



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

November 7, 2014

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

**SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 – NRC
INTEGRATED INSPECTION REPORTS 05200025/2014004 and
05200026/2014004**

Dear Mr. Ivey:

On October 8, 2014, 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 October 9, 2014, 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 (NCVs) in accordance with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest these NCVs, 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 any finding in this report, 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 05200025/2014004
and 05200026/2014004
w/Attachment: Supplemental Information

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Letter to B. L. Ivey from Michael E. Ernstes dated November 7, 2014

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 – NRC
INTEGRATED INSPECTION REPORTS 05200025/2014004 and
05200026/2014004

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

Docket Numbers: 5200025
5200026

License Numbers: NPF-91
NPF-92

Report Numbers: 05200025/2014004
05200026/2014004

Licensee: Southern Nuclear Operating Company, Inc.

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

Location: Waynesboro, GA

Inspection Dates: July 1, 2014 through September 30, 2014

Inspectors: C. Abbott, Resident Inspector, DCP
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Approved by: Michael Ernstes
Branch Chief
Construction Projects Branch 4
Division of Construction Projects

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05200025/2014004, 05200026/2014004; 07/01/2014 through 09/30/2014; Vogtle Unit 3, Vogtle Unit 4 routine integrated inspection report.

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

A. NRC-Identified and Self Revealed Findings

Cornerstone: Design Engineering

- 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 III, "Design Control" for the licensee's failure to correctly translate design basis requirements into specifications, drawings, procedures, and instructions. The licensee entered the issue into their corrective action program as condition report 877796, and took immediate actions to revise the drawings and related design calculation to restore compliance with the American Concrete Institute (ACI) 349-01 Code prior to the concrete placement.

The finding was associated with the Design/Engineering cornerstone. The inspectors determined the performance deficiency was more than minor because it represented a substantive non-conservative error in a design document that defines the technical requirements for the shear reinforcement in the innermost west and east steam generator compartments at elevation 80'-0". The inspectors evaluated the finding using the construction significance determination process and determined the finding was of very low safety significance (Green) because the licensee was able to demonstrate with reasonable assurance that the design function of the applicable structure would not be impaired by the deficiency. The finding was determined to be an ITAAC finding because it was material to the acceptance criteria of Unit 3 ITAAC 760. The acceptance criteria of this ITAAC requires that a reconciliation report, concluding the "as-built" construction conforms to the approved design, is completed for the areas associated with the ITAAC. This finding is associated with deviations from design requirements that would not have been reconciled by the licensee as required by the ITAAC, because the design drawings contained deviations, which did not meet ACI 349-01, which is a Tier 2* licensing commitment for Seismic Category I structures. This finding has a cross-cutting aspect in the area of Human Performance, Documentation, because the licensee failed to ensure that procedures, such as construction drawings and work packages, were accurate and adequate to assure construction quality. [H.7] (Section 1A05 b.1)

Cornerstone: Construction/Installation

- Green. The inspectors identified an ITAAC 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 correctly install structural reinforcement in accordance with approved design drawings. The licensee entered this issue into their corrective action program as CR 877795, and removed the nonconforming reinforcement, revised the design drawings, and re-installed the reinforcement according to the revised design.

The finding was associated with the Construction/Installation Cornerstone. The inspectors determined the performance deficiency was more than minor because it represented an adverse condition that rendered the quality of a system, structure, or component unacceptable or indeterminate and required substantive corrective action. The inspectors evaluated the finding using the construction significance determination process and determined the finding was of very low safety significance (Green) because the licensee was able to demonstrate with reasonable assurance that the design function of the applicable structure would not be impaired by the deficiency. The finding was determined to be an ITAAC finding because it was material to the acceptance criteria of Unit 3 ITAAC 760. The acceptance criteria of this ITAAC requires that a reconciliation report, concluding the "as-built" construction conforms to the approved design, is completed for the areas associated with the ITAAC. This finding is associated with deviations from design requirements that would not have been reconciled by the licensee as required by the ITAAC, because the as-built configuration contained deviations that did not meet ACI 349-01, which is a Tier 2* licensing commitment for Seismic Category I structures. This finding has a cross-cutting aspect in the area of Human Performance, Field Presence, because the licensee failed to ensure that supervisory and management oversight of work activities, including contractors, was adequate and sufficient enough such that construction quality is supported and assured. [H.2] (Section 1A05 b.2)

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 for elevations 66'6" to 82'6", concrete pours inside and outside of the containment vessel (CV); the assembly of modules CA01, CA03, and CA05; and the assembly and preparation of the CV lower, middle, and upper rings. For Unit 4, construction continued on the auxiliary building walls and floors for elevations 66'6" to 82'6", and on 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 No. 71 / Family 05A

a. Inspection Scope

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

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

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

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

The inspectors reviewed a portion of the Quality Verification Documentation (QVD), QVD-N07049-10101/10102, Revision (Rev.) 3, for the Vogtle Unit 3 Reactor Vessel (RV) Assembly, supplied by Doosan Heavy Industries & Construction (Doosan) to determine whether the documentation met the requirements of the design specification and the Updated Final Safety Analysis Report (UFSAR). Specifically, the inspectors reviewed Section 8.0 of the QVD, "As-Built Dimension Record," to determine whether the following as-built dimensions met the requirements of the design specification as specified by Figure 2.1.3-3 and Table 2.1.3-4, dimensions "A" through "I" of the UFSAR:

- Dimension "A": RV inside diameter at beltline (inside cladding);
- Dimension "B": RV wall thickness at beltline (without cladding);
- Dimension "C": RV wall thickness at bottom head (without cladding);

- Dimensions "D" and "E", respectively: Inside diameter of RV inlet nozzles and outlet nozzles at safe-ends;
- Dimensions "F", "G", and "H", respectively: Elevation from RV mating surface to centerline of inlet nozzles, outlet nozzles, and Direct Vessel Injection (DVI) nozzles; and
- Dimension "I": Elevation from RV mating surface to inside of RV bottom head (inside cladding).

b. Findings

No findings were identified.

1A02 (Unit 3) ITAAC No. 72 / Family 05F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 72 (2.1.03.03):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
3. The components identified in Table 2.1.3-1 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 2.1.3-1 as ASME Code Section III.

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

- 65001.F-02.01 - Design Document Review
- 65001.F-02.02 - Fabrication Records Review

The inspectors reviewed fabrication and examination documents for pressure retaining assemblies of the Unit 3 reactor vessel to verify that applicable codes, standards, and specifications were met; proper reviews and approvals were documented; examination results were acceptable; and material traceability was maintained in accordance with the requirements of the 1998 Edition through 2000 Addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, Division 1, Subsection NB, Class 1 Components, and the Westinghouse Electric Company (WEC), APP-MV01-Z0-101, Design Specification for the AP1000 Reactor Vessel. Specifically, the inspectors reviewed the WEC ASME Form N-1 Data Report for Nuclear Vessels, the Doosan ASME Form N-2 Data Report for Identical Nuclear Parts with certified hydrostatic test pressure of 3,125 psia, eight Certified Material Test Reports (CMTRs), and low-carbon austenitic steel cladding for the following:

- lower head (one CMTR);
- four inlet, two outlet, and two DVI nozzles (three CMTRs);
- four inlet, two outlet, and two DVI nozzle safe-ends (four CMTRs); and

- internal corrosion-resistant weld metal overlay (CRWMO) cladding of the lower head and nozzles (inlet, outlet, and DVI) with chemical analysis and delta ferrite inspection.

The inspectors reviewed the above CMTRs to determine whether the applicable dimensions, chemical compositions, mechanical properties (tensile and yield strength, elongation and reduction of area, Charpy V-notch and drop weight impact testing), heat treatments, and nondestructive examinations were in accordance with the requirements of the:

- ASME Section II, Part A, SA-508, Grade 3, Class 1, "Specification for Quenched and Tempered Vacuum-Treated Carbon and Alloy Steel Forgings for Pressure Vessels";
- ASME Section II, Part A, SA-182, Grade F316LN, "Specification for Forged or Rolled Alloy Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service";
- ASME Section II, Part A, SA-275, "Test Method for Magnetic Particle Examination of Steel Forgings";
- ASME Section III, Subsection NCA, Subarticle NCA-3800, "Metallic Material Organization's Quality System Program";
- ASME Section V, "Nondestructive Examination" (including Article 23, Ultrasonic Standards: SA-388, "Standard Practice for Ultrasonic Examination of Heavy Steel Forgings," and SA-745, "Standard Practice for Ultrasonic Examination of Austenitic Steel Forgings");
- APP-MV01-Z0R-101, "AP1000 Reactor Vessel Design Report";
- APP-MV01-Z0-100, "Fabrication Specification for AP1000 Reactor Vessel";
- Unit 3 UFSAR with reference to 10 CFR Part 50, Appendix B, and 10 CFR Part 21 applicability; and
- Doosan, AP-MPS21-065, "Material Purchase Specification for SA-508 Grade 3 Class 1 Forging for AP1000 Project."

The inspectors reviewed the following four Doosan Welding Procedure Specifications (WPSs) with supporting Procedure Qualification Records (PQRs) used for CRWMO cladding on the internal surfaces of the reactor vessel to determine whether the essential and nonessential variables for each welding process were in accordance with the ASME Section IX, Article II, and "Welding Procedure Qualifications":

- A-F-0308-117 for machine Flux-Cored Arc Welding (FCAW);
- A-T-0308-124 for manual Gas Tungsten Arc Welding (GTAW);
- A-M-0308-138 for manual Shielded Metal Arc Welding (SMAW); and
- A-A-0308-150 for machine Submerged Arc Welding (SAW).

The inspectors reviewed four CMTRs of stainless steel weld filler metals used for CRWMO cladding with the FCAW, GTAW, SMAW, and SAW processes to determine whether chemical compositions and mechanical properties were in accordance with the requirements of ASME Section III, NB-2400, "Welding Material," and ASME Section II, Part C, "Specifications for Welding Rods, Electrodes, and Filler Metals."

The inspectors reviewed Doosan procedures for ultrasonic thickness measurement and ultrasonic examination to determine whether CRWMO cladding measurements and

nondestructive examinations were performed in accordance with the applicable requirements of ASME Section V, Article 23, "Ultrasonic Standards," using SE-797, "Standard Practice for Measuring Thickness by Manual Ultrasonic Pulse-Echo Contact (American Society for Testing and Materials (ASTM) E 797-95) Method," and Article V, Ultrasonic Examination Methods for Materials and Fabrication, respectively.

The inspectors reviewed a Doosan Nonconformance Report (NCR) 110704 for a DVI nozzle safe-end Piece No. 4880-1 with a nonconforming ultrasonic examination performed by Lenape Forged Products Corporation using a 5 MHz frequency in lieu of 2.25 MHz required by ASME Section II, SA-745, to determine whether an issue was identified, re-examined, and documented by Doosan in accordance with the requirements of 10 CFR Part 50 Appendix B, Criterion 10, "Inspection."

b. Findings

No findings were identified.

1A03 VOG3 ITAAC No. 73 / Family: 05B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 73 (2.1.03.04):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
4. Pressure boundary welds in components identified in Table 2.1.3-1 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.

