 3. Specifically, the inspectors observed construction activities associated with the floor section between column lines L, M, 8, and 11 at elevation 82'-6".

The inspectors reviewed a sample of design calculations, drawings included in the work packages, and specifications to determine whether:

- design inputs were correctly identified and documented, and that their selection was reviewed and approved by the responsible engineering group;
- design outputs were translated into drawings;
- the documents adequately defined the final design and arrangement of these SSCs;

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

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

- met the requirements specified in the QA program and the UFSAR, including the reconciliation of construction deviations in critical dimensions and tolerances;
- correctly translated requirements from applicable codes and standards;
- described work controls, approved work processes, and inspection requirements;
- included appropriate quantitative and/or qualitative acceptance criteria for determining that the prescribed activities were accomplished satisfactorily;
- clearly prescribed acceptable methods of quality control inspection to ensure that the as-built condition met specified design requirements, drawings and material specifications;
- required measuring and test equipment to be calibrated and maintained in accordance with approved calibration procedures and vendor requirements; and
- provided qualification requirements for craft and quality control inspection personnel performing installation and testing activities.

The inspectors observed a sample of installation activities associated with metal decking, embedments, and steel reinforcement, including horizontal reinforcing steel bars, shear reinforcement, and bar splices, to determine whether:

- the installation activities met applicable quality and technical requirements established by approved procedures, specifications, and drawings included in the work packages;
- piping, penetrations, reinforcing steel and embedments were located properly in the structure and had proper clearances;
- reinforcing steel, metal decking, and embedments were secured and free of concrete or excessive rust; and
- the concrete placement area and forms were leak tight and free from debris or excess water.

The inspectors performed independent inspection and measurements to determine whether the steel reinforcement, metal decking, and embedments conformed to the design specifications. The inspectors observed concrete pre-placement activities to determine whether pre-placement planning and training had been completed and the pre-placement inspection was performed by quality control (QC) before any concrete was placed. Prior to concrete placement, the inspectors independently evaluated whether the reinforcing steel met drawings and specifications included in the work packages, deviations were adequately captured and addressed, and preparation and cleanliness of the formwork had been completed.

The inspectors reviewed a sample of in-process work packages for reinforcing steel, embedments, and penetrations to determine whether:

- the latest approved procedures, drawings, and other work instructions were available at the installation area;
- the installation and inspection sequences were maintained;
- the licensee had verified that the items to be installed met specified requirements;
- the items being installed were not damaged prior to installation;
- materials, tools, and other equipment being used were qualified and approved in accordance with site procedures;
- nonconforming items were clearly identified, segregated if possible, and dispositioned;
- inspection and test reports were current, accurate, and complete; and
- design changes, field modifications, and nonconformances associated with the work observed were properly controlled and processed in accordance with the approved QA program.

The inspectors interviewed licensee and contractor personnel to determine whether:

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

The inspectors reviewed a sample of nonconformances to verify:

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

b. Findings

No findings were identified.

1A13 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family: 01F

a. Inspection Scope

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



Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis loads.	A report exists which reconciles deviations during construction and concludes that the as-built structures in the radiologically controlled area of the auxiliary building, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions.

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

- 65001.F-02.02-Fabrication Records Review
- 65001.B-02.05-Inspection
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed an independent visual inspection of a sample of overlay plates (OLPs) that were receipt inspected by CB&I and approved for installation in the Vogtle Unit 3 CA20 module, specifically column line L-2 from column line 2 to 4 from elevation 66'-6" to 135'-3". The inspectors observed the welds between the mechanical rebar coupler and the OLP base plate to determine whether the final welds were of the proper size and met the visual inspection acceptance criteria for carbon steel welds in AWS D1.1:2000, Table 6.1, "Visual Inspection Acceptance Criteria." Specifically, the inspectors observed the coupler welds on plates E356 and E357 (tag number SV3-APP12169-SS-N953) to determine whether they were in conformance with the following:

- SV3-CA20-S4-361, "Auxiliary Building Areas 5 & 6 CA20 Module Outfitting: Embed Plates Wall L2 East Face," Rev. 0;
- SV3-CA20-S4-382, "Auxiliary Building Areas 5 & 6 CA20 Module Outfitting: Embed Plates Non Standard Type (Carbon Steel) - Sheet 2," Rev. 0;
- AISC N-690, "Specification for the Design, Fabrication and Erection of Safety Related Structures for Nuclear Power Facilities," 1994 edition; and
- AWS D1.1:2000 Structural Welding Code - Steel;

The inspectors reviewed the manufacturer's certificate of conformance, and manufacturing records for the aforementioned welds as well as the related source and receipt inspection reports.

b. Findings

Introduction

The inspectors identified an ITAAC finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment, and Services," for the licensee's failure, through their contractor Chicago Bridge and Iron (CB&I), to perform adequate inspections of safety-related overlay plates at supplier facilities and failure to perform adequate examinations of overlay plates upon delivery, to assure the plates conformed to the procurement documents.

### Description

On October 22, 2014, during the inspection of a sample of seismic category I OLPs that were staged for installation in the Vogtle Unit 3 CA20 module, the NRC inspectors identified two OLPs (plate numbers E356 and E357) that contained deficient welds between the base plate and mechanical rebar couplers. Specifically, the NRC inspectors identified that the coupler to base plate partial joint penetration welds did not meet the requirements of AWS D1.1:2000, Table 6.1, "Visual Inspection Acceptance Criteria." Despite these plates having been through the CB&I Power source and receipt inspection process, they were confirmed to be nonconforming when reinspected by CB&I Power QC as a follow-up to the NRC's questions. Un-Sat inspection report number S561-004-14-0481 was generated to document the issue and re-work plates E356 and E357, and CB&I CAR 2014-2540 was initiated to document the failure of CB&I Power to identify these nonconforming welds during the source and receipt inspection process.

During the rework of the aforementioned plates, CB&I discovered that a significant amount of slag was contained in the welds for 15 of the 16 couplers welded to E357 and 4 out of the 10 couplers welded to E356. N&D SV3-CA20-GNR-000506 was initiated and an extent of condition was performed. The extent of condition investigation involved the visual re-inspection of all the OLPs procured from the supplier, SMCI, which had not yet been installed in the CA20 structural module. In addition to E356 and E357, 18 OLPs were found to be nonconforming. The licensee and their contractor, CB&I, decided to remove all of the already-installed OLPs procured from SMCI so that the coupler to base plate welds could be re-inspected. This re-inspection identified an additional 81 OLPs that failed to meet the AWS D1.1:2000 visual weld acceptance criteria. Therefore, as of March 19, 2015, a total of 101 nonconforming OLPs have been identified and an additional 91 plates pending re-inspection.

As part of the evaluation for the technical significance of the nonconforming welds, CB&I destructively (tensile) tested a sample of the visually unacceptable welds to determine whether the coupler welds would have been able to meet the minimum strength requirements assumed in the design. The results of this tensile testing revealed that all of the welds that failed the visual inspection, would have met the minimum strength requirements assumed in the design. The licensee installed new OLPs.

### Analysis

The inspectors determined that the licensee's failure to perform adequate inspections of safety-related overlay plates at supplier facilities and failure to perform adequate examinations of overlay plates upon delivery was contrary to the requirements of 10 CFR Part 50, Appendix B, Criterion VII, and was a performance deficiency.

The inspectors determined that the issue was more than minor because it was associated with the process and material control attributes of the Procurement / Fabrication Cornerstone and adversely affected the cornerstone objective of ensuring that the licensee's programs and processes were adequately developed and implemented for procurement and fabrication activities.

Furthermore, the inspectors determined the finding represented an ITAAC finding because it was material to the acceptance criteria of Vogtle Unit 3 ITAAC 763, in that, if left uncorrected, the licensee could not show that the acceptance criteria of this ITAAC was met. The acceptance criteria of Vogtle Unit 3 ITAAC 763 requires that all deviations between the as-built structures in the radiologically controlled areas of the auxiliary building and the approved design be reconciled (evaluated) such that the as-built structure would withstand the design basis loads without a loss of structural integrity or other safety-related functions. The inspectors determined that the failure of these overlay plates to meet AWS D1.1:2000 welding requirements represented a nonconformance with the approved structural design, which if left uncorrected, represented a deviation from the design that would not have been reconciled by the licensee.

The inspectors concluded this finding was associated with the Procurement / Fabrication Cornerstone. The inspectors utilized IMC 2519, "Construction Significance Determination Process," to evaluate the finding and determined that the finding was of very low safety significance (Green). The inspectors determined that the finding was mainly associated with auxiliary building structure (intermediate risk), and that the licensee demonstrated, with reasonable assurance by tensile testing a sample of nonconforming welds, that the design function of the applicable structure or system would not have been impaired by the deficiency.

The inspectors screened the finding for a possible construction cross-cutting aspect in accordance with Appendix F, "Construction Cross-Cutting Components and Aspects" of IMC 0613. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution (Resolution) because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee failed to take effective corrective actions for previously identified deficiencies with the source and receipt inspection process. [P.3]

### Enforcement

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

Attachment 1, "Document List of Purchase Order Revision Number 132175-D100.CA007," Rev. 5, required CB&I's vendor to provide CA20 embed overlay plates in accordance with SV3-CA20-S4-382, "Auxiliary Building Areas 5 & 6 CA20 Module Outfitting: Embed Plates Non Standard Type (Carbon Steel) - Sheet 2," Rev. 0. SV3-CA20-S4-382 requires that the fabrication of overlay plates E356 and E357 comply with AISC N-690, "Specification for the Design, Fabrication and Erection of Safety Related

Structures for Nuclear Power Facilities," 1994 edition; and AWS D1.1, "Structural Welding Code - Steel," 2000 edition.

Contrary to the above, on October 22, 2014, the licensee, through its contractor CB&I, failed to perform adequate inspections of safety-related overlay plates at supplier facilities and failed to perform adequate examinations of overlay plates upon delivery, to assure that these overlay plates conformed to the procurement documents. Specifically, during source and receipt inspections, CB&I failed to identify that 93 overlay plates contained welds that failed to meet AISC N690-1994 and AWS D1.1:2000. Because this violation was of very low safety significance (Green) and was entered into the licensee's corrective action program as condition report number 899313 this violation is being treated as a non-cited violation (NCV 05200025/2015001-01, Failure to Identify Nonconforming Overlay Plates), consistent with Section 2.3 of the NRC Enforcement Policy and EGM 11-006.

The licensee's corrective actions included the removal of overlay plates supplied by the associated supplier, and installation of new overlay plates that were in conformance with the requirements stated above. Therefore, this issue no longer impacts the ITAAC acceptance criteria of ITAAC 763. This NCV is closed.

1A14 (Unit 3) ITAAC Number 3.3.00.02a.i.d (763) / Family: 01F

a. Inspection Scope

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

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 - Procedures
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.02 - Laboratory Testing
- 65001.02-02.03 - Special Considerations
- 65001.02-02.06 - Record Review
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed direct inspection of construction activities associated with the radiologically controlled area of the auxiliary building for Vogtle Unit 3. Specifically, the inspectors observed construction activities associated with the exterior wall along column line I between column lines 4 and 7.3 from elevation 82'-6" to 100'-0".

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

- met the requirements specified in the QA program and the UFSAR, including the reconciliation of construction deviations in critical dimensions and tolerances;
- translated requirements from applicable codes and standards;
- described work controls, approved work processes, and inspection requirements;
- included appropriate quantitative and/or qualitative acceptance criteria for determining that the prescribed activities were accomplished satisfactorily;
- clearly prescribed acceptable methods of quality control inspection to ensure that the as-built condition met specified design requirements, drawings and material specifications;
- required measuring and test equipment to be calibrated and maintained in accordance with approved calibration procedures and vendor requirements; and
- provided qualification requirements for craft and quality control inspection personnel performing installation and testing activities.

The inspectors observed concrete pre-placement activities to determine whether pre-placement planning and training had been completed, including appropriate considerations for cold weather and mass concrete, and the pre-placement inspection was performed by quality control personnel before any concrete was placed. Prior to concrete placement, the inspectors independently evaluated whether preparation and cleanliness of the formwork had been completed. The inspectors observed concrete placement activities and reviewed a sample of in-process work packages to determine whether:

- the latest approved procedures, drawings, and other work instructions were available at the installation area and were followed throughout the concrete placement;
- the equipment used was suitable and sized for the work;
- each batch ticket was reviewed for verification of proper mix, transport time, placement location, and amount of temper water being added at the truck delivery point;
- mixing time and rotations were adequate, including after any additions were made;
- placement drop distances did not exceed specification requirements and did not result in segregation;
- vibrators were approved and calibrated;
- vibrators were handled and operated to ensure adequate consolidation and avoid voiding or honeycombing, including vertical operation and penetration through the new concrete into the previously placed layer;
- concrete was placed in lifts in accordance with the concrete placement plan;
- concrete was maintained within acceptable temperature ranges during the placement;
- inspection during placement was performed as required; and
- records were produced, reviewed, and indicate mix, location, time placed, water additions, temperature of the concrete mix, and ambient conditions.

During the placement, the inspectors observed in-process concrete testing to determine whether:

- concrete temperature, slump, air content, and unit weight were determined at the proper location and frequency as required by procedures, specifications, and ASTM standards;
- sample collection and testing techniques conformed to the procedures, specifications, and ASTM standards;
- concrete strength test sample cylinders were made at the required location and frequency and were cured in accordance with specified requirements; and
- personnel performing sampling and testing were trained and qualified.

The inspectors observed laboratory testing activities for concrete cylinder compression breaks to determine whether:

- testing conformed to the test procedures and ASTM standards;
- materials and concrete being tested was controlled as required;
- the test procedures were available at the work location;
- testing was performed at required intervals and times;
- testing apparatus were calibrated and maintained; and
- personnel running the tests were qualified and knowledgeable.

The inspectors reviewed test results to determine whether:

- records were complete, accurate, and approved as required;
- test results were reviewed and evaluated against appropriate acceptance criteria;
- the records were retrievable; and
- any adverse trends or problems were identified at an appropriate threshold and documented in accordance with the approved into the corrective action program.

The NRC inspectors reviewed training and qualification records for the contractor personnel performing the laboratory testing activities to determine whether the work was performed by qualified individuals.

The inspectors observed curing activities to determine whether curing was in accordance with specifications and procedures with regard to the method, materials, duration, temperature, inspections, and records. The inspectors reviewed the final inspection results after form removal, test results, and other information related to the placement to determine whether the placement was subjected to an integrated review before acceptance, that the as-built documentation was complete, and that these activities were controlled and accomplished in accordance with the quality assurance program.

The inspectors interviewed licensee and contractor personnel to determine whether:

- contractors performing safety-related work followed approved implementing procedures that describe administrative and procedural controls, approved work processes, and inspection requirements;
- design processes were performed in compliance with applicable instructions and procedures;
- personnel conducting work and quality assurance roles were qualified and knowledgeable; and

- effective oversight in accordance with specifications and program requirements was implemented for the installation activities observed.

The inspectors reviewed a sample of in-process work packages and installation records in the field to determine whether:

- the records were reviewed and approved by the responsible organization;
- the recorded information was complete, accurate, and met the licensing basis and ITAAC requirements, and conformed to applicable specifications; and
- were correctly stored and maintained in such a manner as to demonstrate conformance with procedure requirements.

The inspectors reviewed a sample of nonconformances to verify:

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

b. Findings

No findings were identified.

1A15 (Unit 3) ITAAC Number 3.3.00.02a.ii.b (765) / Family: 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.b (765):

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.	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.

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

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

The inspectors performed independent measurements on a sample of sub-modules that comprise multiple shield building steel concrete composite wall sections. The sampled wall sections included:

- reinforced concrete to steel concrete composite connection sub-modules 01N, 01K, and 01L at elevation (el.) 100'
- steel concrete composite sub-modules 04G and 04K at el. 123'-6"
- steel concrete composite sub-module 06K at el. 139'-6"

The inspectors reviewed various documents for the selected modules, such as design drawings, and specifications, to verify the shape, size, dimensions, type, and grade of material conformed to the approved specifications and design drawings and fit-up tolerances for length, depth, and straightness of structural members were as specified. Documents reviewed are listed in the attachment.

b. Findings

No findings were identified.

1A16 (Unit 3) ITAAC Number 3.3.00.02a.ii.c (766) / Family: 01A

a. Inspection Scope

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

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.	A report exists that concludes that as-built concrete thicknesses of the non-radiologically controlled area of the auxiliary building sections conform to the building sections defined in Table 3.3-1.



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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed a field inspection of construction activities associated with ITAAC 3.3.00.02a.ii.c for the non-radiologically controlled sections of the auxiliary building walls from elevation 82'-6" to 100'.

The inspectors sampled two separate wall segments along column line I from column line 7.3 to column line 10 at elevation 100'. This field sampling was to verify that each section met the wall thickness requirements stated in Appendix C Table 3.3-1 of the Vogtle Unit 3 Combined License Document, and to provide reasonable assurance that the acceptance criteria of the ITAAC were met. This verification included an independent inspection to determine whether the as-built thickness conforms to the final design, and that the actual dimension was accurately documented in quality records. The inspectors verified that each as-built section met the wall thickness required in Table 3.3-1 by measuring already poured segments of the wall and concrete forms prior to placement.

b. Findings

No findings were identified.

1A17 (Unit 3) ITAAC Number 3.3.00.02a.ii.d (767) / Family: 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.d (767):

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.	A report exists that concludes that the as-built concrete thicknesses of the radiologically controlled area of the auxiliary building sections conform to the building sections defined in Table 3.3-1.

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed a field inspection of construction activities associated with ITAAC 3.3.00.02a.ii.d for the radiologically controlled sections of the auxiliary building walls from elevation 82'-6" to 100'. The inspectors sampled the following two wall segments at elevation 100':

- wall section along column line I from column line 1 to 2
- wall section along column line 1 from column line I to N

This field sampling was to verify that each section met the wall thickness requirements stated in Appendix C Table 3.3-1 of the Vogtle Unit 3 Combined License Document, and to provide reasonable assurance that the acceptance criteria of the ITAAC were met. This verification included an independent inspection to determine whether the as-built thickness conforms to the final design. The inspectors verified that each as-built section met the wall thickness required in Table 3.3-1 by measuring already poured segments of the wall and concrete forms prior to placement.

b. Findings

No findings were identified.

1A18 (Unit 3) ITAAC Number 3.3.00.02a.ii.d (767) / Family: 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.ii.d (767).

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.04 - Review As-built Deviations/Nonconformance
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed a field inspection of construction activities associated with ITAAC 3.3.00.02a.ii.d for the radiologically controlled sections of the auxiliary building walls from elevation 82'-6" to 100', including walls from CA-20. The inspectors sampled the following six CA-20 wall segments at elevation 135':

- wall section along column line 2 between column lines J-2 and K-2;

- wall section one along column line 3 between column lines J-2 and K-2;
- wall section one along column line K-2 between column lines 2 and 3;
- wall section along column line 2 between column lines L-2 and K-2;
- wall section along column line 2 between column lines L-2 and N; and
- wall section along column line L-2 between column lines 2 and 3.

This field sampling was to verify that each section met the wall thickness requirements stated in Appendix C Table 3.3-1 of the Vogtle Unit 3 Combined License Document, and to provide reasonable assurance that the acceptance criteria of the ITAAC were met. This verification included an independent inspection to determine whether the as-built thickness conforms to the final design, and that the actual dimension was accurately documented in quality records. The inspectors verified that each as-built section met the wall thickness required in Table 3.3-1 by measuring the plate separation of CA-20 module.

b. Findings

No findings were identified.

1A19 (Unit 3) ITAAC Number 3.3.00.03c (779) / Family: 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03c (779):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
Walls and floors of the nuclear island structures as defined on Table 3.3-1 except for designed openings or penetrations provide shielding during normal operations.	Inspection of the as-built nuclear island structures wall and floor thicknesses will be performed.	A report exists and concludes that the shield walls and floors of the non-radiologically controlled area of the auxiliary building as defined in Table 3.3-1 except for designed openings or penetrations are consistent with the concrete wall thicknesses provided in Table 3.3-1.

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed a field inspection of construction activities associated with ITAAC 3.3.00.03c for the non-radiologically controlled sections of the auxiliary building

walls from elevation 66'-6" to 82'-6". The inspectors sampled the following three radiation shielding wall segments from elevation 66'-6" to 82'-6":

- wall section along column line 7.3 between column line I and Shield Building;
- wall section along column line K between column line 11 and Shield Building; and
- wall section along column line L between column line 11 and Shield Building.

This field sampling was to verify that each section met the wall thickness requirements stated in Appendix C Table 3.3-1 of the Vogtle Unit 3 Combined License Document, and to provide reasonable assurance that the acceptance criteria of the ITAAC were met. This verification included an independent inspection to determine whether the as-built thickness conforms to the final design, and that the actual dimension was accurately documented in quality records. The inspectors verified that each as-built section met the wall thickness required in Table 3.3-1 by measuring already poured segments of the wall. The inspectors also verified adequate concrete density by reviewing concrete mix design calculations, fresh concrete testing reports taken at the time of placement, compressive strength testing reports, and hardened concrete testing reports.

b. Findings

No findings were identified.

1A20 (Unit 3) ITAAC Number 3.3.00.03d (780) / Family: 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.03d (780):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
Walls and floors of the nuclear island structures as defined on Table 3.3-1 except for designed openings or penetrations provide shielding during normal operations.	Inspection of the as-built nuclear island structures wall and floor thicknesses will be performed.	A report exists and concludes that the shield walls and floors of the radiologically controlled area of the auxiliary building as defined in Table 3.3-1 except for designed openings or penetrations are consistent with the concrete wall thicknesses provided in Table 3.3-1.

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.A.02.02 - Installation Records Review

- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed a field inspection of construction activities associated with ITAAC 3.3.00.03d for the radiologically controlled sections of the auxiliary building walls from elevation 66'-6" to 82'-6". The inspectors sampled the following three radiation shielding wall segments from elevation 66'-6" to 82'-6":

- wall section along column line 5 between column line I and Shield Building;
- wall section along column line J-2 between column line 4 and Shield Building; and
- wall section along column line J-1 between column line 4 and Shield Building

This field sampling was to verify that each section met the wall thickness requirements stated in Appendix C Table 3.3-1 of the Vogtle Unit 3 Combined License Document, and to provide reasonable assurance that the acceptance criteria of the ITAAC were met. This verification included an independent inspection to determine whether the as-built thickness conforms to the final design, and that the actual dimension was accurately documented in quality records. The inspectors verified that each as-built section met the wall thickness required in Table 3.3-1 by measuring already poured segments of the wall. The inspectors also verified adequate concrete density by reviewing concrete mix design calculations, fresh concrete testing reports taken at the time of placement, compressive strength testing reports, and hardened concrete testing reports.

b. Findings

No findings were identified.

1A21 (Unit 4) ITAAC Number 2.2.01.02a (91) / Family: 06F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.02a (91):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The components identified in Table 2.2.1-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements.	Inspection will be conducted of the as-built components as documented in the ASME design reports.	The ASME Code Section III design reports exist for the as-built components identified in Table 2.2.1-1 as ASME Code Section III.

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

- 65001.11-02.06 - PWR Containment Construction
- 65001.11-02.07 - Offsite Fabrication of Assemblies
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors reviewed records associated with a sample of plates and weld filler metal used to fabricate the middle ring of the containment vessel to verify that they met the requirements of the ASME code. Specifically the inspectors reviewed Certificates of Compliance and CMTRs for plates B4-E1, B4-E9, and B4-E10 and welds E9-E10, E5-E6, E1-E2, and D12-E1 to verify that they had been tested and met the physical and chemical requirements of the ASME Code.

b. Findings

No findings were identified.

1A22 (Unit 4) ITAAC Number 2.2.01.04a.ii (96) / Family: 06F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.04a.ii (96):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
The components identified in Table 2.2.1-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	Impact testing will be performed on the containment and pressure-retaining penetration materials in accordance with the ASME Code Section III, Subsection NE, to confirm the fracture toughness of the materials.	A report exists and concludes that the containment and pressure-retaining penetration materials conform with fracture toughness requirements of the ASME Code Section III.

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

- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.04-General QA Review

The inspectors reviewed CMTRs associated with a sample of plates and weld filler metal used to fabricate the middle ring of the containment vessel to verify that they met the requirements of the ASME code. Specifically the inspectors reviewed CMTRs for plates B4-E1, B4-E9, and B4-E10 and welds E9-E10, E5-E6, E1-E2, and D12-E1 to verify that they had been tested and met the impact testing requirements of the ASME Code.

b. Findings

No findings were identified.

1A23 (Unit 4) ITAAC Number 2.2.03.08c.vi.02 (190) / Family: 06A

a. Inspection Scope

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

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

- 65001.06 - Inspection of ITAAC-Related Installation of Mechanical Components
- 65001.06-02.01 - General Installation
- 65001.06-02.04 - Testing and Verification
- 65001.06-02.05 - Problem Identification and Resolution
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed direct inspection of onsite activities, reviewed calculations, and reviewed acceptance information associated with the accumulators for Vogtle Unit 4 to determine whether the volume of both accumulators met the minimum volume of 2000 ft<sup>3</sup> established in the Vogtle Unit 4 COL, Appendix C, Table 2.2.3-4, "Inspections, Tests, Analyses, and Acceptance Criteria."

The inspectors observed a Westinghouse subsidiary perform the volume verification of the accumulators to determine whether:

- the as-built tank volume and dimensions were in accordance with the final design, the ITAAC, and COL;
- the activities were conducted in accordance with the licensee's quality assurance program requirements;
- the correct, up-to-date work procedures were available and used;
- personnel using special tools or equipment to perform measurement activities were qualified and knowledgeable;
- appropriate measures were taken to prevent damage to the tanks during work;
- equipment was properly maintained and calibrated;
- equipment accuracy was within procedural specifications;
- field data was correctly recorded and translated into permanent records;
- hold points were observed as required; and
- any unsatisfactory test results and conditions adverse to quality were entered into the corrective action program.

The inspectors reviewed the results of the volumetric testing to determine whether:

- the testing was conducted in accordance with approved procedures;
- accuracy of the test equipment was documented and accounted for in the test results; and
- test results were complete, accurate, and documented that the as-built tank volume met the design specifications and acceptance criteria.

The inspectors reviewed the dimensions specified in the COL, Appendix C, 2.2.3-4 for the accumulator ITAAC. The inspectors assessed the method and controls used by the licensee to verify that the as-built dimensions conformed to the licensing basis to determine whether the methodology used was appropriate and would produce sufficient

records to document that completed work met the design specifications and acceptance criteria.