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

- 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

The inspectors reviewed Doosan records for the reactor vessel to verify that applicable codes, standards, specifications, and procedure requirements were met; proper reviews and approvals were documented; and traceability of materials, welders, and welding operators was provided for welding activities. The inspectors reviewed a variation of CMTRs, WPSs (with supporting PQRs), welder and nondestructive examination (NDE) qualifications, NDE reports, weld travelers, and weld maps for the following welds:

- three girth welds (101-51, 101-40, and 201-40) between the upper to lower shells, lower shell to transition ring, and lower head to transition ring, respectively;
- three upper shell to nozzle welds for an inlet nozzle (101-21A), outlet nozzle (102-21A), and DVI nozzle (103-21B);
- three dissimilar welds of safe-end to nozzles for an inlet nozzle (201-20A), outlet nozzle (301-20A), and DVI nozzle (401-20B);
- buttering welds for an inlet nozzle (103-24A), outlet nozzle (103-25A), and DVI nozzle (103-26B); and
- weld repairs of dissimilar welds of safe-end to inlet nozzles A-C-D, outlet nozzle A, and DVI nozzle B.

Specifically, the inspectors reviewed seven weld travelers to verify traceability between welding material heat numbers, welders, NDE reports, and Quality Control (QC) inspections for each weld was documented. The inspectors also reviewed three weld maps to determine the applicable WPSs used during production. The inspectors reviewed six CMTRs of weld filler metal to verify the material yield strength, tensile strength, elongation, and chemical composition requirements were met. The inspectors reviewed 13 WPSs to verify they had adequate supporting PQRs and were up to date, accurate, and in conformance with the ASME Code requirements. The inspectors also reviewed the 10 associated PQRs to determine whether the proper materials were used, chemical composition requirements specified in the WPS were met, and adequate impact testing was demonstrated, if applicable.

The inspectors reviewed 22 welder qualifications and 35 NDE personnel qualifications to determine whether each welder and examiner was assigned a unique identification number and demonstrated their skill by performing specific performance qualification tests, the qualification testing conditions and qualification limits were fully documented, and the appropriate number of acceptable test results was achieved.

The inspectors reviewed final NDE reports to verify NDE was performed and found acceptable by the proper certification level of NDE personnel and in accordance with the applicable sections of the ASME Code. Specifically, the inspectors reviewed four liquid penetrant examination reports to verify there were no recordable defects on the surface of the weld. The inspectors reviewed nine magnetic particle examination reports to verify the proper yoke lifting power, visible light source, and surface temperature requirements were met to ensure adequate performance of the test. The inspectors reviewed 12 ultrasonic examination reports to verify adequate angles and frequencies were used to examine the welds, as well as three ultrasonic measurement thickness reports to verify the buttering thickness met the applicable design documents. The inspectors reviewed nine radiography examination reports along with the associated films to verify there were no rejectable indications in the welds. The inspectors also reviewed Doosan's NDE procedures for liquid penetrant, magnetic particle, ultrasonic, and radiographic examination to verify they were in accordance to applicable sections of the ASME Code.

The inspectors reviewed seven welding defect notices (WDNs) and applicable supporting documents associated with weld repairs in the girth seams and nozzles to verify:

- adequate disposition and technical justification, if applicable, for use-as-is, repair, rework, or reject was identified;
- repair welding was performed in accordance with a WDN Repair Traveler;
- welds were re-examined through nondestructive examination in accordance with applicable procedures and the original acceptance criteria;
- verification of the repair was acceptable; and
- reportability screening and evaluations under 10 CFR Part 21 and 10 CFR 50.55(e) were performed.

b. Findings

No findings were identified.

1A04 (Unit 3) ITAAC No. 139 / Family: 06F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 139 (2.2.02.07b.ii):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
7.b) The PCS wets the outside surface of the containment vessel. The inside and the outside of the containment vessel above the operating deck are coated with an inorganic zinc material.	ii) Inspection of the containment vessel exterior coating will be conducted.	ii) A report exists and concludes that the containment vessel exterior surface is coated with an inorganic zinc coating above elevation 135'-3".

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

- 65001.06-02.04 - Testing and Verification

The inspectors reviewed work procedure WSS-3080-QWI-10-01-03, "Performing Methyl Ethyl Ketone (MEK) Rub Test," Rev. 3, to determine if it adequately prescribed the testing requirements established by the design specification, ASTM D740, "Standard Specification for Methyl Ethyl Ketone," Revision 11, and the UFSAR. The inspectors observed a sample of MEK rub testing activities associated with Unit 3 Lower Ring to determine whether the testing was completed in accordance with the work procedures and industry standards. Specifically, the inspectors observed:

- percentage of areas tested based on statistical sampling requirements;
- size of testing area;
- adequate cure time;
- surface cleaning;
- testing procedures;
- minimum required rating was met; and
- dry film thickness (DFT) readings (minimum of 3) taken in the test area.

The inspectors also observed the dry film thickness gauge testing to determine whether the testing was completed in accordance with the work procedures and industry standards. Specifically, the inspectors observed the testing to determine if:

- the coating met the manufacturer's guidelines;
- the containment vessel design specification requirements that the DFT was 2-6 mils thick;
- and testing occurred three times per area of MEK rub testing.

The inspectors reviewed the calibration records for the dry film thickness gauge to determine if it was properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits.

b. Findings

No findings were identified.

1A05 (Unit 3) ITAAC No. 760 / Family 01F

a. Inspection Scope

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

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

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A.02.01 - Observation of in-Process Installation Activities

The inspectors performed a direct inspection of the structural reinforcement (rebar) for the Unit 3 containment internal structures basemat at elevation 80'-6". The inspectors specifically focused on the rebar installed for the floor slab at the east and west steam generator compartments, as well as the rebar around the steam generator embedded

columns. During this inspection, the inspectors utilized American Concrete Institute (ACI) 349-01 code requirements, as well as Westinghouse (WEC) design drawings and approved engineered design changes to determine whether top and bottom layer rebar was installed in accordance with applicable drawings, instructions and procedures. While performing this inspection, the inspectors independently verified the following reinforcement attributes:

- size and grade;
- spacing;
- development lengths;
- lap splice lengths; and
- clear cover requirements.

Prior to the 80'-6" concrete placement, the inspectors checked structural reinforcement and embed plates to determine whether they were properly secured to prevent movement. The inspectors also determined whether the concrete was clean and free of any dirt/debris, and whether the concrete surface was intentionally roughened to satisfy ACI 349-01 construction joint requirements.

On September 26, 2014, the inspectors observed concrete placement activities inside the unit 3 containment vessel, up to elevation 80'-6", to determine whether:

- accepted procedures and specifications were followed throughout the concrete placement;
- the equipment used was suitable and sized for the work;
- placement drop distances did not exceed specification requirements and did not result in segregation; and
- inspection during placement was performed as required.

The inspectors also observed in-process concrete testing activities to determine whether:

- concrete temperature, slump, air content, and unit weight were determined at the proper locations and frequency as required by procedures, specifications, and ASTM standards;
- sample collection and testing techniques conformed to the procedures, specifications, and ASTM standards; and
- concrete strength test sample cylinders were made at the required locations and frequency.

b. Findings

.1 Failure to Correctly Translate Shear Reinforcement Design Requirements Into Design Drawings

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 III, "Design Control," for the licensee's failure to correctly translate the design basis into design drawings.

Description

On September 19, 2014, the inspectors identified that the licensee had installed safety-related reinforcing steel in the Vogtle Unit 3 containment internal structures basemat using design drawings that were not compliant with the design basis requirements established by ACI 349-01, "Code Requirements for Nuclear Safety Related Concrete Structures," and design calculation APP-1100-CCC-005, "Design Calculation, Containment Mass Concrete Reinforcement, Elevation 71'-6" to 83'-0"/84'-6"," Rev. 0. Specifically, the following design drawings specified less shear reinforcement than what section 11.1, "Shear Strength," of the ACI 349-01 Code and Section 5.1.1.3.2 of design calculation APP-1100-CCC-005 required:

- SV3-1110-CR-540, "Containment Concrete Reinforcement EL 71'-6" UP TO 83'-0"/84'-6" PLAN AT EL 80'-0" WEST SG COMPARTMENT" Rev. 0; and
- SV3-1110-CR-541, "Containment Concrete Reinforcement EL 71'-6" UP TO 83'-0"/84'-6" PLAN AT EL 80'-0" EAST SG COMPARTMENT" Rev. 0.

The inspectors noted that these design drawings were issued for construction and maintained in work package SV3-1120-CRW-CV1592, "Containment Concrete Reinforcement El 71'-6" to El 84'-6"," Rev. 0. The inspectors also noted that the licensee's commitment to ACI 349-01, as described in Section 3.8, "Design of Category I Structures," of the Vogtle UFSAR is considered Tier 2* information.

In order to resolve this nonconformance, the licensee performed a re-evaluation of the structural design and subsequently corrected the minimum shear reinforcement required by code, updated the aforementioned calculation, and increased the minimum shear reinforcement specified on the design drawings. Since the licensee had installed more shear reinforcement than the minimum amount specified by the updated drawings and calculation, the as-built shear reinforcement was bounded by the revised calculation and design drawings. The inspectors reviewed this engineering and design coordination report (E&DCR SV3-CC01-GEF-000031, "Shear Reinforcement Discrepancy," Rev. 0) and determined that the changes were compliant with the ACI 349-01 Code and the licensee's quality assurance program requirements.

Analysis

The inspectors determined that the failure to correctly translate design requirements into design drawings, as required by 10 CFR Part 50, Appendix B, Criterion III, represented a performance deficiency. The performance deficiency was considered more than minor following the guidance in Inspection Manual Chapter (IMC) 0613, "Power Reactor Construction Inspection Reports," Appendix E. Specifically, the issue represented a substantive non-conservative error in a design document that defined the technical requirements for the shear reinforcement in the containment internal structures basemat.

The finding was determined to be an ITAAC finding because it was material to the acceptance criteria of Unit 3 ITAAC 760. The acceptance criteria of this ITAAC requires that a reconciliation report, concluding the "as-built" construction conforms to the approved design, is completed for the areas associated with the ITAAC. This finding is associated with deviations from design requirements that would not have been reconciled by the licensee as required by the ITAAC because the issued for construction design drawings contained deviations which did not meet ACI 349-01 requirements.

The inspectors concluded that this finding was associated with the Design/Engineering Cornerstone. The inspectors used IMC 2519, "Construction Significance Determination Process," to evaluate the finding and determined that the finding was of very low safety significance (Green). This was determined because the licensee was able to demonstrate that the as-built shear reinforcement exceeded the minimum amount specified by the design drawings and was sufficient to not impair the design function of the containment internal structures basemat.

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, "Power Reactor Construction Inspection Reports." This finding has a cross-cutting aspect in the area of Human Performance, Documentation, because the licensee failed to ensure that procedures (such as construction drawings and work packages) were accurate and adequate to assure construction quality. [H.7]

Enforcement

Criterion III, "Design Control," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," states in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

UFSAR Section 3.8.4.4.1 states in part, that the design and analysis procedures for Seismic Category I structures are in accordance with ACI 349-01 for concrete structures. Chapter 11, "Shear and Torsion," Section 11.1, "Shear Strength," of ACI 349-01, requires in part that the design of cross sections subject to shear shall be based on the nominal shear strength computed to be greater than the factor of shear forces at the section considered. Where the nominal shear strength computed equals both the nominal shear strength provided by concrete and the nominal shear strength provided by reinforcement.

Section 5.1.1.3.2, "Provided Shear Reinforcement Area 2 (Innermost West/East SG Compartment at Elevation 80'-0")," of design calculation, APP-1100-CCC-005, "Design Calculation, Containment Mass Concrete Reinforcement, Elevation 71'-6" to 83'-0"/84'-6", Rev. 0, states in part that, "the minimum number of rebar required is 113.68 in²."

Contrary to the above, as of September 19, 2014, the licensee failed to correctly translate the design basis of the containment internal structures basemat into design drawings. Specifically, design drawings, SV3-1110-CR-540 and SV3-1110-CR-541, specified 111.91 in² minimum of total shear reinforcement; whereas, calculation APP-1100-CCC-005 required a minimum of 113.68 in² of total shear reinforcement.