The inspectors reviewed a sample of nonconformances associated with the accumulators to verify:

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

b. Findings

No findings were identified.

1A24 (Unit 4) ITAAC Number 2.5.02.13 (552) / Family: 10F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.13 (552).

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

- 43004 - Inspection of Commercial-Grade Dedication Programs
- 43004-02.01 - Technical Evaluations
- 43004-02.02 - Controls for Acceptance of a Commercial Grade Item
- 43004-02.03 - Commercial Grade Dedication Plan
- 65001 - Inspections of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Related Work

ITAAC Acceptance Criteria Verification

The inspectors reviewed documents and records identified by the licensee to support closure of ITAAC 2.5.02.13 and reviewed the scope and results of previous NRC inspections (Inspection Report 99900404/2014-202 (ML14112A168)). The review was performed to verify that the inspected activities appropriately support ITAAC closure.

Specifically, the NRC inspection team reviewed the ITAAC PCD, APP-GW-GLR-616 "AP1000 Design Certification ITAAC 2.5.02.13: The Process used in the Commercial Grade Dedication of PMS Components" Technical Report, Revision 0, December 2014, and the associated implementing documents that were established for accomplishing the use of commercial grade computer hardware and software in the PMS. The purpose of the PCD was to provide a road map to the documentation that fulfilled the Inspection and Acceptance Criteria for the ITAAC and therefore confirmed that the Design Commitment was verified to be met.



The inspection included interviews with responsible licensee personnel and reviews of CDI, and other process control documents necessary for controlling use of commercial grade components in the PMS. The inspection included determining whether the applicable implementing documents established controls for:

- reviews of supplier design control, configuration management, problem reporting, and change control
- reviews of product performance
- receipt acceptance of the commercial grade items
- acceptance based on equipment qualification and software validation in the integrated system.

#### Commercial grade services

The inspectors performed reviews of ITAAC 2.5.02.13 (parts a, b, and, c) completion documentation associated with the use of commercial grade services. The inspectors reviewed the Westinghouse procedures and CDI which had been identified in the PCD as applicable to the use of "build-to-print" fabrication services. The inspection scope also included a review of commercial controls that had not been identified in the PCD. Specifically, procurement specifications issued for "build-to-print" fabrication services were reviewed in order to verify the applicable attributes of ITAAC 2.5.02.13 were addressed. The review of the process for use of commercial grade fabrication services included a determination whether the guidance for conduct of commercial grade surveys and dedications of fabricated commercial grade items were accomplished in accordance with applicable regulations contained in 10 CFR Part 50 Appendix B and 10 CFR Part 21.

#### AC160 Nuclear Critical Components

The inspectors performed reviews of ITAAC completion documentation associated with ITAAC 2.5.02.13 (parts a, b, and, c) in regards to the use of the AC160 Components. The AC160 Controller assemblies consist of processors, communications and input/output modules which are used to perform safety related tasks for the PMS. The AC160 hardware is a product line purchased from ABB as a commercial grade product. As it relates to the use of commercial grade components in the PMS, the inspectors reviewed the Westinghouse procedures and CDI, which had been identified in the PCD as applicable to the AC160 Nuclear Critical Components. Specifically, the AC160 hardware procurement specification was reviewed in order to verify the applicable attributes of ITAAC 2.5.02.13 were addressed. Commercial grade surveys, test reports and inspection procedures were reviewed to ensure that the governing procedures prescribed a process that would be acceptable to meet the requirements for the use of commercially acquired AC160 hardware and was accomplished in accordance with applicable regulations contained in 10 CFR Part 50 Appendix B and 10 CFR Part 21.

#### Acceptance based on Equipment Qualification

The inspectors reviewed ITAAC 2.5.02.13 (part d) completion documentation to verify that the use of commercial grade computer hardware and software items in the PMS was accomplished through a process that specified requirements for acceptance based

on EQ. The inspectors reviewed the PCD, which states in part, that EQ verification is accomplished using design reviews, alternate calculations, or qualification tests as described in Westinghouse procedures. The inspectors noted that the PCD cited Westinghouse procedures, NA 7.4, NA 7.6, NA 4.38, WEC 3.3.3, WEC 7.2, and CDI-2625 as the road map and processes used to complete the ITAAC commitment for acceptance based on equipment qualification. As it relates to the use of acceptance based on EQ in the PMS, the inspectors reviewed the Westinghouse procedures and CDI-2625. The inspectors noted that procedure NA 7.6, "Certificates on Conformance," is the final step in the process for verifying that environmental qualification was completed.

#### Acceptance based on Software Validation in the integrated System

The inspectors reviewed ITAAC completion documentation associated with ITAAC 2.5.02.13 (part d), in regards to software validation in the integrated system. The inspectors reviewed the PCD, SPM, Common Q Platform Topical Report, SVVP, STP, and the IV&V Testing Process to verify they met the requirements of ITAAC 2.5.2.13. The PCD defines the PMS software items as software related to the AC160 controller and the Flat Panel Display Personal Computer node box. The PCD also states that the integrated system validation includes the commercial off-the-shelf software used in the PMS. The SPM provided an overview of the PMS integrated system software validation process and listed IV&V tasks of the validation process. The details of this IV&V process were provided in SVVP. In addition, the inspectors reviewed the requirements of U.S. NRC RG 1.68, IEEE Std. 1012, and ITAAC 2.5.2.13 to the SPM and SVVP to ensure consistency and validity.

The inspectors evaluated the SPM and SVVP and STP documents to verify that the integrated system validation process contained:

- the requirements that the fully integrated PMS system contain the actual system hardware and software
- the requirements that the PMS integrated system test are performed in an environment that is real, or as close to real as can reasonably be created;
- the test requirements to determine whether the system meets its functional requirements (i.e., functional operations, system level performance, external interfaces, internal interfaces, testability, and other requirements); and
- the requirements for the system integration test to provide cross-channel integrated systems testing for the PMS and to address the PMS requirements documented in the PMS functional and system design specifications.

In addition, the inspectors reviewed the IV&V Testing Process documents for Common Q Safety Systems, to assess the PMS system integration tests. Specifically, the inspectors observed that the PMS system integration tests would test the PMS integrated system functional requirements for:

- integration of all of the cabinets in the safety system;
- system-level functional and performance requirements requiring interaction from different divisions;
- communications between cabinets in different divisions;

- redundancy and fault tolerance incorporated in the systems design; and
- system time response.

b. Findings

No findings were identified.

1A25 (Unit 4) ITAAC Number 3.3.00.02a.i.c (762) / Family: 01F

a. Inspection Scope

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

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

- 65001.01-02.01 - Procedures
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.06 - Record Review
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review
- 65001.F-02.03-Observation of Fabrication Activities
- 65001.F-02.04-General QA Review

The inspectors performed a field inspection of construction activities associated with ITAAC 3.3.00.02a.i.c for the non-radiological controlled sections of the auxiliary building walls from elevation 82'-6" to 100'. The inspectors sampled the following two wall segments at elevation 100':

- wall section along column line I from about 10 to 11
- wall section along column line 11 between column lines I and L.

The inspectors observed concrete pre-placement activities, interviewed licensee personnel to verify that construction activities were conducted in accordance with NRC and license requirements. In addition, the inspectors reviewed applicable design documents, drawings, procedures and specifications to verify:

- structural concrete work, design and installation was completed in accordance with applicable specifications, drawings, approved procedures and qualified personnel;
- key building critical dimensions, materials, and separation satisfied design specifications, requirements, and relevant ITAAC;
- licensee records establish an adequate basis for the acceptance of ITAAC with design and fabrication attributes; and
- records reflect that completed work meets design specifications and acceptance criteria.

The inspectors performed independent measurements and observations on the installation of reinforcing steel bars for the sampled auxiliary building walls. Specifically, the inspectors observed as-built reinforcing steel configuration and reviewed records within the work packages and design control documents for the reinforcing steel, to verify:

- reinforcing steel was controlled and placement performed in accordance with the applicable specifications, codes, drawings, and procedures;
- analyses, calculations, bounding condition checks, functional assessments, engineering evaluations and other design reports, were consistent with the safety significance and inspection resources, so that reinforcing steel placement conforms to design drawings, all nonconforming conditions were appropriately resolved;
- the licensee had established an effective method for tracking, evaluating, and dispositioning changes or modifications to the design;
- contractors had approved implementing procedures;
- reinforcing steel was properly located in the structure, secured, free of concrete or excessive rust, and had proper clearances;
- procedures clearly prescribed acceptable methods of quality control inspection and include appropriate acceptance criteria; and
- licensee had confirmed reinforcing steel conforms to design drawings and there were no deviations from design.

In addition, inspectors reviewed applicable design specifications, E&DCRs, non-conformance reports and corrective action reports associated with the non-radiological auxiliary building walls and reinforcing steel to determine whether:

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

b. Findings

No findings were identified.

1A26 (Unit 4) ITAAC Number 3.3.00.02a.i.c (762) / Family: 01F

a. Inspection Scope

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

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem

- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.02-02.07 - Problem Identification and Resolution
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed direct inspection of construction activities associated with the non-radiologically controlled area of the Auxiliary Building for Vogtle Unit 4. Specifically, the inspectors observed construction activities associated with wall sections along column line 11 between column lines I and Q, including adjoining wall connections, from elevation 82'-6" to 100'-0".

The inspectors observed installation activities associated with formwork, embedments, and steel reinforcement, including horizontal and vertical reinforcing steel bars, shear reinforcement, wall dowel bars extending above 100'-0", steel reinforcement extending into adjoining walls, and bar splices, to determine whether:

- the installation activities met applicable quality and technical requirements established by approved procedures, specifications, and drawings included in the work packages;
- piping, penetrations, reinforcing steel, and embedments were located properly in the structure, were sized as specified in drawings and calculations, and had proper clearances;
- reinforcing steel and embedments were secured and free of concrete or excessive rust; and
- forms were secure, leak tight, and free from debris or excess water.

The inspectors observed concrete pre-placement activities to determine whether pre-placement planning and training had been completed and the pre-placement inspection was performed by QC before any concrete was placed. Prior to concrete placement, the inspectors independently evaluated whether the steel reinforcement, embedments, and formwork conformed to the design specifications and drawings included in the work packages, all deviations were adequately captured and addressed, and preparation and cleanliness of the formwork had been completed.

The inspectors reviewed a sample of in-process work packages for reinforcing steel, formwork, and concrete placement to determine whether:

- the latest approved procedures, drawings, and other work instructions were available at the installation area;
- the installation, inspection, and testing sequences were maintained;
- the licensee had verified that the items to be installed met specified requirements;
- the items being installed were not damaged prior to installation;
- materials, tools, and other equipment being used were qualified and approved in accordance with site procedures;
- nonconforming items were clearly identified, segregated if possible, and dispositioned;
- inspection and test reports were current, accurate, and complete; and

- design changes, field modifications, and nonconformances associated with the work observed were properly controlled and processed in accordance with the approved QA program.

The inspectors interviewed licensee and contractor personnel to determine whether:

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

The inspectors reviewed a sample of nonconformances to verify:

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

b. Findings

No findings were identified.

1A27 (Unit 4) ITAAC Number 3.3.00.02a.ii.c (766) / Family: 01A

a. Inspection Scope

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

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed a field inspection of construction activities associated with ITAAC 3.3.00.02a.ii.c for the non-radiologically controlled sections of the auxiliary

building walls from elevation 82'-6" to 100'. The inspectors sampled the following two wall segments at elevation 100':

- wall section along column line I from about 10 to 11
- wall section along column line 11 between column lines I and L.

This field sampling was to verify that each section met the wall thickness requirements stated in Appendix C Table 3.3-1 of the Vogtle Unit 4 Combined License Document, and to provide reasonable assurance that the acceptance criteria of the ITAAC were met. This verification included an independent inspection to determine whether the as-built thickness conforms to the final design, and that the actual dimension was accurately documented in quality records. The inspectors verified that each as-built section met the wall thickness required in Table 3.3-1 by measuring already poured segments of the wall and concrete forms prior to placement.

b. Findings

No findings were identified.

1A28 (Unit 4) ITAAC Number 3.3.00.02a.ii.c (766) / Family: 01A

a. Inspection Scope

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

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed direct inspection of construction activities associated with the non-radiologically controlled area of the Auxiliary Building for Vogtle Unit 4. Specifically, the inspectors observed construction activities associated with wall sections along column line 11 between column lines I and Q, including adjoining wall connections, from elevation 82'-6" to 100'-0".

The inspectors reviewed the dimensions specified in the Vogtle Unit 4 COL, Appendix C, Table 3.3-1 for samples listed above. The inspectors assessed the method and controls used by the licensee to verify that the as-built dimensions conformed to the licensing basis in order to determine whether the methodology used was appropriate and would produce sufficient records to document that completed work met the design specifications and acceptance criteria. The inspectors performed independent inspections and measurements of the formwork to determine whether it was correctly in place to provide the wall thickness specified in the COL.

b. Findings

No findings were identified.

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

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

a. Inspection Scope

The inspectors reviewed a sample of E&DCRs, listed in the documents reviewed section, to determine whether these changes were performed in accordance with procedure number APP-GW-GAP-420, "Engineering and Design Coordination Report." The inspectors evaluated these design changes for conformance to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and Supplement 3S-1, "Supplementary Requirements for Design Control," of ASME NQA-1-1994. The inspectors also reviewed the licensing impact determination screening associated with each of these design changes to determine whether the change was properly evaluated against the current licensing basis as described in the Vogtle Unit 3 and Unit 4 UFSAR and was performed in accordance with procedure APP-GW-GAP-147. Furthermore, the inspectors reviewed these E&DCRs to determine whether each change received the proper level of engineering review and was incorporated into all affected documents.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed surveillance report CMP-ENG-2015-3-10633, "8" LP Squib Valve EQ Submergence Test," which was performed by the licensee to confirm whether Westinghouse performed adequate oversight of the Vogtle Unit 3 & 4 environmental qualification testing of squib valves supplied by SPX/Copes Vulcan and tested by National Testing Services, Huntsville, AL.

The inspectors performed direct observation of surveillance activities performed by SNC at the National Testing Services, Huntsville, AL facility, including post-test valve disassembly and inspection oversight, review of test data logs, and conducting interviews. The inspectors observed these surveillance activities to determine whether the licensee had adequately implemented the quality requirements of 10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment, and Services;" Section 7, "Control of Purchased Material, Equipment, and Services," of the SNC Nuclear Development Quality Assurance Manual; and SNC procedure ND-CA-VNP-013, "Nuclear Development Compliance Monitoring Program Surveillance and General Observation Program."



Furthermore, the inspectors reviewed the surveillance results to determine whether the licensee had appropriately assessed the effectiveness of the control of quality by Westinghouse, their subcontractors, and their vendors at intervals consistent with the importance, complexity, and quantity of the product or services. The inspectors also reviewed these reports to determine whether:

- the reports were adequate records of an activities affecting quality;
- the reports were completed in accordance with the licensee's quality assurance program implementing procedures; and
- any issues identified by the licensee were appropriately 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 (IP 35007)

Failure to Perform Routine Quality Control Inspections

a. Inspection Scope

During the NRC's inspection of safety-related welding activities associated with the Vogtle Unit 3 CA01 structural module, the inspectors evaluated the contractor's program for the inspection of activities affecting quality. Specifically, the inspectors reviewed the CB&I QC inspection plan number F-S561-004 to determine whether it established appropriate guidance for the QC inspection of structural modules to assure quality. The inspectors reviewed this procedure to verify that appropriate in-process, routine inspections and hold point inspections were prescribed. Regarding routine, in-process QC inspections of welding activities, the inspectors verified that inspection plan F-S561-004 established adequate guidance to ensure that the requirements of Section 6.5.4 of AWS D1.1:2000 were satisfied. Furthermore, during the NRC's inspection of welding activities associated with the Vogtle Unit 3 CA01-32 submodule, the inspectors evaluated CB&I's implementation of inspection plan F-S561-004.

b. Findings

Introduction

The inspectors identified a construction finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to accomplish safety-related, required quality control inspections in accordance with CB&I QC inspection plan F-S561-004.

Description

On March 12, 2015, the inspectors identified that CB&I QC had failed to perform routine inspections of in-process welding activities since August 23, 2014. Section 6.5.4, "Scope of Examination," of AWS D1.1:2000, "Structural Welding Code - Steel," requires

the following: "The inspector shall, at suitable intervals, observe joint preparation, assembly practice, the welding techniques, and performance of each welder, welding operator, and tack welders to make certain that the applicable requirements of this Code [AWS D1.1:2000] are met."

Item number 6 (attribute code W19) of QC inspection plan F-S561-004 requires the QC inspector to verify the following, as applicable, on a routine / sampling basis: pre-heat, root pass penetration, welding environment, voltage, amperage, travel speed, heat input, interpass temperature, shielding gas type and flow rate, proper control and handling of welding consumables, weld profiles, and acceptability of backgouged area / root pass acceptability.

Section 6.1.6 of CB&I QS 10.67 states that routine inspections are performed to monitor activities that are not associated with pre-established hold or notification points. Moreover, this procedure states that routine inspections are performed on a periodic basis at frequencies and to a depth commensurate with the specific activity, complexity, attribute and quality performance activity.

Through discussions with CB&I QC personnel, the inspectors identified that CB&I had not performed the routine inspections specified above since August 23, 2014. The inspectors determined that the failure to perform these inspections on a routine basis was contrary to the AWS D1.1:2000 Code, CB&I procedure QS 10.67, and CB&I inspection plan F-S561-004.

### Analysis

The inspectors determined that the failure to meet 10 CFR Part 50, Appendix B, Criterion V, represented a performance deficiency. The finding was determined to be more than minor because the issue represented a substantive failure to implement an adequate quality oversight function, in that these routine welding inspections were not performed by the licensee's contactor for over six months.

The finding was determined to be a construction finding because it was not associated with a specific ITAAC. The inspectors concluded that this finding was associated with the Construction/Installation Cornerstone. The inspectors utilized IMC 2519, "Construction Significance Determination Process," to evaluate the finding and determined that the finding was of very low safety significance (Green) because the finding could not be directly associated with a system or structure.

The inspectors screened the finding for a possible construction cross-cutting aspect in accordance with Appendix F, "Construction Cross-Cutting Components and Aspects" of IMC 0613. This finding has a cross-cutting aspect in the area of Human Performance, Procedure Adherence because the licensee failed to ensure that individuals followed the specified procedures [H.8].

### Enforcement

Criterion V, "Instructions, Procedures, and Drawings," of 10 CFR Part 50, Appendix B, requires, in part, that activities affecting quality shall be prescribed by documented procedures and shall be accomplished in accordance with these procedures.

Item number 6 (attribute code W19) of CB&I inspection plan [QC inspection procedure] F-S561-004, "Structural Weld Inspection-Modules, AWS D1.1/D1.6 and Fabrication, Submodule Assembly, and Module In Plant Installation Tolerances," Rev. 13, requires the QC inspector to verify the following, as applicable, on a routine / sampling basis: pre-heat, root pass penetration, welding environment, voltage, amperage, travel speed, heat input, interpass temperature, shielding gas type and flow rate, proper control and handling of welding consumables, weld profiles, and acceptability of backgouged area / root pass acceptability.

Contrary to the above, from August 23, 2014, to March 5, 2015, the licensee, through its contractor CB&I, failed to accomplish safety-related, routine inspections of in-process, safety-related welding activities associated with structural modules in accordance with CB&I QC inspection plan number F-S561-004, "Structural Weld Inspection-Modules, AWS D1.1/D1.6 and Fabrication, Submodule Assembly, and Module In Plant Installation Tolerances," Rev. 13.

Because this violation was of very low safety significance (Green) and was entered into the licensee corrective action program as condition report number 10039935, this violation is being treated as a non-cited violation (NCV 05200025/2015001-02 and NCV 05200026/2015001-02, Failure to Perform Routine Quality Control Inspections), consistent with Section 2.3.2 of the NRC Enforcement Policy and EGM 11-006. Because this finding does not impact a specific ITAAC, this NCV is closed.

1P04 Quality Assurance Implementation, Appendix 10, Inspection of Criterion X – Inspection (IP 35007)

Routine Inspection of QA Program Implementation

a. Inspection Scope

The NRC inspectors reviewed procedure QAD 14.01, "Inspection Report System-Type "A" Inspection Report," to verify that the licensee's QA implementing documents for conducting inspections of rebar installation activities and reporting of nonconformances identified during those inspection activities were consistent with the NRC approved QAPD; American Concrete Institute (ACI) 349-01, "Code Requirements for Nuclear Safety Related Concrete Structures"; and ACI 117-09, "Specification for Tolerances for Concrete Construction and Materials". Additionally, the NRC inspectors reviewed procedure CSI 3-42, "Reinforcing Steel Installation," to verify that it included provisions for:

- proper completion of Form 8.3, installation of Reinforcing Steel Data Sheets;
- documentation of in-process QC inspection non-conformances;
- inspection and documentation requirements;
- hold and witness points;
- acceptance criteria; and
- inspection personnel are other than those who perform or directly supervise the work being inspected.

The NRC inspectors observed CB&I QC inspection and oversight of rebar installation activities to verify:

- effective implementation of the licensee’s QA implementing program;
- conformance with acceptance criteria;
- the rebar was installed in accordance with ACI-349 and ACI-117 (tolerances);
- inspections were performed by qualified individuals other than those who performed or directly supervised the work being inspected; and
- mandatory hold points were witnessed by the QC inspector.

The inspectors performed independent inspection and measurements to determine whether the steel reinforcement, embedments, and formwork conformed to the design specifications. Additionally, the NRC inspectors reviewed the inspection documentation to verify that the results were documented, detailed, complete, and included:

- item inspected and date of inspection;
- identification of person conducting inspection ;
- reference to inspection criteria, sampling plan, or reference documents used to determine acceptance; and
- results of inspection performed.

b. Findings

No findings were identified.

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

a. Inspection Scope

The inspectors reviewed a sample of N&D reports to determine whether the conditions were adequately reviewed and accepted, rejected, repaired, or reworked in accordance with the QA program implementing documents for the control of nonconforming material, parts, and components. The inspectors compared these N&D reports to Section 15, “Nonconforming Materials, Parts, or Components,” of the CB&I quality assurance program (CMS-720-03-PL-00020-A, Revision 0) and CB&I procedure QS 15.1, “Nonconformance & Disposition Report,” revision 05.02. The inspectors reviewed N&D reports associated with both Units 3 and 4.

The inspectors selected a sample of nonconforming items that the licensee rejected, repaired, reworked, or accepted through evaluation. During the review of the sample of N&D reports, the inspectors determined if the reports properly identified the nonconforming items and if the systems for initiating, processing, and closing nonconformances were adhered to. The inspectors specifically determined if:

- reportability screening and evaluations under 10 CFR Part 21 and 10 CFR 50.55(e) were performed;
- the disposition, such as use-as-is, reject, repair, or rework of nonconforming items were properly identified and documented;
- adequate technical justification for the acceptability of a nonconforming item, dispositioned repair, or use-as-is was appropriately documented;

- nonconformances to design requirements dispositioned use-as-is or repair were subjected to design control measures commensurate with those applied to the original design;
- the as-built records properly reflected the accepted deviation, if applicable;
- controls were implemented to preclude the inadvertent use of nonconforming items and that nonconforming items were marked or tagged and segregated; and
- repaired or reworked items were reexamined in accordance with applicable procedures and with the original acceptance criteria unless the disposition had established alternate acceptance criteria.

b. Findings

No findings were identified.

1P06 Quality Assurance Implementation, Appendix 16, Inspection of Criterion XVI – Corrective Action (IP 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. The inspectors reviewed corrective action program procedures and evaluated implementation of these procedures to determine whether the procedures contained guidance for the following attributes:

- classification, prioritization, and evaluation for reportability (i.e., 10 CFR 50.55(e)) of conditions adverse to quality;
- complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery;
- screening of items entered into the CAP to determine the proper level of evaluation;
- identification and correction of: procurement documents errors; deviations from procurement document requirements; defective items; poor workmanship; incorrect vendor instructions; significant recurring deficiencies at both vendor shops and on site; and generic procurement related deficiencies;
- identification and correction of design deficiencies;
- consideration of extent of condition, generic implications, common cause, and previous occurrences;
- classification and prioritization of the resolution of the problem commensurate with its safety significance;
- identification of corrective actions that are appropriately focused to correct the problem;
- identification of root and contributing causes, as well as actions to preclude recurrence for significant conditions adverse to quality; and

- completion of corrective actions in a timely manner commensurate with the safety significance of the issue;
- provisions for escalating to higher management those corrective actions that are no adequate or not timely; and
- conditions adverse to quality were trended to proactively identify potential adverse trends and potential common cause problems, and the trending results were reported to management.

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 Engineering, Procurement, and Construction (EPC) contractor's corrective action programs. The inspectors attended several weekly management review committee meetings at the site and held discussions with licensee and EPC consortium personnel responsible for the screening and correction of the issues to determine if:

- the licensee and the EPC contractor were identifying equipment, human performance, and program issues at an appropriate threshold and were entering the issues into their respective corrective action programs;
- the licensee and the 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.

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 if the handling of these issues was consistent with the applicable quality assurance program requirements and 10 CFR Part 50, Appendix B. Specifically, the inspectors reviewed the corrective action records listed in the documents reviewed section of this report. The inspectors reviewed these corrective action documents to determine if:

- conditions adverse to quality were promptly identified and corrected;
- classification and prioritization of the resolution of the problem was commensurate with its safety significance;

- for significant conditions adverse to quality: the cause was determined, corrective actions were taken to prevent recurrence, and the cause and corrective actions taken were documented and reported to appropriate levels of management;
- conditions were appropriately screened;
- the licensee and their contractors properly evaluated and reported the condition in accordance with 10 CFR 50.55(e) and 10 CFR 21;
- the identification and correction of design deficiencies were being adequately addressed;
- extent of condition was being adequately addressed; and
- appropriate corrective actions were developed and implemented.

b. Findings

No findings were identified.

**4. OTHER INSPECTION RESULTS**

4OA5 Other Activities

Previous inspection reports documented inspection activities associated with welding and NDE of pressure boundary components (ITAAC 93). These inspections also applied to design and construction of ASME Section III components (ITAAC 91). The following provide reference to those inspection reports.

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

a. Inspection Scope

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.

Inspection Report 05200025/2013-002 (ML13127A392), section 1A02.1 discusses inspection activities associated with ITAAC 2.2.01.03a (93). This section also applies to ITAAC 2.2.01.02a (91).

b. Findings

No findings were identified.