This violation is being treated as an NCV, consistent with section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee's corrective action program as condition report number 877796 to ensure actions are taken to correct the condition. Moreover, E&DCR SV3-CC01-GEF-000031, "Shear Reinforcement Discrepancy," Rev. 0, was issued to reconcile the deviation between the design calculation and drawings. (NCV 05200025/2014004-01, Failure to Correctly Translate Shear Reinforcement Design Requirements Into Design Drawings).

Upon approval of the changes to the calculation and drawings, the licensee was able to accept the as-installed shear reinforcement because it had exceeded the minimum amount specified by the original design drawings and was compliant with the revised design documents and the ACI 349-01 Code. Therefore, the inspectors determined that this NCV is closed because the condition no longer impacted the ITAAC acceptance criteria.

.2 Failure to Install Structural Reinforcement in Accordance with ACI 349-01 Development Length Requirements

Introduction

The inspectors identified an ITAAC 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 install structural reinforcement in accordance with approved design drawings.

Description

On September 20, 2014, the inspectors identified that the licensee had installed safety-related reinforcing steel in the Vogtle Unit 3 containment internal structures basemat that were not compliant with the design basis requirements established by ACI 349-01, "Code Requirements for Nuclear Safety Related Concrete Structures," and design calculation, APP-1100-CCC-005, "Design Calculation, Containment Mass Concrete Reinforcement, Elevation 71'-6" to 83'-0"/84'-6"," Rev. 0. Specifically, the following design drawings required vertical reinforcement around the east and west steam generator compartments to be installed with development lengths in accordance with Chapter 12, "Development and Splices for Reinforcement," of the ACI 349-01 Code and Section 5.1.4.2, "Minimum Straight or Hooked Development Length Designs," of design calculation APP-1100-CCC-005:

- SV3-1110-CR-526, "Containment Concrete Reinforcement EL 71'-6" UP TO 83'-0"/84'-6" WEST SG AREA DOWEL PLAN," Rev. 2; and
- SV3-1110-CR-527, "Containment Concrete Reinforcement EL 71'-6" UP TO 83'-0"/84'-6" EAST SG AREA DOWEL PLAN," Rev. 2.

The inspectors noted that these design drawings were issued for construction and maintained in work package SV3-1120-CRW-CV1592, "Containment Concrete Reinforcement EI 71'-6" to EI 84'-6"," Rev. 0. The inspectors also noted that the licensee's commitment to ACI 349-01, as described in Section 3.8, "Design of Category I Structures," of the Vogtle UFSAR is considered Tier 2* information.

The licensee failed to install the vertical reinforcement with the minimum development length specified by the design drawings. Therefore, the as-built configuration did not meet the ACI 349-01 Code nor the design drawings. In order to resolve this nonconformance, prior to concrete being placed, the licensee removed the nonconforming reinforcement; generated engineering and design coordination report SV0-CR01-GEF-000351, "Z-Bar Options at SG Compartments," Rev. 0; and re-installed the vertical reinforcement in accordance with the design requirements. The inspectors determined that these changes were compliant with the ACI 349-01 Code, design drawings, and the licensee's quality assurance program.

Analysis

The inspectors determined that the failure to correctly install structural reinforcement in accordance with approved design drawings, as required by 10 CFR Part 50, Appendix B, Criterion V, represented a performance deficiency. The performance deficiency was considered more than minor following the guidance in IMC 0613, "Power Reactor Construction Inspection Reports," Appendix E. Specifically, the issue represented an adverse condition that rendered the quality of a system, structure, or component (SSC) unacceptable or indeterminate and required substantive corrective action to the vertical structural reinforcement in the containment internal structures basement surrounding the east and west steam generator compartments at elevation 80'-6".

The finding was determined to be an ITAAC finding because it was material to the acceptance criteria of Unit 3 ITAAC 760. The acceptance criteria of this ITAAC requires that a reconciliation report, concluding the "as-built" construction conforms to the approved design, is completed for the areas associated with the ITAAC. This finding is associated with deviations from design requirements that would not have been reconciled by the licensee as required by the ITAAC, because the "as-built" construction did not conform to design drawings which resulted in a deviation from ACI 349-01 requirements.

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). This was determined because the licensee was able to demonstrate with reasonable assurance that the design function of the applicable structure would not be 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, "Power Reactor Construction Inspection Reports." This finding has a cross-cutting aspect in the area of Human Performance, Field Presence, because the licensee failed to ensure that supervisory and management oversight of work activities, including contractors, was adequate and sufficient enough such that construction quality was supported and assured [H.2].

Enforcement

Criterion V, "Instructions, Procedures, and Drawings" of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," states in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

UFSAR Section 3.8.4.4.1 states in part, that the design and analysis procedures for Seismic Category I structures are in accordance with ACI 349-01 for concrete structures. The criteria of ACI 349-01, Chapter 12, are applied in development and splicing of reinforcing steel.

Chapter 12, "Development and Splices for Reinforcement," Section 12.1, "Development of Reinforcement: General," of ACI 349-01, requires in part that reinforcement at each section of structural concrete members shall be developed on each side of that section by embedment length, hook or mechanical device, or a combination thereof.

Section 5.1.4.2, "Minimum Straight or Hooked Development Length Designs" of design calculation, APP-1100-CCC-005, "Design Calculation, Containment Mass Concrete Reinforcement, Elevation 71'-6" to 83'-0"/84'-6"," Rev. 0, states in part that all of the structural reinforcement that is required per analysis must be fully developed on each side of the section per ACI 349-01 Section 12.1.

WEC design drawings, SV3-1110-CR-526, "Containment Concrete Reinforcement EL 71'-6" UP TO 83'-0"/84'-6" WEST SG AREA DOWEL PLAN," Rev. 2 and SV3-1110-CR-527, "Containment Concrete Reinforcement EL 71'-6" UP TO 83'-0"/84'-6" EAST SG AREA DOWEL PLAN," Rev. 2, specified development requirements.

Contrary to the above, as of September 20, 2014, the licensee failed to correctly install vertical reinforcing steel around the perimeter of the east and west steam generator compartments at the 80'-6" elevation in accordance with the aforementioned design documents and ACI 349-01 development length requirements.

This violation is being treated as an NCV, consistent with section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee's corrective action program as condition report number 877795 to ensure actions are taken to correct the condition. E&DCR SV0-CR01-GEF-000351, "Z-Bar Options at SG Compartments," Rev. 0 was created in response to this violation and the licensee reworked the nonconforming conditions and installed reinforcement with the correct development length as specified by the design drawing and the E&DCR. As a result of the corrective actions, the inspectors determined that this NCV is closed because the condition no longer impacted the ITAAC acceptance criteria. Therefore, the potential impact to the ITAAC was resolved. (NCV 05200025/2014004-02, Failure to Install Structural Reinforcement in Accordance with ACI 349-01 Development Length Requirements).

1A06 (Unit 3) ITAAC No. 760 / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 760 (3.3.00.02a.i.a). The inspectors used the following NRC inspection procedures/sections to perform this inspection:

- 65001.B-02.02-Welding Procedure Qualification
- 65001.B-02.03-Welder Qualification
- 65001.B-02.05-Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors reviewed a sample of nonconformance and disposition (N&D) reports and applicable supporting documents associated with vendor welding procedure specifications used on structural module welds for CA04 that did not comply with the American Welding Society (AWS) D1.1:2000 Code. Specifically, the inspectors reviewed applicable prequalified and qualified welding procedure specifications, procedure qualification records, weld travelers, welding operator qualification records, certified material test reports, and nondestructive examination records, as well as observed the applicable welds in the field, to determine whether the conditions identified in the following N&Ds were adequately reviewed and accepted, rejected, repaired, or

reworked in accordance with the quality assurance (QA) program implementing documents for the control of nonconforming material, parts, and components:

- APP-CA04-GNR-850007, "SV3 CA04 WPS 1-1-107 Noncompliance to AWS Code Requirements," Rev. 0
- APP-CA04-GNR-850008, "SV3 CA04 WPS 1-1-86 Non-Compliance to AWS Code Requirements," Rev. 0
- APP-CA04-GNR-850009, "SV3 CA04 WPS 1-1-107 Non-Compliance to AWS Code Requirements," Rev. 0
- SV3-CA04-GNR-000022, "CA04-03 Horizontal Stiffener now Inaccessible," Rev. 0
- SV3-CA04-GNR-000027, "CA04-03 Horizontal Stiffener Now Inaccessible," Rev. 0
- APP-GW-GNR-850038, "WPS 1-1-107 (NCR 14-153) Struct. WPS Non-Compliance to AWS Code Requirements," Rev. 0

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

- 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 was 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; and
- repaired or reworked items were re-examined in accordance with applicable procedures and the original acceptance criteria.

b. Findings

No findings were identified.

1A07 (Unit 3) ITAAC No. 760 / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 760 (3.3.00.02a.i.a). The inspectors used the following NRC inspection procedures/sections to perform this inspection:

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.02-02.01 - Inspection of Concrete Placement

The inspectors performed a direct inspection of the reinforcement (rebar) installed inside the Unit 3 containment vessel bottom head (CVBH), to support the 76'-6" containment mass concrete placement. During this inspection, the inspectors utilized the following WEC issued for construction design drawings:

- SV3-1100-CR-519, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" General Vertical Dowel Plan," Rev. 2;
- SV3-1100-CR-524, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" Plan at EL 76'-6"," Rev. 2;
- SV3-1100-CR-525, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" Sections," Rev. 2;
- SV3-1100-CR-531, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" Vertical Dowel Layout at CJ 76'-6"," Rev. 2;
- SV3-1100-CR-540, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" Plan at EL 80'-0" West SG Compartment," Rev. 0;
- SV3-1100-CR-541, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" Plan at EL 80'-0" East SG Compartment," Rev. 0;
- SV3-1100-CR-546, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" Sections," Rev. 2;
- SV3-1100-CR-547, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" Sections," Rev. 2;
- SV3-1100-CR-549, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" Sections," Rev. 2; and
- SV3-1100-CR-550, "Containment Concrete Reinforcement EL 71'-6" Up to 83'-0"/84'-6" Sections," Rev. 2.

The inspectors utilized the aforementioned WEC design drawings to determine whether both horizontal and vertical rebar surrounding module CB65/66 and module CA04 (Room 11104 RCDT Room and Room 11105 RV Cavity, respectively) was installed in accordance with WEC design drawings and applicable engineered approved design changes. The inspectors verified that the rebar was of the correct size, type and spacing, and that the bent horizontal and vertical rebar had the appropriate bends as specified by the design drawings. The inspectors also independently measured installed lapped splices and development lengths for conformance to WEC AP1000 Concrete General Notes and American Concrete Institute 349-01, "Code Requirements for Nuclear Safety-Related Concrete Structures." Furthermore, the inspectors determined whether the horizontal construction joint dowel reinforcement was installed correctly.

Prior to concrete placement, the inspectors reviewed Chicago Bridge and Iron (CB&I) QC inspection report C112-002-14-0109, "Reinforcing Steel Elev 71'-6" to 76'-6"," and C112-002-14-0119, "Containment Concrete Placement Elev 71'-6" to 76'-6"," to determine whether the following attributes were verified by CB&I QC organization:

- rebar is of the proper size and type;
- rebar is installed in correct location;
- rebar has the correct lap splice and development length; and
- reinforcement is clean and secure.

In addition, the inspectors performed a concrete pre-placement inspection of the installed formwork surrounding both the east and west steam generator block-outs to determine whether the:

- clear cover dimensions were in accordance with the applicable WEC concrete drawings;
- formwork was clean and secure; and
- dimensions of the formwork were correctly in place to provide the block-out dimensions specified on WEC concrete drawings.

The inspectors observed in-process concrete placement activities to determine whether:

- concrete drop heights were within specifications;
- concrete was properly placed and consolidated; and
- concrete was placed within the required testing limits and frequency.

b. Findings

No findings were identified.

1A08 (Unit 3) ITAAC No. 760 / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 760 (3.3.00.02a.i.a). The inspectors used the following NRC inspection procedures/sections to perform this inspection:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.05 - Steel Structures
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors observed work associated with the Vogtle Unit 3 CA01 module. Specifically, the inspectors performed an independent visual inspection of submodules CA01-20, -21, and -35 to determine whether these submodules were built in accordance with the construction drawings, AISC N690-1994, AWS D1.1 2000, AWS D1.6 1999, and applicable regulatory requirements. Modules CA01-20 and -21 form a portion of the west refueling cavity wall and CA01-35 forms a portion of the south refueling cavity wall parallel with column line 7 from elevation 98' 0" to 135' 3". Specifically, the inspectors observed the location, arrangement, and attachment of the following Tier 2* structural components:

- angles;
- channels;
- shear studs;
- mechanical couplers; and
- carbon and stainless steel faceplates at 4' spacing as specified in UFSAR table 3.3-1.

The inspectors performed their independent inspections after the licensee and contractors completed their oversight on these submodules. This timing allowed the inspectors to verify whether the licensee was providing adequate oversight with regard to the following areas:

- the licensee confirmed that the sub-modules and miscellaneous connection steel conformed to design drawings and that there were no deviations from the approved design;
- the licensee established and implemented an effective method for tracking, evaluating, and dispositioning of changes or modifications to the approved design;
- installation, inspection, and testing sequences were being maintained;
- any design changes or field modifications relevant to work observed were properly controlled and processed in accordance with quality and technical requirements; and
- the items were assembled in accordance with the latest approved-for-construction drawings and procedures.

The inspectors also performed independent inspections to evaluate the weld quality and condition of structures, systems, and components for the CA01 module. Specifically, inspectors reviewed the condition of the welds to determine if they met the requirements of the industry standards and design specifications with regard to size, length, and location of welds. The inspectors also performed independent visual inspections of the these submodules to determine if the welds met the requirements of Table 6.1, "Visual Inspection Acceptance Criteria," of AWS D1.1:2000 for carbon steel and Part E, "Quality of Welds," Section 6.28, "Quality of Welds - Statically Loaded," of AWS D1.6:1999 for stainless steel or duplex. Specifically, the visual inspection looked to identify whether any of the following conditions existed:

- cracks;
- lack of fusion;
- undercut;
- porosity; and
- weld size under-run.

The inspectors reviewed a sample of CB&I Power N&D reports which were associated with submodule CA01-01 repair work and fit-up. The inspectors reviewed these N&D reports, which documented a difference between the as-designed and as-built condition of the submodule to determine whether the difference was properly documented, evaluated, and incorporated into the work packages. The N&D reports that were reviewed as a part of this inspection and the associated work packages are shown in the documents reviewed section of the report. The inspectors verified that these nonconformances were properly evaluated against the current licensing basis. The inspectors compared these N&D reports to Section 15, "Nonconforming Materials, Parts, or Components," of the CB&I quality assurance program (SWSQAP 1-74A, Rev. B) and CB&I procedure QS 15.1, "Nonconformance & Disposition Report," Revision 5.

b. Findings

No findings were identified.

1A09 (Unit 3) ITAAC No. 760 / Family 01Fa. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 760 (3.3.00.02a.i.a). The inspectors used the following NRC inspection procedure/section to perform this inspection:

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

The inspectors reviewed CB&I Power N&D report number SV3-CA05-GNR-000073, "OLP CA05.71 Stud Interference," Revision 0; which was associated with the onsite fabrication of the CA05 module. The inspectors reviewed this N&D, which documented a difference between the as-designed and as-built module to determine whether the difference was properly documented, evaluated, and incorporated into the as-built drawing (SV3-CA05-S5-07003, "Containment Building Area 3 Module CA05 Submodule CA05-07 Structural Outline - Vertical Sections / Views," Revision 0). The inspectors verified that this condition was properly evaluated against the current licensing basis.

The inspectors compared this N&D report to Section 15, "Nonconforming Materials, Parts, or Components," of the CB&I (formerly Shaw) quality assurance program (SWSQAP 1-74A, Rev. B) and CB&I procedure QS 15.1, "Nonconformance & Disposition Report," Revision 5.

b. Findings

No findings were identified.

1A10 (Unit 3) ITAAC No. 760 / Family 01Fa. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 760 (3.3.00.02a.i.a). The inspectors used the following NRC inspection procedures/sections to perform this inspection:

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 - Procedures
- 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-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.B-02.06 - Records
- 65001.02-02.01 - Inspection of Concrete Placement
- 65001.A - As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed a field inspection of containment internal reinforcing steel from elevation 76'-6" to 80'-6". The inspectors reviewed applicable design drawings, design specifications, and interviewed licensee personnel to determine whether structural concrete work and related licensee quality control activities were being performed in accordance with design specifications and approved procedures. Specifically, the inspectors verified that:

- structural concrete design and construction was accomplished under controlled conditions and in accordance with applicable procedures, specifications, drawings, and approved procedures using qualified personnel;
- key building critical dimensions and materials satisfied design specifications, requirements, and relevant ITAAC;
- deviations from the design due to as-built conditions were identified and documented appropriately;
- records reflected that completed work met design specifications and acceptance criteria;
- reinforcing steel installation was controlled and performed in accordance with the applicable specifications, codes, drawings, and procedures;
- reinforcing steel was located properly in the structures, secured, free of excess rust, and had proper clearances;
- QC inspections were performed to verify correct placement of reinforcing steel;

In addition, inspectors reviewed applicable design specifications, E&DCRs, nonconformance reports, and corrective action reports associated with the containment vessel bottom head reinforcing steel installation to determine if:

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

The inspectors performed a direct inspection of construction activities associated with the assembly of CA01. The inspectors observed fit up and welding for the seam weld joining submodules CA01-01 and CA01-24 which forms part of the south and east refueling cavity wall from elevation 98'-0" to 135'-3". The inspectors reviewed the drawings, WPSs, and supporting PQRs to determine whether the welding activities were performed in accordance with the design specifications, design drawings, and AWS D1.1, "Structural Steel Welding Code." The inspectors also reviewed the welder qualification records to determine whether the welders performing the activities were qualified in accordance with the applicable AWS D1.1 requirements. The inspectors reviewed the weld travelers to verify the traceability of each welder and the filler material used for the weld observed. The inspectors also reviewed the CMTRs for the weld filler material used to determine whether the material was in accordance with the WPS.

The inspectors performed an inspection of submodules CA01-42, CA01-43, and CA01-44. The inspectors measured the overall dimensions of each submodule to determine whether they were in accordance with approved design drawings. The inspectors also performed measurements of the steel components including the face plates, stiffeners, cross beams, and other supporting steel to ensure the member size, shape, and grade was in accordance with the design drawings and design specifications. The inspectors

visually inspected the welds to determine whether if they were the correct type, size, in the proper location, and free of any visual defects. The inspectors also reviewed nonconformance documents associated with the submodules to verify if deviations from the design were being identified at the appropriate threshold, adequately documented, and controlled within the applicable nonconformance and parallel receipt inspection process.

b. Findings

No findings were identified.

1A11 (Unit 3) ITAAC No. 762 / Family 01F

a. Inspection Scope

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

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

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.02-02.01 - Inspection of Concrete Placement

The inspectors performed a surveillance of the 36” thick interior wall at column line 7.3 to determine whether safety-related construction activities were performed in accordance with applicable design drawings, design specifications, and applicable approved design changes. During this inspection, the inspectors performed an independent surveillance of installed reinforcement along the south and north sides of the interior wall. The

inspectors independently measured rebar spacing, location, as well as both splice lengths and development lengths, for conformance with ACI 349-01 requirements and the following design drawings:

- SV3-1210-CR-931, "Auxiliary Building Areas 3 & 4 Concrete Reinforcement Wall 7.3 Section and Details EL 66'-6"," Rev. 5;
- SV3-1200-CR-931, "Auxiliary Building Areas 3 & 4 Concrete Reinforcement Wall 7.3 Elevation," Rev. 17.

In addition, the inspectors performed a concrete pre-placement inspection of the installed formwork to determine whether the:

- clear cover dimensions were in accordance with the applicable WEC concrete drawings;
- formwork was clean and secure;
- embed plates were flush to the face of formwork; and
- width of the formwork along column line 7.3 was correctly in place to provide the wall thickness specified on WEC concrete drawings.

During concrete placement activities of wall 7.3, the inspectors determined whether:

- concrete drop heights were within specifications;
- concrete was properly placed and consolidated; and
- concrete was placed within the required testing limits and frequency.

Lastly, the inspectors observed batch plant activities to ensure activities were conducted in accordance with design specification SV3-CC01-Z0-026, "Safety Related Mixing and Delivering Concrete, Westinghouse Seismic Category 1, Safety Class C 'Nuclear Safety'," Rev. 5 as well as the following implementing procedures:

- CSI 3-31, "Concrete Batch Plant Operations," Rev. 4;
- CSI 3-32, "Concrete Batch Plant Mix and Material Control," Rev. 3; and
- CB&I Inspection Plan, F-C111, "Concrete Batch Plant – Mixing & Delivering Concrete," Rev. 5.

b. Findings

No findings were identified.

1A12 (Unit 3) ITAAC No. 762 / Family 01F

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.02-02.01 - Inspection of Concrete Placement

- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed an independent inspection of the structural reinforcement (rebar) along interior wall on column line K, between the Unit 3 shield wall and corridor 12111, at elevation 66'-6" to elevation 82'-6". During this inspection, the inspectors determined whether both horizontal and vertical rebar was installed in accordance with WEC design drawings and applicable engineered approved design changes. The inspectors specifically determined whether the rebar was of the correct size, type and spacing; and that horizontal rebar terminating at edges were enclosed and were the correct size/diameter. The inspectors also independently measured installed lapped splices and development lengths for conformance to WEC AP1000 Concrete General Notes and American Concrete Institute 349-01, "Code Requirements for Nuclear Safety-Related Concrete Structures."

The inspectors utilized WEC issued for construction design drawings to inspect the embed plates installed on both the east and west face of column line K. During this inspection, the inspectors specifically determined whether the embed plates were installed in the correct location/elevation, as well as whether the plates were of the correct type, size, and had the correct anchorage type, as specified on the following WEC design drawings:

- SV3-1212-CEX-921, "Auxiliary Building Area 2 Wall K Embedments Index Elevation 66'-6" East View," Rev. 3
- SV3-1212-CEX-925, "Auxiliary Building Area 2 Wall K Embedments Index Elevation 66'-6" West View," Rev. 3

The inspectors also independently determined whether the embed plates used to support the three hour fire rated metal studded wall in room 12113 (separate battery charger room) and were installed in accordance with WEC approved design drawings. During this inspection, the inspectors determined whether the embed plates were the correct length, width, and thickness as specified on SV3-1212-CE-806, "Auxiliary Building Area 2 3 HR Fire Rated Metal Studded Wall Top and Walls Embedded Plates Layout Room 12113 - Plan at EL 66'-6"," Rev 3. The inspectors also measured the stud spacing on the backside of the embed plates, as well as the stud head size and stud lengths, to determine whether the embed plates were in accordance with SV3-1200-CEX-010, "Auxiliary Building Fire Rated MSW Anchor Stud Layout," Rev. 0.