.2 (Unit 4) ITAAC Number 2.2.01.03a (93) / Family: 06B

a. Inspection Scope

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.

Inspection Report 05200026/2013-002 (ML13127A392), section 1A10 discussed inspection activities associated with ITAAC 2.2.01.02a (91). This section also applies to ITAAC 2.2.01.03a (93).

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

.1 Exit Meeting.

On March 31, 2015, the inspectors presented the inspection results to Mark Rauckhorst, Vogtle 3&4 Construction Vice President, along with other licensee and consortium staff members. The inspectors stated that no proprietary information would be included in the inspection report.



## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensees and Contractor Personnel**

P. Albuquerque, ITAAC Manager, SNC  
W. Crisler, Consortium QA Director  
S. DiTommaso, Manager ITAAC & Inspections, WEC  
S. Dlugolenski, Principal Engineer, WEC  
E. Dumas, CB&I QC manager  
A. Simpson, CB&I QC  
J. Speer, Engineering, WEC  
F. Willis, Licensing, SNC  
M. Yox, SNC Regulatory Affairs Director

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

<b><u>Item Number</u></b>	<b><u>Type</u></b>	<b><u>Status</u></b>	<b><u>Description</u></b>
05200025/2015001-01	NCV	Open/Closed	Failure to Identify Nonconforming Overlay Plates (Section 1A13)
05200025/2015001-02; 05200026/2015001-02	NCV	Open/Closed	Failure to Perform Routine Quality Control Inspections (Section 1P03)

## LIST OF DOCUMENTS REVIEWED

### Section 1A01:

#### CB&I Documents:

QA Data Package 11PO002-P009-01 Rev. E  
Quality Assurance Type "A" Inspection Report Q445-014-14-0005

#### Taewoong Documents:

Cert of conformance BHICOC-11po002-01  
CMTR 1112-027 Rev. 1  
Heat treatment report H110920-001  
Ultrasonic inspection report HSIT-02-U11-TW3473  
Liquid penetrant inspection report HSIT-02-P11-TW0270  
Dimensional inspection record HD-1110-T14-1

### Section 1A02:

#### Corrective Action Documents:

Condition Report 10012322  
Condition Report 780050  
Condition Report 810920  
Engineering and Design Coordination Report APP-MT02-GEF-046, "AP1000 Accumulator Tank Plate Thickness and Weight Revisions," Rev. 0  
Engineering and Design Coordination Report APP-MT02-GEF-060, "Accumulator Tank Generic Design Report and Detailed Analysis Revisions," Rev. 0  
Technical Evaluation 798594

#### Drawings:

APP-MT02-V6-001, "AP1000 Accumulator Tank Manway," Rev. 2  
APP-MT02-V6-003, "AP1000 Accumulator Tank Tap and Nozzle Details," Rev. 2  
APP-MT02-V6-020, "AP1000 Accumulator Tank Manway Assembly," Rev. 0  
SV3-MT02-V2-001, "AP1000 Accumulator Tank Final Assembly," Rev. 0  
SV3-MT02-V2-001, "AP1000 Accumulator Tap & Connections Assembly," Rev. 0

#### Miscellaneous:

APP-MT02-Z0R-001, "Detailed Analysis of AP1000 Accumulator Tank," Rev. 6  
SV3-MT02-VDR-001, "AP1000 Vogtle 3 Accumulator Tanks Volumetric Scanning Report", Rev. 1  
SV3-MT02-Z0-101, "Design Specification for AP1000 Accumulator Tank for PXS," Rev. 0  
SVP\_SVO\_002973, Submittal of Inspection, Test, Analyses and Acceptance Criteria (ITAAC) Completion Package for Unit 3 ITAAC 2.2.03.08c.vi.02 (190) (Verification of Accumulator Volume), dated January 30, 2015

### Section 1A03:

#### CB&I Documents:

QA Data Package 11PO002-P009-01 Rev. E  
Quality Assurance Type "A" Inspection Report Q445-014-14-0005

Taewoong Documents:

Cert of conformance BHICOC-11po002-01

CMTRs: 1112-003 Rev. 1, 1112-025 Rev. 1

Heat treatment reports: H110920-001, H110920-001

Ultrasonic inspection reports: HSIT-02-U11-TW3470, HSIT-02-U11-TW3472

Liquid penetrant inspection reports: HSIT-02-P11-TW0247, HSIT-02-P11-TW0228

Dimensional inspection records: HD-1110-T07-1, HD-1110-T13-1

**Section 1A04:**

Commercial Grade Services:

APP-GW-GLR-616, "AP1000 Design Certification ITAAC 2.5.02.13: The Process Used in the Commercial Grade Dedication of PMS Components Technical Report," Revision 0, Dated December 2014

CDI-4056, "Services Associated with Build to Print Fabricated Parts & Assemblies," Rev. 9

CDI-4057, "Services associated with Build to Print Electro-mechanical Parts & Assemblies," Rev. 11

QSP-218, "Quality Specification for Procurement Services Associated with Build to Print Electro-mechanical Parts and Assemblies," Rev. 9

QSP-219, "Quality Specification for Procurement Services Associated with Build to Print Fabricated Parts & Assemblies" Rev. 13

NA 7.4, "Preparation of Commercial Dedication Instructions (CDIs)," Rev. 5

WEC-7.2 "Dedication of Commercial Grade Items," Rev. 2.0

WEC 7.3, "Commercial Grade Surveys," Rev. 1.0

WES-2012-395-R, "Audit Package – CMC - Cygnus Manufacturing Company," dated 1/13/2013

WES-2013-126, "Audit Package – CBT Technology, Inc.," dated 11/8/2013

3D91746, "Standard Safety Power Supply Panels & Brackets Details; Sheet 1 of 5" Rev. 10

410097D48, "VC Summer Unit 2 AP1000 PMS ILC Division D Cabinet Configuration," Sheet 1 of 5, Rev. 1

10096D29, VC Summer AP1000 PMS A1687 Termination Unit Configuration," Sheet 1 of 5, Rev. 0

AC160 Nuclear Critical Components:

APP-GW-GLR-616, "AP1000 Design Certification ITAAC 2.5.02.13: The Process Used in the Commercial Grade Dedication of PMS Components Technical Report," Revision 0, Dated December 2014

CDI-2625, "AC160 Nuclear Critical Components," Revision 21, Dated 09/24/2014

2C48361, "AC160 HARDWARE PROCUREMENT," Revision 25

HTS-AC160-0001, "Inspection Procedure: Visual Inspection of AC160 Hardware," Revision 22, Dated October 2014

WES-2012-302-R, "Supplier Commercial Grade Survey Report, Supplier: ABB AB Control Technologies," Dated 08/27/2012

WNA-TR-02497-GEN, "Analysis of Sample Relay Testing of ABB Modules," Revision 2, Dated September 2011

Acceptance Based on Equipment Qualification:

APP-GW-G1-002, "AP1000 Equipment Qualification Methodology", Revision 4

APP-GW-GLR-616, "AP1000 Design Certification of ITAAC 2.5.02.13: The process used in the Commercial Grade Dedication of PMS Components Technical Report," Revision 0.

CDI-2625, AC160 nuclear critical components, Revision 21

CDI-4064, commercial grade survey of supplier Keystone Services  
NA 4.38, "I&C Equipment Design / Equipment Qualification Process," Revision 2  
NA 7.4, "Preparation of Commercial Dedication Instructions," Revision 5  
NA 7.6, "Certificates on Conformance," Revision 1  
WEC 3.3.3, "Design Verification," Revision 1  
WEC 3.4.2, "Part Change Evaluation," Revision 0.1  
WEC 7.2, "Dedication of Commercial Grade Items," Revision 2.0  
WEC 7.3, "Commercial Grade Surveys," Revision 1.0

Acceptance Based on Software Validation in the Integrated System:

APP-GW-GLR-616, "AP1000 Design Certification ITAAC 2.5.02.13: The Process Used in the Commercial Grade Dedication of PMS Components Technical Report," Revision 0  
WCAP-16096, "Software Program Manual for Common Q Systems," Revision 4,  
WCAP-16097, "Common Qualified Platform Topical Report," Revision 3  
WNA-PV-00054-WAPP, "AP1000 Protection and Safety Monitoring System Software Verification and Validation Plan," Revision 4  
APP-PMS-T5-001, "AP1000 Protection and Safety Monitoring System Test Plan," Revision 4  
WNA-PT-00058-GEN, "Nuclear Automation Independent Verification and Validation Testing Process for Common Q Safety Systems," Revision 5  
WNA-PV-00009-GEN, "Automation and Field Services Independent Verification and Validation Software Verification & Validation Process for the Common Q Safety Systems," Revision 10  
WNA-WI-00433-GEN, "Automation and Field Services Independent Verification & Validation Instructions for Updating IV&V Fulfillment Methods," Revision 0  
CDI-3389, "ABB AC160 and AMPL Control Configuration Advanced Software and Media," Revision 7  
CDI-3806, "QNX 4.25G Software for Generic Flat Panel Display Systems," Revision 4

**Section 1A05:**

SV3-CA01-S5K-CV5014, "Weld Map - CA01-32 Lower Lateral Support Assemblies," Rev. 4  
SV3-CA01-GNR-000235, Rev. 0  
APP-CA01-GEF-423, Rev. 0  
APP-SU01-CCC-002, "Containment Internal Structure - Pressurizer Supports Concrete Reinforcement Design," Revision 1  
MISTRAS procedure number 100-PT-304, "Liquid Penetrant Examination in Accordance with AWS Structural Welding Code," Rev. 6

**Section 1A06:**

CA01-08 to CA01-09 Weld Seam:

Weld Data Sheet for Weld No. SV3-CA01-S4K-CV3185-FW4  
Welding Material Requisition No. 72980  
Welding Procedure Specification WPS2-1.1S03, Rev. 1  
Procedure Qualification Record SP277, Rev. 0  
Procedure Qualification Record SP278, Rev. 0  
Procedure Qualification Record SP279, Rev. 0  
Procedure Qualification Record SP280, Rev. 0  
Procedure Qualification Record SP281, Rev. 0  
Procedure Qualification Record SP282, Rev. 0  
Welding Procedure Specification WPS2-1.1M73, Rev. 6  
Procedure Qualification Record SP129, Rev. 2

Procedure Qualification Record SP130, Rev. 0  
Procedure Qualification Record SP132, Rev. 0  
Procedure Qualification Record SP154, Rev. 1  
Procedure Qualification Record SP427, Rev. 0  
Calibration record for Preheat Temperature Gage ID No. V-AP-0127, Expires 11/7/2015

CA01-19 Weld Seams:

Weld Data Sheet for Weld No. CV3446-1  
Weld Data Sheet for Weld No. CV3446-17  
Weld Data Sheet for Weld No. CV3446-20  
Weld Data Sheet for Weld No. CV2161-AT-19-04-1-BMR1  
Weld Data Sheet for Weld No. CV6931-05  
Weld Data Sheet for Weld No. CV6931-03-BMR 1  
Weld Data Sheet for Weld No. CV5323-1  
Weld Data Sheet for Weld No. CV5322-1  
Welding Procedure Specification WPS2-1.1M71, Rev. 0  
Procedure Qualification Record SP154, Rev. 1  
Procedure Qualification Record SP160, Rev. 0  
Welding Procedure Specification WPS5-1.10HM01, Rev. 2  
Procedure Qualification Record SP233-1, Rev. 0  
Welding Procedure Specification WPS5-1.10HM03, Rev. 0  
Procedure Qualification Record SP293, Rev. 0  
Procedure Qualification Record SP294, Rev. 0  
Welding Procedure Specification WPS5-10H.10HM70, Rev. 8  
Procedure Qualification Record 8-8-331, Rev. 0  
Procedure Qualification Record 8-8-335, Rev. 0  
Procedure Qualification Record 8-10-567, Rev. 1  
Welding Procedure Specification WPS2-1.1T30, Rev. 2  
Procedure Qualification Record SP121, Rev. 1  
Procedure Qualification Record SP122, Rev. 2  
Procedure Qualification Record SP123, Rev. 1  
Procedure Qualification Record SP176, Rev. 0  
Procedure Qualification Record SP177, Rev. 0  
Procedure Qualification Record SP178, Rev. 0  
Welding Procedure Specification WPS2-1.1T70, Rev. 2  
Procedure Qualification Record D-2010-32, Rev. 0  
Procedure Qualification Record D-2010-34, Rev. 0  
Procedure Qualification Record D-2010-35, Rev. 0  
Welding Procedure Specification WPS5-1.10HT03, Rev. 7  
Procedure Qualification Record SP238, Rev. 0  
Procedure Qualification Record SP242-1, Rev. 0  
Welding Procedure Specification WPS5-1.10HT04, Rev. 0  
Procedure Qualification Record SP235-1, Rev. 0  
Procedure Qualification Record SP236, Rev. 0  
Procedure Qualification Record SP237, Rev. 0  
Welding Procedure Specification WPS5-1.10HT30, Rev. 1  
Procedure Qualification Record SP254, Rev. 0  
Welding Procedure Specification WPS5-1.10HT70, Rev. 1  
Procedure Qualification Record SP148, Rev. 0  
Welding Procedure Specification WPS5-10H.10HT70, Rev. 4  
Procedure Qualification Record SP394, Rev. 0