In addition, the inspectors performed a concrete pre-placement inspection of the installed formwork to determine whether the:

- clear cover dimensions were in accordance with the applicable WEC concrete drawings;
- embed plates were secure and flush with formwork;
- width of the formwork was correctly in place to provide the wall thickness specified on WEC concrete drawings; and
- formwork was clean and secure.

b. Findings

No findings were identified.

1A13 (Unit 3) ITAAC No. 762 / Family 01F

a. Inspection Scope

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

The inspectors used the following NRC inspection procedures/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.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.F-02.03 - Observation of Fabrication Activities
- 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 a direct inspection of the construction activities associated with the Unit 3 composite steel floors at elevation 82'-6" in the non-radiologically controlled area of the auxiliary building from Column Line 9.2 to Column Line 11 and between Column Line L and Column Line P to determine whether these activities were completed in conformance with the approved design and that any deviations from the design were properly identified, evaluated, and documented to provide assurance that these structural components were capable of withstanding design loads without loss of structural integrity and any safety related functions. The inspectors performed direct measurements of the structural beams supporting the floors and the structural steel connecting the floor to the walls to determine whether the structural steel was the correct shape, size, and spacing. The CMTRs for the structural steel were reviewed by the inspectors to determine whether the material was of the correct grade and material composition. The inspectors also reviewed construction installation records to verify if construction records accurately reflected the work performed and quality control inspections were performed at the prescribed construction steps and conducted by qualified personnel. The inspectors reviewed weld records and performed visual inspections of the welds to determine whether the welding was performed by qualified personnel, welders were traceable to each weld, weld filler material was of the appropriate type and controlled, and the weld procedures used were qualified and in accordance with applicable AWS D1.1 requirements. Approved design changes were also reviewed by the inspectors to verify if design changes were accurately documented, technically accurate, and contained an adequate justification. The inspectors observed the installation of the metal decking to determine whether the decking material was installed in accordance with the approved design and was of the correct material and size with studs welded at the appropriate spacing.

b. Findings

No findings were identified.

1A14 (Unit 3) ITAAC No. 763 / Family 01F

a. Inspection Scope

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

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

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.02-02.01 - Inspection of Concrete Placement

The inspectors performed a walkdown of room 12158 (Degasifier Discharge Pump Room), which is located in area 3 of the auxiliary building, just south of column line 7.3, and between column lines I and J from elevation 66'-6" to 82'-6". The inspectors specifically performed this inspection to determine whether safety-related construction activities were performed in accordance with applicable design drawings, design specifications, and applicable engineered approved design changes. During this inspection, the inspectors performed an independent surveillance of installed reinforcement (rebar) for the 24" small interior walls along the south and west sides of the Degasifier Discharge Pump Room. The inspectors independently measured rebar spacing, location, as well as both splice lengths and development lengths for conformance with ACI 349-01 requirements. The inspectors also observed installation of nuclear island safety-related embed plates along the small walls enclosing the Degasifier Discharge Pump Room. The inspectors performed visual inspections of the anchor studs welded to the backside of the embed plates and also measured the lengths of the embed anchors. In addition, the inspectors reviewed CB&I survey data to

determine whether the issued for construction embed plates were installed in accordance with the following drawings:

- SV3-1210-CE-992, "Auxiliary Building Small Walls Elevation 66'-6" (Sheet 3)," Rev. 13;
- SV3-1210-CE-990, "Auxiliary Building Small Walls Elevation 66'-6" (Sheet 1)," Rev. 9 and;
- SV3-1210-CEX-990, "Auxiliary Building Small Walls Embedments Index El. 66'-6" (Sheet 1)," Rev. 11.

Prior to concrete placements of the small walls enclosing the Degasifier Discharge Pump Room, the inspectors reviewed survey data of electrical conduits and piping penetrations. During this inspection, the inspectors determined whether installed electrical conduits and piping penetrations were in their designed locations and were within specified tolerances in accordance with the following drawings:

- SV3-1210-E0-931, "Auxiliary Building Electrical Penetrations Area Elevation 66'-6" Sections C, D & E," Rev. 2;
- SV3-1210-P0-931, "Auxiliary Building Piping Penetrations Area Elevation 66'-6" Sections C, D & E," Rev. 2;

The inspectors also observed in-process concrete placement activities in the aforementioned areas to determine whether:

- Concrete drop heights were within specifications;
- Concrete was properly placed and consolidated; and
- Concrete was placed within the required testing limits and frequency.

Lastly, the inspectors observed batch plant activities to ensure activities were conducted in accordance with design specification SV3-CC01-Z0-026, "Safety Related Mixing and Delivering Concrete, Westinghouse Seismic Category 1, Safety Class C 'Nuclear Safety'," Rev. 5 as well as the following implementing procedures:

- CSI 3-31, "Concrete Batch Plant Operations," Rev. 4;
- CSI 3-32, "Concrete Batch Plant Mix and Material Control," Rev. 3 and;
- CB&I Inspection Plan, F-C111, "Concrete Batch Plant – Mixing & Delivering Concrete," Rev. 5.

b. Findings

No findings were identified.

a. Inspection Scope

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

- 65001.01-02.05 - Steel Structures
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors observed work associated with the Vogtle Unit 3 CA20 module. Specifically, the inspectors performed independent inspections on submodule CA20-66 to determine whether this submodule was built in accordance with the construction drawings, AISC N690-1994, AWS D1.1 2000, AWS D1.6 1999, and applicable regulatory requirements. This module forms a piece of a floor and wall in the CA20 module (Column Line L-2 wall from 2 to 4). Specifically, the inspectors observed the location, arrangement, and attachment of the following Tier 2* structural components:

- angles;
- channels;
- shear studs;
- mechanical couplers; and
- carbon and stainless steel faceplates at 4' spacing as specified in UFSAR table 3.3-1.

The inspectors also performed independent inspections to evaluate the weld quality and condition of structures, systems, and components for the CA20 submodule. Specifically, inspectors reviewed the condition of the welds to determine if they met the requirements from the industry standards and design specifications with regard to size, length, and location of welds. The inspectors also performed independent visual inspections of the these submodules to determine if the welds met the requirements of Table 6.1, "Visual Inspection Acceptance Criteria," of AWS D1.1:2000 for carbon steel, and Part E, "Quality of Welds," Section 6.28, "Quality of Welds - Statically Loaded," of AWS D1.6:1999 for stainless steel or duplex. Specifically, the visual inspection looked to identify whether any of the following conditions existed:

- cracks;
- lack of fusion;
- undercut;
- porosity; and
- weld size under-run.

b. Findings

No findings were identified.

1A16 (Unit 3) ITAAC No. 763 / Family 01F

a. Inspection Scope

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

- 65001.B - Inspection of the ITAAC-Related Welding Program
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 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-02.03 - Welder Qualification
- 65001.B-02.04 - Production Controls
- 65001.B-02.05 - Inspection
- 65001.B-02.06 - Records
- 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

The inspectors observed the in-process welding of the Vogtle Unit 3 CA20 floor (From J1 to J2 between column lines 2 and 3; at elevation 98') to the ledger angles to determine whether the welding was performed within the ranges allowed by WPS number WPS2-1.1M01, and the requirements of the AWS D1.1:2000, "Structural Welding Code - Steel." Specifically, the inspectors observed the in-process welding of weld numbers CV0775-1, -2, -3, -4, -5, -6, and -7, which joined submodule floors CA20-52 and CA20-53 to the ledger angles that were welded to the CA20 walls. The inspectors also observed the fit-up and tack welds associated with this joint. The inspectors noted that this floor supports the Normal Residual Heat Exchangers. The inspectors also observed the in-process welding of weld number SV3-CA20-S4K-CV0774-14C, which was the complete joint penetration weld between floor submodules CA20-52 and CA20-53, to determine whether the welding was performed in accordance with the WPS.

Regarding the welds listed above, the inspectors reviewed the applicable portions of the CB&I AWS welding program to determine the following attributes:

- CB&I had approved procedures describing the administrative controls and work processes; and
- work control and inspection requirements prescribe adequate methods to ensure that the as-built condition of the module meets the relevant design documents, codes and standards, and current licensing basis.

The inspectors reviewed welding procedure number WPS2-1.1M01, which was an AWS D1.1 prequalified welding procedure. For this WPS, the inspectors compared it to the

requirements of Section 3, "Prequalification of WPSs," of AWS D1.1:2000 Code. The inspectors verified the following attributes for this WPS:

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

The inspectors also reviewed WPS2-1.1T71 and the associated PQRs to determine whether the welding procedure was properly qualified in accordance with Section 4, "Qualification," of AWS D1.1:2000 Code. Specifically, the inspectors reviewed PQR record numbers SP155, SP156, SP157, SP158, SP212, SP214, and SP227. The inspectors reviewed these PQRs and compared the ranges (for essential and nonessential variables) qualified to the requirements of Table 4.5, "PQR Essential Variable Changes Requiring WPS requalification for SMAW, SAW, GMAW, FCAW, and GTAW," of AWS D1.1:2000 Code. The inspectors reviewed these PQRs to determine whether the correct number and type of qualification tests were performed.

Furthermore, the inspectors reviewed these WPSs to determine whether the welding positions allowed by the WPS were in accordance with welding procedure qualification requirements stipulated by the AWS D1.1 Code. The inspectors verified that the above welding procedures were in the work control package and available to the welder during production welding activities.

For a sample of welders associated with the above welds, the inspectors reviewed the welder qualification records to determine whether these welders were qualified in accordance with the AWS D1.1:2000 code requirements and CB&I procedure WQ-1, "Qualification of Welders and Welding Operators," Revision 3. The inspectors verified that these welders were qualified to weld using the above WPSs. Furthermore, the inspectors verified the following:

- welding personnel have demonstrated their skill by performing specific performance qualification tests prescribed by the applicable code;
- performance qualification tests were fully documented, and that the welder qualification test was traceable to the welder; and
- the welders had used the welding process within the last six months to maintain their qualification.

The inspectors observe the in-process welding, including the tack welds, for the above weld numbers. During this inspection, the inspectors verified that a sample of the welding variables were within the ranges allowed by the WPS, such as: filler metal size and classification, voltage, amperage, travel speed, wire feed speed, shielding gas

composition, and shielding gas flow rate. Furthermore, during the in-process welding, the inspectors verified the following attributes:

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

The inspectors observed the in-process inspection performed by construction personnel of the fit-up, tack welds, and the final weld. The inspectors also performed an independent visual inspection of the fit-up and tack welds and a final visual inspection of the as-welded condition to determine whether the final weld satisfied the requirements of Table 6.1, "Visual Inspection Acceptance Criteria," of AWS D1.1:2000. The inspectors also verified that the final weld profile met the requirements of section 5.24.1, "Fillet Welds," of AWS D1.1:2000. Specifically, the inspectors observed the surface condition of the finished welds, measured the amount of reinforcement, and measured any locations of undercut to determine that the as-welded condition was acceptable per the aforementioned technical requirements.

The inspectors observed the CB&I QC fit-up inspection of this weld to determine that the QC inspection was performed in accordance with CB&I Inspection Plan number F-S561-04, "Structural Weld Inspection-Modules, AWS D1.1/D1.6 and Fabrication, Submodule Assembly, and Module in Plant installation tolerances," Revision 10. The inspectors also reviewed the QC inspector's qualification and certification records to verify that the inspector was qualified in accordance with the CB&I procedure QAD-2.15, "Qualification and Certification of Inspection and Test Personnel," Revision 3.A.

The inspectors reviewed the in-process and completed weld records, and associated work package (SV3-CA20-S4W-CV0425, "CA20 Subassembly 1 Wall Submodule Erection," Revision 0) associated with the welds listed above. The inspectors reviewed these weld records to determine whether:

- the welding activity was properly documented in the work traveler;
- records provided adequate traceability to all aspects of the welding activity, including traceability to the welder who performed the work;
- the records adequately documented the following attributes: reference to procedure and welder qualifications, inspector qualifications, weld material certifications and receipt inspection reports, weld data or process records (travelers), weld maps, weld inspection records, and NDE records;
- the records were appropriately retained and stored in accordance with QA program requirement;
- required inspections were identified in the traveler with hold points, as appropriate; and
- accepted, rejected, and repaired items were documented in written reports.

The inspectors reviewed ultrasonic examination (UT) report number V-14-UT-310-461 for weld number SV3-CA20-S4K-CV0774-14C to determine whether the required examination was performed in accordance with the MISTRAS UT procedure and the AWS D1.1:2000, "Structural Welding Code - Steel."

The inspectors reviewed the following design output documents associated with the above welds, to determine whether the specified weld joint was consistent with the applicable design documents and current licensing basis:

- SV3-CA20-S4-01004, "Auxiliary Building Areas 5 and 6 CA20 Module Subassembly 1 Floor, Elevation 100'0" and 107'2" Structural Outline Plan Views," Revision 0;
- SV3-CA20-S4-01011, "Auxiliary Building Areas 5 and 6 CA20 Module Subassembly 1 Structural Outline Sections and Details," Revision 0;
- SV3-CA20-S5Y-00200, "Auxiliary Building Areas 5 and 6 Module CA20 Standard Welding Details," Revision 0;
- SV3-CA20-S5Y-00202, "Auxiliary Building Areas 5 and 6 Module CA20 Standard Welding Details," Revision 0; and
- SV3-CA20-GEF-000123, "Floor CA20-52 and 53 Alt. Weld," Revision 0.

b. Findings

No findings were identified.

1A17 (Unit 3) ITAAC No. 763 / Family 01F

a. Inspection Scope

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

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

- 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 welding and nondestructive examination (NDE) records related to the installation of the CA20 module basemat attachment brackets welded to the CA20 module walls and nuclear island basemat embed plates. The inspectors reviewed these records to determine whether the licensee had performed these activities according to the applicable quality and technical requirements. The inspectors reviewed the weld data sheets and associated NDE reports for the welds associated with the E137, E138, E8, and E22 attachment brackets. The inspectors reviewed these weld records to determine whether:

- the welding activity was properly documented in the work traveler;
- records provided adequate traceability to all aspects of the welding activity, including traceability to the welder who performed the work;
- the records adequately documented the following attributes: reference to procedure and welder qualifications, inspector qualifications, weld material certifications and receipt inspection reports, weld data or process records (travelers), weld maps, weld inspection records, and NDE records;
- the records were appropriately retained and stored in accordance with QA program requirements;
- required inspections were identified in the traveler with hold points, as appropriate; and
- accepted, rejected, and repaired items were documented in written reports.

The inspectors reviewed the applicable welding procedure specifications to determine whether these procedures met the requirements of the AWS D1.1:2000 Code.

Specifically, the inspectors reviewed welding procedure number WPS2-1.1M02 and WPS2-1.1S02, which were AWS D1.1 prequalified welding procedures. For these welding procedures, the inspectors compared them to the requirements of Section 3, "Prequalification of WPSs," of AWS D1.1:2000 Code. The inspectors verified the following attributes for these welding procedures:

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

The inspectors reviewed WPS2-1.1T71 and WPS2-1.1T02 along with the associated PQRs to determine whether the welding procedure was properly qualified in accordance with Section 4, "Qualification," of AWS D1.1:2000 Code. Specifically, the inspectors reviewed PQR record numbers SP155, SP156, SP157, SP158, SP212, SP214, and

SP227 for WPS2-1.1T71. The inspectors reviewed PQR record numbers SP218, SP219, and SP220 for WPS2-1.1T02. The inspectors reviewed these PQRs and compared the ranges (for essential and nonessential variables) qualified to the requirements of Table 4.5, "PQR Essential Variable Changes Requiring WPS requalification for SMAW, SAW, GMAW, FCAW, and GTAW," of AWS D1.1:2000 Code. The inspectors reviewed these PQRs to determine whether the correct number and type of qualification tests were performed. Furthermore, the inspectors reviewed these WPSs to determine whether the welding positions allowed by the WPS were in accordance with welding procedure qualification requirements stipulated by the AWS D1.1 Code. The inspectors verified that the above welding procedures were in the work control package and available to the welder during production welding activities.

The inspectors performed an independent visual inspection of the E8, E17, E22, E137, and E138 welds to determine whether the final welds satisfied the requirements of Table 6.1, "Visual Inspection Acceptance Criteria," of AWS D1.1:2000. The inspectors also verified that the final weld profile met the requirements of section 5.24.4, "Groove or Butt Welds," of AWS D1.1:2000.

The inspectors reviewed the embedded torque data sheets for the E8, E22, E137, and E138 attachment brackets to determine whether the bolts between the attachment bracket and basemat embed plate were installed and inspected by quality control to be snug tight.

The inspectors observed the in-process fabrication / welding of bracket numbers E25, E75, and E76. The inspectors also observed the in-process welding of bracket E17 to the CA20 wall plate. During this inspection, the inspectors verified that a sample of the welding variables were within the ranges allowed by the WPS, such as: filler metal size and classification, voltage, amperage, travel speed, wire feed speed, shielding gas composition, and shielding gas flow rate. Specifically, the inspectors observed welding activities for the following field welds:

- S4K-CV3188-E25-3, -3A, -5, and -5A
- S4K-CV3188-E75-3, -3A, -5, and -5A
- S4K-CV3188-E76-3, -3A, -5, and -5A
- S4K-CV3188-E17-2

Furthermore, during the in-process welding of the welds listed above, the inspectors verified the following attributes:

- the work was conducted in accordance with a traveler (weld data sheet) that provided for the proper sequencing of the work and that this weld data sheet properly referenced the applicable procedures, drawings, specifications;
- the weld data sheet established adequate hold points as required by the quality inspection plan;
- the weld joint was sufficiently protected from inclement conditions such as high wind;
- surfaces to be welded were smooth, uniform, and free from significant surface discontinuities such as cracks or seams, and free from paint, oil, rust, scale, slag, grease, moisture or other harmful foreign materials that would be detrimental to welding;

- weld joint geometry, including root opening and fit-up tolerances were in accordance with the applicable WPS;
- temperature of the base material at the joint prior to welding met the minimum preheat requirements specified in the welding procedure;
- maximum interpass temperature was checked to ensure that it did not exceed the value specified in the welding procedure;
- other welding variables specified in the WPS were routinely verified by quality control;
- the weld was traceable to the welder;
- the filler metal and backing bar (as applicable) used in the joint were traceable and were qualified materials in accordance with the AWS D1.1:2000 Code; and
- tack welds between the backing bar (as applicable) and base material were fabricated using qualified welders using qualified welding procedure specifications.

The inspectors also reviewed the CMTRs for the E8 bracket materials and the hold down bolts to determine whether these materials were procured as safety-related items and were compliant with the relevant material specifications.

b. Findings

No findings were identified.

1A18 (Unit 3) ITAAC No. 763 / Family 01F

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01 - Design Document Review
- 65001.F-02.03 - Observation of Fabrication Activities
- 65001.F-02.04 - General QA Review
- 65001.02-02.01 - Inspection of Concrete Placement
- 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 a direct inspection of construction activities associated with the precast panels that will be located in the radiologically controlled area of the Unit 3 Auxiliary Building. The precast panels are intended for use as elements of the reinforced concrete floors at the 82'-6" elevation. During this inspection, the inspectors determined whether the safety-related structural reinforcement was of the correct size, spacing, and configuration for the following precast panels:

- 1223-CP-S01
- 1223-CP-S02

- 1223-CP-S05
- 1223-CP-S06

The inspectors also reviewed work package SV3-1220-CPW-CV0950, "Unit 3 Auxiliary Building Precast Concrete Floors EL 82'-6"," to determine whether work activities were being performed in accordance with specified work instructions (e.g. design specifications, design drawings, and construction site instructions).

Prior to the concrete placement, the inspectors determined whether the reinforcement was adequately secured to prevent movement during concrete placement and whether the specified concrete cover was within tolerances. During the concrete placement, the inspectors observed concrete placement activities to determine whether:

- accepted procedures and specifications were followed throughout the concrete placement;
- placement flow distances did not exceed specified requirements and did not result in segregation; and
- quality control performed direct inspections during placement.

The inspectors observed in-process concrete testing activities to determine whether:

- concrete temperature, slump flow, 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
- personnel performing sampling and testing were trained and knowledgeable.

b. Findings

No findings were identified.

1A19 (Unit 3) ITAAC No. 766 / Family 01A

a. Inspection Scope

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

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	ii) An inspection of the as-built concrete thickness will be performed.	ii.c) A report exists that concludes that as-built concrete thicknesses of the non-radiologically controlled area of the auxiliary building sections conform to the building sections defined in Table 3.3-1.

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

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

The inspectors performed a concrete thickness inspection of the non-radiological control portion of the auxiliary building. Specifically, column line 7.3 from elevation 66'-6" to 82'-6" was independently inspected by the inspectors to determine whether the interior wall was 36" thick, as specified by Westinghouse concrete drawings and UFSAR Table 3.3-1, "Definition of Wall Thicknesses for Nuclear Island Buildings, Turbine Building, and Annex Building." During this inspection, the inspectors performed independent surveillances of the formwork used for construction, as well observed in-process concrete placement activities.

Prior to concrete being placed, the inspectors performed a concrete pre-placement inspection to determine whether the concrete wall thickness of column line 7.3 at elevation 66'-6" to 82'-6" was in accordance with Westinghouse issued for construction design drawings. During this inspection, the inspectors performed an inspection of the installed formwork to determine whether:

- clear cover dimensions were in accordance with the applicable WEC concrete drawings;
- formwork was clean and secure;
- embed plates were flush to the face of formwork; and
- width of the formwork along column line 7.3 was correctly in place to provide the wall thickness specified on WEC concrete drawings.

Prior to concrete being placed, the inspectors also inspected the construction joint to determine whether the surface of the concrete joint was intentionally roughened in accordance with ACI 349-01 and whether the surface was clean and free of laitance.

b. Findings

No findings were identified.

1A20 (Unit 3) ITAAC No. 766 / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 766 (3.3.00.02a.ii.c). The inspectors used the following NRC inspection procedures/sections to perform this inspection:

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

The inspectors performed direct measurements and reviewed the as-built condition of the non-radiological controlled auxiliary building walls to verify they conformed to the as-built thickness requirements as specified in the UFSAR Tier 1 Table 3.3-1. Specifically, the inspectors verified the as-built thickness of the following walls:

- Column Line J wall between the shield building and Column Line 9.1 from elevation 66'-6" to 82'-6"
- Column Line Q wall between the shield building and Column Line 11 from elevation 66'-6' to 82'-6"; and
- Column Line K wall between the shield building and Column Line 9.1 from elevation 66'-6" to 82'-6"

b. Findings

No findings were identified.

1A21 (Unit 3) ITAAC No. 767 / Family 01A

a. Inspection Scope

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

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions.	ii) An inspection of the as-built concrete thickness will be performed.	ii.d) A report exists that concludes that the as-built concrete thicknesses of the radiologically controlled area of the auxiliary building sections conform to the building sections defined in Table 3.3-1.