Welding Procedure Specification WPS5-10H.10HT71, Rev. 2  
Procedure Qualification Record 10-10-649, Rev. 0  
Welding Procedure Specification WPS6-1.10HSW01, Rev. 2  
Procedure Qualification Record SP201, Rev. 0  
Procedure Qualification Record SP202, Rev. 0  
Procedure Qualification Record SP203, Rev. 0  
APP-1100-SUC-003, "General Design of Shear Studs for Structural Modules for Inside Containment and CA20," Rev. 5  
APP-VW01-Z0-001, "Structural Module Shear Stud Welding Specification," Rev. 3  
APP-VW20-Z0-023, "Welding Specification for ASTM A240 UNS S32101 Duplex Stainless Steel Plate," Rev. 3  
E&DCR No. SV0-CA20-GEF-000018, "Heat Input Rev. 2 APP-VW20-Z0-023," Rev. 0  
E&DCR No. APP-CA20-GEF-850036, "CA20 (APP-VW20-Z0-023)," Rev. 0  
GWS-5, "AWS D1.6 – Stainless Structural Steel General Welding Specification," Rev. 2

CA05 Weld Seams:

Weld Data Sheet for Weld No. CV6117-8  
Weld Data Sheet for Weld No. CV6056-25  
Weld Data Sheet for Weld No. CV6056-26  
Weld Data Sheet for Weld No. CV6056-32  
Welding Material Requisition No. 82348  
Welding Material Requisition No. 82350  
Welding Material Requisition No. 82351  
Welding Procedure Specification WPS2-1.1M02, Rev. 2  
Welding Procedure Specification WPS2-1.1S02, Rev. 1  
Welding Procedure Specification WPS2-1.1S03, Rev. 1  
Procedure Qualification Record SP277, Rev. 0  
Procedure Qualification Record SP278, Rev. 0  
Procedure Qualification Record SP279, Rev. 0  
Procedure Qualification Record SP280, Rev. 0  
Procedure Qualification Record SP281, Rev. 0  
Procedure Qualification Record SP282, Rev. 0

**Section 1A07:**

CB&I welding procedure WPS5-10H.10HM70 Rev. 10  
CB&I qualification records SP256 and SP298

**Section 1A08:**

Certified Material Test Reports:

1084N  
1039M  
1039N  
1181W

Weld Map:

SV3-CA03-S4K-CV3282

Weld Records:

CV4165 FW-L12-1

CV4165 FW-L12-2

Welding Procedure Specifications:

WPS2-1.1S02  
WPS2-1.1M73  
WPS5-10H.10HT70  
WPS5-10H.10HM70

Procedure Qualification Records:

SP129  
SP130  
SP132  
SP154  
SP427  
SP158  
SP212  
SP428  
SP429  
SP430  
SP431  
SP394

Welders Performance Qualification Records:

SAY1478  
LJH9267  
WEA4534  
JPM5996  
SWA1324  
NWC4631  
TMM1830  
RAM3996

Calibration Records:

CB&I Vogtle R350 x3631 AD4R10 X7941 4-09-2014

Condition Reports:

10035194  
10030766  
871409

Non Destructive Examination Reports:

V-15-UT-312-537  
V-15-UT-312-540  
V-15-UT-312-554  
V-15-UT-312-340

Nonconformance and Disposition Reports (N&Ds):

SV3-CA01-GNR-000164, CA01-04 Unspecified Weld on Channel Flanges, Rev. 0  
APP-CA05-GNR-850047, SV4-CA05-08 (NCR 14-1556) Brinell Hardness out of tolerance,  
Rev. 0

APP-CA04-GNR-850063, SMCI SV4 Module 01, NCR 2014-738, Geometric Configuration UT Not Performed, Rev. 0  
APP-CA03-GNR-850108, SMCI SV3 CA03 Module 10, NCR 2014-907, Base Metal Reduction, Rev. 0  
APP-GW-GNR-850043, WPS 1-1-86 (MCR 14-159) Struct. WPS Non-Compliance to AWS Code Requirements, Rev. 0  
APP-GW-GNR-850038, WPS 1-1-107 (NCR 14-153) Struct. WPS Non-Compliance to AWS Code Requirements, Rev. 0  
APP-GW-GNR-850036, NCR 14-282 WPS 1-1-107 Structural non-compliance to AWS Code requirements, Rev. 0  
APP-GW-GNR-850035, NCR 14-165 WPS 1-1-91 Structural non-compliance to AWS Code requirements, Rev. 0  
APP-GW-GNR-850034, WPS 1-1-141 (NCR 14-243) Struct. WPS Non-Compliance to AWS Code Requirements, Rev. 0  
APP-GW-GNR-850032, NCR 14-135 WPS 1-10-322 Structural noncompliance to AWS code requirements, Rev. 0  
APP-GW-GNR-850004, WPS 1-10-155 (NCR 14-160) Struc. WPS Non-Compliance to AWS Code Requirements, Rev. 0  
APP-GW-GNR-850014, WPS 8-8-72 (NCR 14-182) Struc. WPS Non-Compliance to AWS Code Requirements, Rev. 0

Engineering and Design Coordination Reports (E&DCRs):

APP-GW-GEF-850060, WPS Qualification (RFI 1140), Rev. 0  
SV0-GW-GEF-000079, Endorse Rounding Method for AWS, Rev. 0

**Section 1A09:**

Drawings:

SV3-1208-SC-101, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" Location and Identification Rollout View, Rev. 4  
SV3-1208-SC-100, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" General Notes, Rev. 2  
SV3-1208-SC-261, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" Connection Panel Group 26, Rev. 2  
SV3-1208-SC-411, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" Type 1 Panel Group 41, Rev. 2  
SV3-1208-SC-701, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" Type 2 Panel Group 70, Rev. 2

E&DCR:

APP-1208-GEF-072, Rev. 0, Shield Building – Gusset Plate Tolerance

N&Ds:

APP-1208-GNR-850176, Rev. 0, NNI NCR 837A for SV3-1208-SC-09L, Weld joint # 09L-2027 has melt thru  
F-Q445-004, Rev. 3, Receipt Inspection – Module – Structural  
Q445-004-14-0071, Receipt Inspection- Modules- Structural, 04/24/2014  
Q445-004-14-0032, Receipt Inspection- Modules- Structural, 02/06/2014  
APP -1208-Z0-001, Rev. 1, Specification for the Fabrication and Field Erection of the SC Panels for the AP1000 Shield Building



**Section 1A10:**

Weld Map:

SV3-1208-SCK-CV7190

Weld Records:

CV7487-3-JK-I

CV7190-6-I

CV7190-6-O

Radiography Reports:

V-15-RT-313-080

V-15-RT-313-088

Material Receiving Report:

MRR-14-02922

Welders Qualification Records:

JWB3343

CLN8229

JLH2338

Welding Procedure Specifications:

WPS2-1.1F20-SB

Nonconformance and Disposition Reports (N&Ds):

APP-1208-GNR-850204, NNI NCR 898AA SV3-1208-SC-01H, NDE tests on CJP welds for gussets, Rev. 0

APP-1208-GNR-850202, NNI NCR 896A SV3-1208-SC-01Q, NDE tests on CJP welds for gussets, Rev. 0

Engineering & Design Coordination Reports (E&DCRs):

SV0-0000-GEF-000161, Shield Building Welding to ASME IX, Rev. 0

**Section 1A11:**

Concrete Data:

AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5301; 10/16/2015

AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5310; 10/16/2015

AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5311; 10/16/2015

AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5312; 10/16/2015

AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5313; 10/16/2015

AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5314; 10/16/2015

AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5315; 10/16/2015

CB&I Concrete/Grout Delivery Ticket # 36388, Pour # 1775, 01/07/2015

CB&I Concrete/Grout Delivery Ticket # 36396, Pour # 1775, 01/07/2015

CB&I Concrete/Grout Delivery Ticket # 36397, Pour # 1775, 01/07/2015

CB&I Concrete/Grout Delivery Ticket # 36404, Pour # 1775, 01/07/2015

CB&I Concrete/Grout Delivery Ticket # 36411, Pour # 1775, 01/07/2015

CB&I Concrete/Grout Delivery Ticket # 36417, Pour # 1775, 01/07/2015

CB&I Concrete/Grout Delivery Ticket # 36423, Pour # 1775, 01/07/2015

CB&I Concrete/Grout Delivery Ticket # 36427, Pour # 1775, 01/07/2015

Drawings:

SV3-1220-CC-911, "Auxiliary Building Concrete Outline Area 2 Floor El 82'-6"," Rev. 2  
SV3-1222-CC-202, "Auxiliary Building Concrete Outline Area 2 Floor El 82'-6"," Rev. 4  
SV3-1222-CC-402, "Auxiliary Building Concrete Outline Area 4 Floor El 82'-6"," Rev. 5  
SV3-1223-CC-302, "Auxiliary Building Concrete Outline Area 3 Floor El 82'-6"," Rev. 2  
SV3-1225-CC-502, "Auxiliary Building Concrete Outline Area 5 Floor El 82'-6"," Rev. 2  
SV3-1230-CC-932, "Auxiliary Building Concrete Outline Areas 3 & 4 El 100'-0" Section F," Rev. 3  
SV3-1232-CC-203, "Auxiliary Building Concrete Outline Area 4 Floor El 100'-0"," Rev. 3  
SV3-1233-CC-303, "Auxiliary Building Concrete Outline Area 3 Floor El 100'-0"," Rev. 2  
SV3-1234-CC-403, "Auxiliary Building Concrete Outline Area 4 Floor El 105'-0", 107'-2", & El 100'-0"," Rev. 3  
SV3-1235-CC-503, "Auxiliary Building Concrete Outline Area 5 Floor El 100'-0"," Rev. 2

Miscellaneous:

SV3-1220-CRW-CV1586, "Unit 3 Auxiliary Building Perimeter A3 (82'-6") Walls Rebar Installation," Rev. 0  
SV3-1230-CCW-CV2441, "Aux Building Exterior Walls (25A, 26, 27, 28, & 42) up to El 100'-0"," Rev. 0  
SV3-CC01-GNR-000146, "Inadequate protection for curing concrete-Placements 28 & 42," Rev. 0

Procedures and Specifications:

CSI 3-31, "Concrete Batch Plant Operations," Rev. 4  
NCSP 03-31, "Concrete Placement," Rev. 1  
SV4-CC01-Z0-026, "Design Specification for Safety Related Mixing and Delivering Concrete, Westinghouse Safety Class C "Nuclear Safety Related"," Rev. 5  
SV4-CC01-Z0-027, "Design Specification for Safety Related Concrete Testing Services, Westinghouse Safety Classification C "Nuclear Safety Related"," Rev. 4  
SV4-CC01-Z0-031, "Safety Related Placing Concrete and Reinforcing Steel, Westinghouse Seismic Category I, Safety Class C "Nuclear Safety"," Rev. 5

**Section 1A12:**

Miscellaneous:

N&D SV3-CR01-GNR-000164, "Formsavers Locations RM12111 Between Q-Wall and P-Wall EL 82'-6"," Rev. 0  
N&D SV3-CR01-GNR-000158, "U3 Aux FS on Q wall interrupted by Pipe penetration EL. 82'-6"," Rev. 0  
E&DCR SV0-CR-01-GEF-000367, "Floor Slabs DVLP & SPLC length," Rev. 0  
E&DCR SV0-CR01-GEF-000399, Aux Bldg Floors Splice Details

Procedures and Specifications:

CSI 3-42, "Reinforcing Steel Installation," Rev. 4A  
NCSP 02-12, "Construction Quality Completion Program," Rev. 4  
NCSP 03-31, "Concrete Placement," Rev. 1-C  
NCSP 03-42, "Reinforcing Steel Installation," Rev. 1-A  
QAP 114.01, "Nuclear Quality Assurance Directive," Rev. 4.00  
SV4-CC01-Z0-026, Safety Related Mixing and Delivering Concrete, Rev. 5

SV4-CC01-Z0-027, Safety Related Concrete Testing Services, Rev. 4  
SV4-CC01-Z0-031, Safety Related Placing Concrete and Reinforcing Steel, Rev. 5  
SV4-CR01-Z0-011, "Furnishing of Safety Related Reinforcing Steel, Westinghouse," Rev. 3

Work Packages:

SV3-1220-CEW-CV1603, "Auxiliary Building Embed plates, Anchor Bolts, Elec/Mech Blockout Penetrations/Sleeves and Formwork/Shoring – Elevation 82 ft – 6 in Slab – Areas 1 and 2," Rev. 0  
SV3-1220-CRW-CV1701, "Unit 3 Auxiliary Building Reinforcing Steel for floors at El. 82'-6"," Rev. 0

**Section 1A13:**

Corrective Action Records:

SNC CR 10002993  
SNC CR 899313  
SNC CR 10006189  
CB&I CAR 2014-2540  
CB&I N&D SV3-CA20-GNR-000506

Drawings, Procedures, Specifications:

SV3-CA20-S4-361, "Auxiliary Building Areas 5 & 6 CA20 Module Outfitting: Embed Plates Wall L2 East Face," Rev. 0;  
SV3-CA20-S4-382, "Auxiliary Building Areas 5 & 6 CA20 Module Outfitting: Embed Plates Non Standard Type (Carbon Steel) - Sheet 2," Rev. 0;  
SMCI Shop Drawing SD-ONS25, "Overlay Plate," Rev. 0;  
SMCI Shop Drawing SD-ONS24, "Overlay Plate," Rev. 0;