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

- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed direct measurements and reviewed the as-built condition of the radiological controlled auxiliary building walls to verify they conformed to the as-built thickness requirements as specified in the UFSAR Tier 1 Table 3.3-1. Specifically, the inspectors verified the as-built thickness of the following walls:

- Column Line 1 wall between Column Lines I to N from elevation 66'-6" to 82'-6"
- Column Line I wall between Column Lines 1 to 7.3 from elevation 66'-6" to 82'-6";
and
- Column Line N wall between Column Lines 1 to 2 from elevation 66'-6" to 82'-6"

The inspectors also performed a direct inspection of construction activities associated with the precast panels that will be located in the radiologically controlled area of the Unit 3 Auxiliary Building. The precast panels are intended for use as elements of the reinforced concrete floors at the 82'-6" elevation. During this inspection, the inspectors determined whether the as-built thickness of the following precast panels conformed to design requirements:

- 1223-CP-S01
- 1223-CP-S02
- 1223-CP-S05
- 1223-CP-S06

b. Findings

No findings were identified.

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 819 (3.3.00.13):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
13. Separation is provided between the structural elements of the turbine, annex and radwaste buildings and the nuclear island structure. This separation permits horizontal motion of the buildings in the safe shutdown earthquake without impact between structural elements of the buildings.	An inspection of the separation of the nuclear island from the annex, radwaste and turbine building structures will be performed. The inspection will verify the specified horizontal clearance between structural elements of the adjacent buildings, consisting of the reinforced concrete walls and slabs, structural steel columns and floor beams.	The minimum horizontal clearance above floor elevation 100'-0" between the structural elements of the annex and radwaste buildings and the nuclear island is 4 inches. The minimum horizontal clearance above floor elevation 100'-0" between the structural elements of the turbine building and the nuclear island is 4 inches.

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.A.02.01 - Observation of in-Process Installation Activities

Prior to concrete placement activities, the inspectors directly observed reinforcement associated with the first bay basemat of the Unit 3 Turbine Building. The inspectors performed this inspection to determine whether separation was provided between the structural elements of the turbine building and the nuclear island structure. This separation permits horizontal motion of the buildings in the safe shutdown earthquake without impact between structural elements of the buildings. During this inspection, the inspectors determined whether the specified horizontal clearance of four inches between the structural elements of the adjacent buildings was maintained.

b. Findings

No findings were identified.

1A23 (Unit 4) ITAAC No. 86 / Family 05F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.03.11 (86):

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

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

- 65001.05-02.07 - Records Review
- 65001.05-02.08 - Problem Identification and Resolution
- 65001.F-02.02 - Fabrication Records Review
- 65001.05-02.01 - Purchase and Receipt of Components

The inspectors reviewed documentation related to the Charpy impact testing of the Unit 4 reactor vessel beltline materials to verify the upper shelf energies (USE) were no less than 75 ft-lbs. Specifically the inspectors reviewed the portion of the calculation which identified fast fluence (>1.0 MeV) values at 56 effective full power years in the reactor vessel to ensure all materials in the beltline regions were appropriately identified as required by 10 CFR Part 50.62. The inspectors reviewed the Test Results for Fracture Appearance Transition Temperature reports for the upper shell, lower shell, transition ring, and filler metal materials to verify that those beltline materials Charpy USE were no less than 75 ft-lbs and therefore met established acceptance criteria. The inspectors also verified those reports generated full transition temperature curves as required by ASTM E 185. The inspectors also reviewed drawings showing the location, orientation and numbers of test samples to ensure they complied with the requirements of 10 CFR Part 50, Appendix G; the ASME Code, Section III, Subsection NB-2000; and ASME E 185. The inspectors reviewed the purchase orders for beltline materials to ensure they were in compliance with the approved design.

b. Findings

No findings were identified.

1A24 (Unit 4) ITAAC No. 91 / Family 06F

a. Inspection Scope

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

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

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

- 65001.06-02.04 - Testing and Verification
- 65001.F-02.01 - Design Document Review
- 65001.F-02.02 - Fabrication Records Review

The inspectors observed CB&I QC inspectors perform their receipt inspection of the Vogtle Unit 4 steam line and feedwater line insert plates (B4-13 and B4-14), to determine whether the inspection was performed according to the CB&I Services' QA program procedures. The inspectors also reviewed CB&I receiving inspection report (RIR) number U4-130, to determine whether CB&I appropriately verified the following dimensions of the insert plate, which were designated Tier 2* information in Section 3.8.2.1.5, "Mechanical Penetrations," and Figure 3.8.2-4, "Containment Penetrations," of the Vogtle Units 3 and 4 UFSAR:

- inside diameter of the main steam penetration sleeve;
- inside diameter of the feedwater penetration sleeve; and
- minimum thickness of the insert plate.

Furthermore, the inspectors performed an independent inspection of the above dimensions to verify the measurements recorded by CB&I on their RIR during receipt inspection.

The inspectors also reviewed the related N-2 ASME Code Data Reports for B4-13 and B4-14 (Part numbers IN-4960 and IN-4961 [National Board Numbers 2821 and 2822]), to determine whether the code data reports met the requirements of Article NCA-8000 from ASME Code, Section III, Division 1, Subsection NE. The inspectors performed an independent review of the CMTRs for the insert plates and for the penetration sleeves to determine whether the materials met the following quality and technical requirements:

- Vogtle Units 3 and 4 UFSAR;
- 221A213, "Detail Drawing of Penetration Block B3/4-B13 Assemblies," Revision 8;
- 221A214, "Detail Drawing of Penetration Block B3/4-B14 Assemblies," Revision 8;
- APP-MV50-V1-018, "AP1000 Containment Vessel Mechanical Penetrations Sleeves Rings," Revision 7;

- SA-738 Grade B, "Specification for the Pressure Vessel Plates, Heat-Treated, Carbon-Manganese-Silicon Steel, for Moderate and Lower Temperature Service," 2001 Edition with 2002 addenda;
- APP-MV50-Z0-037, "AP1000 Containment Vessel: SA-738 Grade B Plates," Revision 2;
- MS-SA-738B-2889, "Material Specification for SA 738 Grade B Steel Plate AP1000 Nuclear Containment Vessel," Revision 4;
- ASME Section III, Division I, Subsection NE, 2001 edition through 2002 addenda; and
- 10 CFR Part 50, Appendix B.

b. Findings

No findings were identified.

1A25 (Unit 4) ITAAC No. 93 / Family 06B

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.03a (93):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
3.a) Pressure boundary welds in components identified in Table 2.2.1-1 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.

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

- 65001.B-02.05 - Inspection
- 65001.11-02.05 - Nondestructive Examination

The inspectors reviewed the Radiographic Testing (RT) film for the completed lower ring vertical weld A6/A14 to determine whether the completed weld met the acceptance standards specified by Subsection NE-5320, "Radiographic Acceptance Standards," of ASME Section III, Article NE-5000, "Examination." This included a review of the radiographs of repaired areas. For these repair areas, the inspectors reviewed the original film and reviewed the final (acceptable) film for each of these areas to determine if the rejectable indications were adequately repaired. Specifically, the inspectors reviewed RT Report No. RT-U4-073 to determine if the weld and RT record met the requirements of CB&I RT procedure CMS-830-15-PR-45154, "Radiographic Examination ASME Section III, Division 1 – Subsection NE," Rev. 1.

b. Findings

No findings were identified.

1A26 (Unit 4) ITAAC No. 760 / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 760 (3.3.00.02a.i.a). The inspectors used the following NRC inspection procedures/sections to perform this inspection:

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.03 - Observation of Fabrication Activities
- 65001.02-02.01 - Inspection of Concrete Placement
- 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.F-02.01 - Design Document Review

For containment internal structures below elevation 71'-6" for Vogtle Unit 4, the inspectors reviewed a sample of design calculations, drawings included in the work packages, and specifications to determine whether:

- design activities were completed in accordance with applicable specifications, drawings, and approved procedures;
- design inputs were correctly identified and documented, and that their selection was reviewed and approved by the responsible engineering group;
- design outputs were translated into drawings;
- the documents adequately defined the final design and arrangement of these SSCs;
- critical attributes associated with the ITAAC were correctly identified and documented for review and approval by responsible engineering personnel; and
- the documents were consistent with the design commitments and requirements of the technical specifications, the UFSAR, and code commitments.

The inspectors observed a sample of installation activities for containment internal structures below elevation 71'-6" associated with embedments and steel reinforcement, including horizontal reinforcement at elevation 71'-6", shear reinforcement, dowel bars extending above 71'-6", curved and circumferential reinforcement parallel to the surface of the containment vessel bottom head, and reinforcement bar splices to determine whether:

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

For containment internal structures below elevation 71'-6" for Vogtle Unit 4, the inspectors performed independent inspection and measurements to determine whether the steel reinforcement 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, including appropriate considerations for hot weather and mass concrete, and the pre placement inspection was performed by 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, all deviations were adequately captured and addressed, and preparation and cleanliness of the formwork had been completed. The inspectors observed concrete placement activities to determine whether:

- accepted procedures and specifications 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 at 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 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;
- 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 concrete placement, the inspectors observed in-process concrete testing to determine whether:

- concrete temperature, slump, air content, and unit weight were being 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 knowledgeable.

The inspectors observed curing activities to determine whether curing was in accordance with specifications and procedures with regard to the method, materials, duration, and temperature.

The inspectors reviewed a sample of in-process work packages associated with containment internal structures below elevation 71'-6" for reinforcing steel, embedments, and concrete placements 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 in accordance with site procedures; 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 No. 762 / Family 01F

a. Inspection Scope

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

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

The inspectors observed concrete pre-placement activities for wall 11 between Column Lines I and L and wall I between Column Lines 9.2 and 11 from elevation 66'-6" to 82'-6" to determine whether pre-placement planning and training had been completed, including appropriate considerations for hot weather and mass concrete, and the pre placement inspection was performed by QC before concrete was placed. Prior to concrete placement the inspectors inspected the form work and reinforcement placement for secureness, dimensional verification, and cleanliness. The inspectors observed concrete placement activities to determine whether:

- accepted procedures and specifications 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 at 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 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;
- 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 concrete placement, the inspectors observed in-process concrete testing to determine whether:

- concrete temperature, slump, air content, and unit weight were being 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 knowledgeable.

b. Findings

No findings were identified.

1A28 (Unit 4) ITAAC No. 763 / Family 01F

a. Inspection Scope

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

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.F - Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01 - Design Document Review
- 65001.02-02.01 - Inspection of Concrete Placement
- 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.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed a direct inspection of construction activities associated with the radiologically controlled area of the Auxiliary Building for Vogtle Unit 4. Specifically, the inspectors observed construction activities associated with the following wall sections between elevation 66'-6" and 82'-6":

- wall section along column line 1 between column lines K-2 and N
- wall section along column line N between column lines 1 and 2
- wall section along column line I between column lines 1 and 4

For the wall sections listed above, the inspectors reviewed a sample of design calculations, drawings included in the work packages, and specifications to determine whether:

- design activities were completed in accordance with applicable specifications, drawings, and approved procedures;
- design inputs were correctly identified and documented, and that their selection was reviewed and approved by the responsible engineering group;
- design outputs were translated into drawings;
- the documents adequately defined the final design and arrangement of these SSCs;
- critical attributes associated with the ITAAC were correctly identified and documented for review and approval by responsible engineering personnel; and
- the documents were consistent with the design commitments and requirements of the technical specifications, the UFSAR, and code commitments.