Source and Receipt Inspection Records:

QC [Receipt] Inspection Report Number Q445-011-14-0083  
QC [Receipt] Inspection Report Number Q445-011-14-0073  
Source Inspection Report 132175-D100.CA007-017  
QC Inspection Report # S561-004-14-0481  
QC Inspection Report # S561-004-14-0532

Miscellaneous:

Purchase Order Number 132175-D100.CA007, Revision 5  
Material Receiving Report J132175-MRR-14-00650 (For Plate E357, tag number SV3-APP-12169-SS-N953);  
Material Receiving Report J132175-MRR-14-00556 (For Plate E356, tag number SV3-APP-12169-SS-N952);  
Certificate of Conformance from SMCI dated 1/22/2014

**Section 1A14:**

Concrete Data:

AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5301; 10/16/2015  
AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5310; 10/16/2015  
AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5311; 10/16/2015  
AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5312; 10/16/2015  
AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5313; 10/16/2015

AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5314; 10/16/2015  
AMEC Concrete Field and Lab Test Data; Set ID: 2015VEGP5315; 10/16/2015  
CB&I Concrete/Grout Delivery Ticket # 36388, Pour # 1775, 01/07/2015  
CB&I Concrete/Grout Delivery Ticket # 36396, Pour # 1775, 01/07/2015  
CB&I Concrete/Grout Delivery Ticket # 36397, Pour # 1775, 01/07/2015  
CB&I Concrete/Grout Delivery Ticket # 36404, Pour # 1775, 01/07/2015  
CB&I Concrete/Grout Delivery Ticket # 36411, Pour # 1775, 01/07/2015  
CB&I Concrete/Grout Delivery Ticket # 36417, Pour # 1775, 01/07/2015  
CB&I Concrete/Grout Delivery Ticket # 36423, Pour # 1775, 01/07/2015  
CB&I Concrete/Grout Delivery Ticket # 36427, Pour # 1775, 01/07/2015

Drawings:

SV3-1220-CC-911, "Auxiliary Building Concrete Outline Area 2 Floor El 82'-6"," Rev. 2  
SV3-1222-CC-202, "Auxiliary Building Concrete Outline Area 2 Floor El 82'-6"," Rev. 4  
SV3-1222-CC-402, "Auxiliary Building Concrete Outline Area 4 Floor El 82'-6"," Rev. 5  
SV3-1223-CC-302, "Auxiliary Building Concrete Outline Area 3 Floor El 82'-6"," Rev. 2  
SV3-1225-CC-502, "Auxiliary Building Concrete Outline Area 5 Floor El 82'-6"," Rev. 2  
SV3-1230-CC-932, "Auxiliary Building Concrete Outline Areas 3 & 4 El 100'-0" Section F," Rev.  
3  
SV3-1232-CC-203, "Auxiliary Building Concrete Outline Area 4 Floor El 100'-0"," Rev. 3  
SV3-1233-CC-303, "Auxiliary Building Concrete Outline Area 3 Floor El 100'-0"," Rev. 2  
SV3-1234-CC-403, "Auxiliary Building Concrete Outline Area 4 Floor El 105'-0", 107'-2", & El  
100'-0"," Rev. 3  
SV3-1235-CC-503, "Auxiliary Building Concrete Outline Area 5 Floor El 100'-0"," Rev. 2

Miscellaneous:

SV3-1220-CRW-CV1586, "Unit 3 Auxiliary Building Perimeter A3 (82'-6") Walls Rebar  
Installation," Rev. 0  
SV3-1230-CCW-CV2441, "Aux Building Exterior Walls (25A, 26, 27, 28, & 42) up to El 100'-0","  
Rev. 0  
SV3-CC01-GNR-000146, "Inadequate protection for curing concrete-Placements 28 & 42,"  
Rev. 0

Procedures and Specifications:

CSI 3-31, "Concrete Batch Plant Operations," Rev. 4  
NCSP 03-31, "Concrete Placement," Rev. 1  
SV4-CC01-Z0-026, "Design Specification for Safety Related Mixing and Delivering Concrete,  
Westinghouse Safety Class C "Nuclear Safety Related"," Rev. 5  
SV4-CC01-Z0-027, "Design Specification for Safety Related Concrete Testing Services,  
Westinghouse Safety Classification C "Nuclear Safety Related"," Rev. 4  
SV4-CC01-Z0-031, "Safety Related Placing Concrete and Reinforcing Steel, Westinghouse  
Seismic Category I, Safety Class C "Nuclear Safety"," Rev. 5

**Section 1A15:**

Drawings:

SV3-1208-SC-101, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" Location and  
Identification Rollout View, Rev. 4  
SV3-1208-SC-100, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" General  
Notes, Rev. 2

SV3-1208-SC-261, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" Connection  
Panel Group 26, Rev. 2  
SV3-1208-SC-411, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" Type 1 Panel  
Group 41, Rev. 2  
SV3-1208-SC-701, Shield Building Steel Wall Panels EL 100'-0" to EL 248'-6 ½" Type 2 Panel  
Group 70, Rev. 2

**Section 1A16:**

SV3-1222-CC-202

**Section 1A17:**

SV3-1220-CC-950, "Auxiliary Building Concrete Outline Areas 5&6 EL 82'-6" Section A"  
SV3-1220-CC-954, "Auxiliary Building Concrete Outline Areas 5&6 EL 82'-6" Section E"  
SV3-1225-CC-502, "Auxiliary Building Concrete Outline Area 5 Floor EL 82'-6"  
SV3-1226-CC-602, "Auxiliary Building Concrete Outline Area 6 Floor EL 82'-6"

**Section 1A18:**

SV3-1226-CC-602

**Section 1A19:**

Design Drawings:

SV3-1211-CC-101  
SV3-1212-CC-201

Density Test Report:

VSC18746a  
VSC18987  
VSC20392  
VSC18712  
VSC19780c  
VSC19780b  
VSC19789

Compressive Strength Test Report:

VSC18746a  
VSC20392  
VSC18987  
VSC19789  
VSC19780b  
VSC19780c  
VSC18712

**Section 1A20:**

Design Drawings:

SV3-1213-CC-301  
SV3-1214-CC-401

Density Test Report  
VSC19648  
VSC21932  
VSC21066

Compressive Strength Test Report:

VSC19648  
VSC21932  
VSC21066

**Section 1A21:**

IHI CMTRs: 6420-1, 6420-9, 6420-10  
IHI COC: QA-COC-003-113-1  
Lincoln Electric CMTR for lot 1115G  
ESAB CMTR for heat M902228 / Lot 2H005T01

**Section 1A22:**

IHI CMTRs: 6420-1, 6420-9, 6420-10  
Lincoln Electric CMTR for lot 1115G  
ESAB CMTR for heat M902228 / Lot 2H005T01

**Section 1A23:**

Corrective Action Documents:

Condition Report 10012322  
Condition Report 780050  
Engineering and Design Coordination Report APP-MT02-GEF-046, "AP1000 Accumulator Tank Plate Thickness and Weight Revisions," Rev. 0  
Engineering and Design Coordination Report APP-MT02-GEF-060, "Accumulator Tank Generic Design Report and Detailed Analysis Revisions," Rev. 0  
Nonconformance and Disposition SV4-MT02-GNR-012, "Dimensional Non-Conformances for AP1000 Accumulator Tank, Vogtle Unit 4 Component 1," Rev. 0  
Nonconformance and Disposition SV4-MT02-GNR-019, "AP1000 Accumulator As Built Dimensions – Vogtle 4, 1st Component," Rev. 0  
Technical Evaluation 798594

Drawings:

APP-MT02-V2-001, "AP1000 Accumulator Tap & Connections Assembly," Rev. 5  
APP-MT02-V6-001, "AP1000 Accumulator Tank Manway," Rev. 2  
APP-MT02-V6-003, "AP1000 Accumulator Tank Tap and Nozzle Details," Rev. 2  
APP-MT02-V6-020, "AP1000 Accumulator Tank Manway Assembly," Rev. 0  
SV4-MT02-V2-001, "AP1000 Accumulator Tank Final Assembly," Rev. 0

Miscellaneous:

APP-MT02-Z0-101, "Design Specification for AP1000 Accumulator Tank for PXS," Rev. 7  
APP-MT02-Z0R-001, "Detailed Analysis of AP1000 Accumulator Tank," Rev. 6  
SV4-MT02-VDR-001, "AP1000 Vogtle 4 Accumulator Tanks Volumetric Scanning Report", Rev.

0

SVP\_SVO\_003052, Submittal of Inspection, Test, Analyses and Acceptance Criteria (ITAAC) Completion Package for Unit 4 ITAAC 2.2.03.08c.vi.02 (190) (Verification of Accumulator Volume), dated February 11, 2015

Procedures:

PI-2411401-MT-001, "Vogtle Core Make-up and Accumulator Tanks Data Collection and Volume Verification Plan," Rev. 0

PI-2411401-MT-002, "Vogtle Core Make-up and Accumulator Tanks Invar Bar Measurement Check," Rev. 0

**Section 1A24:**

Commercial Grade Services:

APP-GW-GLR-616, "AP1000 Design Certification ITAAC 2.5.02.13: The Process Used in the Commercial Grade Dedication of PMS Components Technical Report," Revision 0, Dated December 2014

CDI-4056, "Services Associated with Build to Print Fabricated Parts & Assemblies," Rev. 9

CDI-4057, "Services associated with Build to Print Electro-mechanical Parts & Assemblies," Rev. 11

QSP-218, "Quality Specification for Procurement Services Associated with Build to Print Electro-mechanical Parts and Assemblies," Rev. 9

QSP-219, "Quality Specification for Procurement Services Associated with Build to Print Fabricated Parts & Assemblies" Rev. 13

NA 7.4, "Preparation of Commercial Dedication Instructions (CDIs)," Rev. 5

WEC-7.2 "Dedication of Commercial Grade Items," Rev. 2.0

WEC 7.3, "Commercial Grade Surveys," Rev. 1.0

WES-2012-395-R, "Audit Package – CMC - Cygnus Manufacturing Company," dated 1/13/2013

WES-2013-126, "Audit Package – CBT Technology, Inc.," dated 11/8/2013

3D91746, "Standard Safety Power Supply Panels & Brackets Details; Sheet 1 of 5" Rev. 10

410097D48, "VC Summer Unit 2 AP1000 PMS ILC Division D Cabinet Configuration," Sheet 1 of 5, Rev. 1

10096D29, VC Summer AP1000 PMS A1687 Termination Unit Configuration," Sheet 1 of 5, Rev. 0

AC160 Nuclear Critical Components:

APP-GW-GLR-616, "AP1000 Design Certification ITAAC 2.5.02.13: The Process Used in the Commercial Grade Dedication of PMS Components Technical Report," Revision 0, Dated December 2014

CDI-2625, "AC160 Nuclear Critical Components," Revision 21, Dated 09/24/2014

2C48361, "AC160 HARDWARE PROCUREMENT," Revision 25

HTS-AC160-0001, "Inspection Procedure: Visual Inspection of AC160 Hardware," Revision 22, Dated October 2014

WES-2012-302-R, "Supplier Commercial Grade Survey Report, Supplier: ABB AB Control Technologies," Dated 08/27/2012

WNA-TR-02497-GEN, "Analysis of Sample Relay Testing of ABB Modules," Revision 2, Dated September 2011

Acceptance Based on Equipment Qualification:

APP-GW-G1-002, "AP1000 Equipment Qualification Methodology", Revision 4

APP-GW-GLR-616, "AP1000 Design Certification of ITAAC 2.5.02.13: The process used in the Commercial Grade Dedication of PMS Components Technical Report," Revision 0.

CDI-2625, AC160 nuclear critical components, Revision 21  
CDI-4064, commercial grade survey of supplier Keystone Services  
NA 4.38, "I&C Equipment Design / Equipment Qualification Process," Revision 2  
NA 7.4, "Preparation of Commercial Dedication Instructions," Revision 5  
NA 7.6, "Certificates on Conformance," Revision 1  
WEC 3.3.3, "Design Verification," Revision 1  
WEC 3.4.2, "Part Change Evaluation," Revision 0.1  
WEC 7.2, "Dedication of Commercial Grade Items," Revision 2.0  
WEC 7.3, "Commercial Grade Surveys," Revision 1.0

Acceptance Based on Software Validation in the Integrated System:

APP-GW-GLR-616, "AP1000 Design Certification ITAAC 2.5.02.13: The Process Used in the Commercial Grade Dedication of PMS Components Technical Report," Revision 0  
WCAP-16096, "Software Program Manual for Common Q Systems," Revision 4,  
WCAP-16097, "Common Qualified Platform Topical Report," Revision 3  
WNA-PV-00054-WAPP, "AP1000 Protection and Safety Monitoring System Software Verification and Validation Plan," Revision 4  
APP-PMS-T5-001, "AP1000 Protection and Safety Monitoring System Test Plan," Revision 4  
WNA-PT-00058-GEN, "Nuclear Automation Independent Verification and Validation Testing Process for Common Q Safety Systems," Revision 5  
WNA-PV-00009-GEN, "Automation and Field Services Independent Verification and Validation Software Verification & Validation Process for the Common Q Safety Systems," Revision 10  
WNA-WI-00433-GEN, "Automation and Field Services Independent Verification & Validation Instructions for Updating IV&V Fulfillment Methods," Revision 0  
CDI-3389, "ABB AC160 and AMPL Control Configuration Advanced Software and Media," Revision 7  
CDI-3806, "QNX 4.25G Software for Generic Flat Panel Display Systems," Revision 4

**Section 1A25:**

Concrete and Reinforcing Steel Design Drawings:

SV4-1221-CR-102  
SV4-1200-CR-910  
SV4-1200-CR-914  
SV4-1222-CC-202  
SV4-1220-CC-917  
SV4-1221-CC-102  
SV4-1220-CC-919

Associated Work Packages:

SV4-1220-CCW-CV2540  
SV4-1220-CRW-CV2538  
SV4-1220-CEW-CV2434  
SV4-1220-CEW-CV2435

Concrete and Reinforcing Steel Specifications:

SV4-CC01-Z0-026  
SV4-CC01-Z0-027  
SV4-CC01-Z0-031  
SV4-CC01-Z0-026  
SV4-CC01-Z0-027



SV4-CR01-Z0-011

E&DCRs:

APP-1200-GEF-648, Additional Reinforcement Clarification Around Wall Openings  
SV3-CR01-GEF-000094, Addition of Bar at 6" pipe-Q Line  
APP-1210-GEF-195, Auxiliary Building A2 Secondary (Small) Walls up to EL 82'-6" Reinforced Concrete Design  
SV0-CR01-GEF-000399, Aux Bldg floors splice details  
APP-1222-GEF-073, Clarification of Floor to Wall Connection Reinforcement at Wall 7.3  
SV4-CC01-GEF-000013, SCC in Placement #3 U4 CVBH  
SV0-CC01-GEF-000233, Concrete Testing  
SV0-CC01-GEF-000249, Post-Installation of Rebar Dowels

N&Ds:

APP-CE01-GNR-850036, CAPAL A6 Tolerance - Part 4

**Section 1A26:**

Corrective Action Documents:

E&DCR APP-CR01-GEF-037, "Clear Cover Issue; Wall at C.L. 2," Rev. 0  
E&DCR SV0-CR01-GEF-000313, "Couplers CA20 Interference," Rev. 0  
CB&I CAR 2014-2064  
CB&I CAR 2015-0830

Design Drawings:

SV4-1200-CR-910, "Auxiliary Building Areas 1 and 2 Concrete Reinforcement Wall 11 Elevation," Rev. 5  
SV4-1200-CR-913, "Auxiliary Building Areas 1 and 2 Concrete Reinforcement Walls L and M Elevations," Rev. 6  
SV4-1221-P0-102, "Auxiliary Building Piping Penetrations Area 1 Floor Elevation 82-6," Rev. 1  
SV4-1222-P0-202, "Auxiliary Building Piping Penetrations Area 2 floor Elevation 82-6," Rev. 1, Rev. 2, and Rev. 3

Miscellaneous:

APP-1200-S3C-103, "Auxiliary Building Wall 4 Reinforcement Detail Evaluation (Seismic Qualification)," Rev. 1.0  
F-C112-002, "QC Inspection Plan: Preplacement: Concrete," Rev. 4  
SV4-1210-CCW-CV-1814, "Line 11 placement 40," Rev. 1  
SV4-1220-CRW-CV-2538, Form 8.3, "Installation of Reinforcing Steel Data Sheet"

Procedures and Specifications:

CSI 3-42, "Reinforcing Steel Installation," Rev. 4A  
NCSP 02-12, "Construction Quality Completion Program," Rev. 4  
NCSP 03-31, "Concrete Placement," Rev. 1-C  
NCSP 03-42, "Reinforcing Steel Installation," Rev. 1-A  
QAP 114.01, "Nuclear Quality Assurance Directive," Rev. 4.00  
SV4-CC01-Z0-031, "Safety Related Placing Concrete and Reinforcing Steel," Rev. 5  
SV4-CR01-Z0-011, "Furnishing of Safety Related Reinforcing Steel, Westinghouse," Rev. 3

Quality Control Inspection Reports:

C112-002-14-0245, "Sat Inspection" dated 9/11/2014

C112-002-14-0355, "Unsat Inspection" dated 1/13/2015  
C112-002-15-0028, "Unsat Inspection" dated 1/31/2015  
C112-002-15-0037, "Unsat Inspection" dated 2/6/2015  
C112-002-14-0245, "Unsat Inspection" dated 3/24/2015

Work Packages:

SV4-1220-CCW-CV2540, "Unit 4 Nuclear Island Auxiliary Building Concrete Placement for Exterior Walls from Elev. 82'6" to 100'0" (Wall Placements 39 thru 48)," Rev. 0  
SV4-1220-CEW-CV2434, "U4 Auxiliary Building Embed Plates & Form Work for Area 1-EL 82'6"," Rev. 0  
SV4-1220-CRW-CV2538, "Unit 4 Nuclear Island Aux. Bldg – Installation of Reinforcing Steel on Exterior Walls from Elev. 82'6" to 100'0" (Wall Placements 39 thru 48) ," Rev. 0

**Section 1A27:**

SV4-1222-CC-202

**Section 1A28:**

Corrective Action Documents:

E&DCR APP-CR01-GEF-037, "Clear Cover Issue; Wall at C.L. 2," Rev. 0  
E&DCR SV0-CR01-GEF-000313, "Couplers CA20 Interference," Rev. 0  
CB&I CAR 2014-2064  
CB&I CAR 2015-0830

Design Drawings:

SV4-1200-CR-910, "Auxiliary Building Areas 1 and 2 Concrete Reinforcement Wall 11 Elevation," Rev. 5  
SV4-1200-CR-913, "Auxiliary Building Areas 1 and 2 Concrete Reinforcement Walls L and M Elevations," Rev. 6  
SV4-1221-P0-102, "Auxiliary Building Piping Penetrations Area 1 Floor Elevation 82-6," Rev. 1  
SV4-1222-P0-202, "Auxiliary Building Piping Penetrations Area 2 floor Elevation 82-6," Rev. 1, Rev. 2, and Rev. 3

Miscellaneous:

APP-1200-S3C-103, "Auxiliary Building Wall 4 Reinforcement Detail Evaluation (Seismic Qualification)," Rev. 1.0  
F-C112-002, "QC Inspection Plan: Preplacement: Concrete," Rev. 4  
SV4-1210-CCW-CV-1814, "Line 11 placement 40," Rev. 1  
SV4-1220-CRW-CV-2538, Form 8.3, "Installation of Reinforcing Steel Data Sheet"

Procedures and Specifications:

CSI 3-42, "Reinforcing Steel Installation," Rev. 4A  
NCSP 02-12, "Construction Quality Completion Program," Rev. 4  
NCSP 03-31, "Concrete Placement," Rev. 1-C  
NCSP 03-42, "Reinforcing Steel Installation," Rev. 1-A  
QAP 114.01, "Nuclear Quality Assurance Directive," Rev. 4.00  
SV4-CC01-Z0-031, "Safety Related Placing Concrete and Reinforcing Steel," Rev. 5  
SV4-CR01-Z0-011, "Furnishing of Safety Related Reinforcing Steel, Westinghouse," Rev. 3

Quality Control Inspection Reports:

C112-002-14-0245, "Sat Inspection" dated 9/11/2014  
C112-002-14-0245, "Unsat Inspection" dated 3/24/2015  
C112-002-14-0355, "Unsat Inspection" dated 1/13/2015  
C112-002-15-0028, "Unsat Inspection" dated 1/31/2015  
C112-002-15-0037, "Unsat Inspection" dated 2/6/2015

Work Packages:

SV4-1220-CCW-CV2540, "Unit 4 Nuclear Island Auxiliary Building Concrete Placement for Exterior Walls from Elev. 82'6" to 100'0" (Wall Placements 39 thru 48)," Rev. 0  
SV4-1220-CEW-CV2434, "U4 Auxiliary Building Embed Plates & Form Work for Area 1-EL 82'6"," Rev. 0  
SV4-1220-CRW-CV2538, "Unit 4 Nuclear Island Aux. Bldg – Installation of Reinforcing Steel on Exterior Walls from Elev. 82'6" to 100'0" (Wall Placements 39 thru 48)," Rev. 0

**Section 1P01:**

E&DCRs:

APP-CA01-GEF-423, "CA01-32 Pzr Support Thru-Wall Option," Revision 0  
APP-1232-GEF-073, "Rebar details around penetrations at Elevation 100'-0"," Revision 0  
SV0-CE01-GEF-000057, "Emb Type & Location Tol.-Rm. 12321," Revision 0  
SV4-CC01-GEF-000011, "SCC Placement under CVBH Change," Revision 0  
SV4-CC01-GEF-000013, "SCC in Placement #3 U4 CVBH," Revision 0

Miscellaneous:

APP-GW-GAP-420, "Engineering and Design Coordination Report," Revision 8  
APP-GW-GAP-147, "AP1000 Current Licensing Basis Review," Revision 1

**Section 1P02:**

Engineering & Design Coordination Report APP-PV70-GEF-043, "APP-PV70-VPH-001, Additional Figures for Revised Submergence Conditions," Rev. 0  
SNC procedure ND-CA-VNP-013, "Nuclear Development Compliance Monitoring Program Surveillance and General Observation Program," Version 8.0  
Surveillance report CMP-ENG-2015-3-10633, "8" LP Squib Valve EQ Submergence Test," completed 03/09/2015

**Section 1P03:**

Procedures:

Inspection Plan F-S561-004, "Structural Weld Inspection-Modules, AWS D1.1/D1.6 and Fabrication, Submodule Assembly, and Module In Plant Installation Tolerances," Rev. 13;  
Quality Standard (QS) 10.67, "Inspection Planning System," Rev. 5;

Inspection Reports:

S561-004-15-0298

Corrective Action Documents:

CB&I CAR 2013-2017  
CB&I CAR 2015-0868  
SNC CR# 10039935  
SNC CR# 10040042

## **Section 1P04:**

### Miscellaneous:

QAD 14.01, "Inspection Report System-Type "A" Inspection Report," Rev. 04.00

CSI 3-42, "Reinforcing Steel Installation", Rev. 4

SV4-120-CRW-CV-2538, "Unit 4 Nuclear Island Auxiliary Building-Installation of Reinforcing Steel on Exterior Walls From Elevation 82'6" to 100'0" (Wall Placements 40 and 41)," Rev. 0

### Quality Control Type "A" Inspection Reports:

C112-002-15-0037, "Unsat Inspection" dated 2/6/2015

C112-002-14-0355, "Unsat Inspection" dated 1/13/2015

C112-002-15-0028, "Unsat Inspection" dated 1/31/2015

C112-002-14-0245, "Unsat Inspection" dated 3/24/2015

C112-002-14-0245, "Sat Inspection" dated 9/11/2014

## **Section 1P05:**

### Procedures:

QS 15.1, "Nonconformance & Disposition Report," Rev. 05.02

### N&Ds:

APP-CA01-GNR-000006, "SMS NCR-2013-31 PJP Welds Lack Inspection," Rev. 0

APP-CA03-GNR-850089, "SMCISV3 - CA03 (NCR 2014-213) Base Metal Reduction," Rev. 0

SV3-CA01-GNR-000235, "CA01-32 Change Weld Prep for Slots," Rev. 0

SV3-CA01-GNR-850337, "Tane-Toshiba, NNRK 1418248 Rev A, Tensile Test Fail (CA01, Vogtle4/VCSummer 3)," Rev. 0

SV3-CA20-GNR-000546, "E3 Extra Holes," Rev. 0

SV3-CA20-GNR-000549, "CA20 OLP E272," Rev.0

SV3-CA20-GNR-000554, "CA20-12 OLP E589," Rev. 0

SV4-CC01-GNR-000045, "U4 Outside CVBH up to 72'6" SCC Low Slump Flow," Rev. 0

SV4-CC01-GNR-000046, "U4 Outside CVBH up to 72'6" SCC – debris & drop heights," Rev. 0

SV4-CC01-GNR-000048, "U4 Outside CVBH up to 72'6" – Water in hopper," Rev. 0

SV4-CC01-GNR-000049, "U4 Outside CVBH up to 72'6" SCC – pieces of cementitious materials," Rev. 0

## **Section 1P06:**

CB&I CAR 2013-2017

CB&I CAR 2014-2041

SNC CR 861037

SNC CR 901025

Westinghouse Discrete Issue 100075513

## LIST OF ACRONYMS

ACI	American Concrete Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWS	American Welding Society
CAR	Corrective Action Report
CB&I	Chicago Bridge and Iron
CDI	Commercial Dedication Instructions
CFR	Code of Federal Regulations
CMTR	Certified Material Test Report
COL	Combined License
E&DCR	Engineering and Design Coordination Report
EPC	Engineering, Procurement, and Construction
EQ	Environmental Qualification
IEEE	Institute of Electrical and Electronics Engineers
IMC	Inspection Manual Chapter
ITAAC	Inspections, Tests, Analysis, and Acceptance Criteria
IV&V	Independent Verification and Validation
N&D	Nonconformance and Disposition
NCV	Noncited Violation
NRC	Nuclear Regulatory Commission
OLP	Overlay Plate
PCD	Principal Closure Document
PMS	Protection and Monitoring System
PQR	Procedure Qualification Record
PT	Liquid Penetrant Testing
QA	Quality Assurance
QC	Quality Control
SPM	Software Program Manual
SSC	Structure, System, and Component
STP	System Test Plan
SVVP	Software Verification and Validation Plan
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing
WPS	Welding Procedure Specification