The inspectors observed a sample of installation activities for the wall sections along column line 1 and column line N listed above associated with steel reinforcement, including shear reinforcement, wall dowel bars extending above 82'-6", and rebar extending into the floor at 82'-6", to determine whether:

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

Additionally, the inspectors observed a sample of installation activities for the wall sections along column line I and column line N listed above associated with formwork, embedments, and steel reinforcement, including horizontal and vertical reinforcing steel bars, shear reinforcement, and bar splices, to determine whether:

- the installation activities met applicable quality and technical requirements established by approved procedures, specifications, and drawings;
- piping, penetrations, reinforcing steel and embedments were located properly in the structure 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.

For the wall sections along column lines 1, I, and N listed above, the inspectors performed independent inspections and measurements to determine whether the steel reinforcement and formwork conformed to the design specifications. The inspectors performed independent inspections and measurements to determine whether the as-built concrete thickness of completed wall sections were in accordance with the final design, the ITAAC, and UFSAR.

For the wall section along column line I listed above, the inspectors observed concrete pre-placement activities to determine whether pre-placement planning and training had been completed, including appropriate considerations for hot weather and mass concrete, and the pre placement inspection was performed by 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, all deviations were adequately captured and addressed, and preparation and cleanliness of the formwork had been completed. The inspectors observed concrete placement activities to determine whether:

- accepted procedures and specifications 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 at 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;
- 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.

For the wall section along column line I between column lines 1 and 4, the inspectors observed curing activities to determine whether curing was in accordance with specifications and procedures with regard to the method, materials, duration, and temperature. 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 performed independent inspection and measurements of the as-built concrete, including finishes, locations of embeds, and dimensions, to determine whether the as-built configuration met the design specifications.

The inspectors reviewed a sample of in-process work packages associated with wall placements between elevation 66'-6" and 82'-6" for reinforcing steel, embedments, formwork, and concrete placements 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 in accordance with site procedures; 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.

1A29 (Unit 4) ITAAC No. 766 / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 766 (3.3.00.02a.ii.c). The inspectors used the following NRC inspection procedure/section to perform this inspection:

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

The inspectors performed direct measurements and reviewed the as-built condition of the non-radiological controlled auxiliary building walls to verify they conformed to the as-built thickness requirements as specified in the UFSAR Tier 1 Table 3.3-1. Specifically, the inspectors verified the as-built thickness of the following walls:

- Column Line I wall between Column Lines 7.3 and 11 from elevation 66'-6" to 82'-6"
- Column Line 11 wall between Column Lines L and Q from elevation 66'-6" to 82'-6"
- Column Line Q wall between the shield building and Column Line 11 from elevation 66'-6" to 82'-6"

b. Findings

No findings were identified.

1A30 (Unit 4) ITAAC No. 767 / Family 01A

a. Inspection Scope

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 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
- 65001.A - As-Built Attributes for SSCs associated with ITAAC

The inspectors performed a direct inspection of construction activities associated with the radiologically controlled area of the Auxiliary Building for Vogtle Unit 4. Specifically, the inspectors observed construction activities associated with the following wall sections between elevation 66'-6" and 82'-6":

- wall section along column line 1 between column lines K-2 and N
- wall section along column line N between column lines 1 and 2
- wall section along column line I between column lines 1 and 4

The inspectors reviewed applicable dimensions listed in the UFSAR that were associated with the 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 performed independent inspections and measurements to determine whether the as-built concrete thickness of completed wall sections were in accordance with the final design, the ITAAC, and UFSAR. Additionally, the inspectors reviewed measuring and surveying records associated with the wall sections inspected to determine whether:

- they were complete, accurate, and documented that the as-build configuration met the design specifications and the acceptance criteria;
- the activities were conducted in accordance with the licensee's quality assurance program requirements; and
- there were any identified deviations from the approved design.

b. Findings

No findings were identified.

1A31 (Unit 4) ITAAC No. 774 / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 774 (3.3.00.02f):

Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
2.f) The key dimensions of nuclear island structures are defined on Table 3.3-5.	An inspection will be performed of the as-built configuration of the nuclear island structures.	A report exists and concludes that the key dimensions of the as-built nuclear island structures are consistent with the dimensions defined on Table 3.3-5.

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

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.04 - Review As-built Deviations/Nonconformance

The inspectors performed a direct inspection and independent measurements of the installed containment sump (KQ11) to determine whether the distance from the bottom of the containment sump to the top surface of the embedded containment shell met the requirements established in the Vogtle Unit 4 COL, Appendix C, Table 3.3-5, "Key Dimensions of Nuclear Island Building Features". The inspectors reviewed N&D No. SV4-KQ11-GNR-000001, "KQ11 Sump Datum Point out of Tolerance," to determine whether measurements were taken at the required locations. The inspectors reviewed measurement documentation provided in SV4-KQ11-KQK-ME4984, "KQ11 Containment Sump (MT-02) as build & ITAAC's 2.3.10.01, 3.3.00.02f & 3.3.00.09," to verify that key dimensions were recorded and records were complete and accurate.

b. Findings

No findings were identified.

IMC 2504, Inspection of Construction Programs

1P01 Quality Assurance Implementation, Appendix 2, Inspection of Criterion II – Quality Assurance Program (IP35007)

a. Inspection Scope

During the week of August 25th, the inspectors reviewed CB&I issued procedures associated with reinforcing steel activities, to determine whether these activities were performed in a quality manner as specified by CB&I's QA program. The inspectors specifically reviewed personnel training and indoctrination requirements specified in the following procedures:

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

- NCSP 3-42, "Reinforcing Steel Installation," Rev. 1 and;
- NCSP 3-6, "Personnel Training and Qualifications," Rev. 3.

While reviewing the above procedures, the inspectors specifically determined whether the procedures required:

- personnel qualifications (e.g., education, experience, position description) to be established for selected positions, as determined by management or industry standards;
- personnel to be indoctrinated and trained prior to quality-affecting work being performed;
- QA indoctrination to be provided to all personnel performing quality-affecting activities;
- QA personnel (e.g., auditors and QC inspectors) to be trained to specific activities performed; and
- periodic reevaluation of qualifications/certifications is conducted.

In addition to the procedure review, the inspectors also independently reviewed training records of site personnel performing safety related construction activities in units 3 and 4 construction areas. During this record review, the inspectors reviewed the training records of civil QC inspectors, civil field engineers, as well as civil superintendents/supervisors. The inspectors reviewed a sample of training records to determine if individuals were indoctrinated, trained, qualified and/or certified to perform assigned work as specified in the aforementioned procedures.

b. Findings

No findings were identified.

1P02 Quality Assurance Implementation, Appendix 3, Inspection of Criterion III – Design Control (IP35007)

a. Inspection Scope

The inspectors reviewed a sample of engineering and design coordination reports 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-420. 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. Specifically, the inspectors reviewed the following E&DCRs:

- E&DCR APP-CA00-GEF-057, "Duplex and AWS Inspection Criteria," Revision 0;

- E&DCR SV0-CA20-GEF-000018, "Heat Input Rev.2 APP-VW20-Z0-023," Revision 0;
- E&DCR APP-VW20-GEF-850000, "Thermal Cutting Modification," Revision 0;
- E&DCR APP-CA20-GEF-850036, "CA20 (APP-VW20-Z0-023)," Revision 0;
- E&DCR APP-CA00-GEF-850013, "Spreader Angle NDE (SV3, SV4)," Revision 0;
- E&DCR SV0-CA00-GEF-000005, "Alternate AWS PQR Materials," Revision 0;
- E&DCR SV0-CA20-GEF-000039, "Leak Chase DMW Backing Combos," Revision 0;
- E&DCR APP-CA20-GEF-1291, "CA20-01 and CA20-05 Stud / Mounting Bracket Interference Correction," Revision 0;

b. Findings

No findings were identified.

1P03 Quality Assurance Implementation, Appendix 10, Inspection of Criterion X – Inspection (IP35007)

a. Inspection Scope

The NRC inspectors reviewed procedure CSI 3-42, "Reinforcing Steel Installation," to verify that the licensee's QA implementing documents for conducting inspections of rebar bending activities were consistent with the NRC approved quality assurance program document; 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 to verify that it included provisions for:

- examinations and measurements for each work operation, where necessary;
- methods used to perform inspections, including M&TE requirements;
- frequency of inspections and sampling requirements;
- hold and witness points;
- acceptance criteria;
- inspection documentation requirements; and
- ensuring inspection personnel are other than those who perform or directly supervise the work being inspected.

The NRC inspectors observed CB&I QC inspections of rebar bending activities to verify:

- effective implementation of the licensee's QA implementing program;
- conformance with acceptance criteria;
- the rebar was marked accurately to reflect its inspection status;
- 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.

Moreover, the inspectors performed independent inspections of the the bent rebar to verify that the final rebar was in conformance with the applicable technical requirements.

The NRC inspectors reviewed training and qualification records for the craft personnel performing the rebar bending activities to verify the work was performed by qualified individuals. The NRC inspectors reviewed training and qualification records for the QC inspector signing off on the rebar bending activities to verify the person conducting the inspection was qualified and authorized to conduct the inspection and to update markings subsequent to the inspection.

The inspectors evaluated inspection report C112-004-14-0125, "Pre-placement Rebar Field Fabrication"; work package SV4-1200-CRW-CV1740, "Unit 4 Nuclear Island Auxiliary Building-Installation of Reinforcing Steel on Exterior Walls Up To Elevation 82'6" (Wall Placements 1 thru 8)"; and associated documentation associated with the rebar bending activities to verify inspections were performed at the required frequency described in CSI 3-42, mandatory hold points were complied with and witnessed by the QC inspector, and the inspector had the current implementing document and appropriate tools to conduct the inspection. Additionally, the NRC inspectors reviewed the inspection documentation to verify that the results were documented, detailed, complete, and included:

- observation or type of method used to perform inspection;
- item inspected and date of inspection;
- identification of person conducting inspection;
- M&TE used during 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.

1P04 Quality Assurance Implementation, Appendix 13, Inspection of Criterion XIII – Handling, Storage and Shipping (IP35007)

a. Inspection Scope

During the week of August 25, 2014, the inspectors toured Level D safety-related storage areas, adjacent to Unit 3 and Unit 4 Nuclear Islands. The inspectors performed this inspection to determine if safety-related items were stored in accordance with licensee procedures as well as NQA-1-1994. During this walk-down, the inspectors assessed the storage of reinforcing steel and embed plates to determine whether:

- Level D items were stored in an area marked and designated for storage;
- designated storage areas were well drained (e.g. gravel covered or paved);
- storage areas were reasonably removed from the actual construction area and traffic to prevent the possibility of damage from construction equipment;
- items were stored on cribbing or equivalent to avoid trapping of water; and
- nonconforming items were properly labeled and segregated.

b. Findings

No findings were identified.

1P05 Quality Assurance Implementation, Appendix 15, Inspection of Criterion XV – Nonconforming Materials, Parts, or Components (IP35007)

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 (formerly Shaw) quality assurance program (SWSQAP 1-74A, Rev. B), CB&I procedure QS 15.1, "Nonconformance & Disposition Report," Revision 5, and APP-GW-GAP-428, "Control of Nonconforming Items for the AP1000 Program, Revision 4.

The inspectors reviewed a sample of N&Ds and applicable supporting documents associated with vendor welding procedure specifications that did not comply with the AWS D1.1:2000 Code. These nonconformances were related to structural module welds on modules CA04, CB65, and CB66. The inspectors selected the following evaluations of nonconforming items that the licensee either rejected, repaired, reworked, or accepted through evaluation:

- APP-CA04-GNR-850007, "SV3 CA04 WPS 1-1-107 Noncompliance to AWS Code Requirements," Rev. 0
- APP-CA04-GNR-850008, "SV3 CA04 WPS 1-1-86 Non-Compliance to AWS Code Requirements," Rev. 0
- APP-CA04-GNR-850009, "SV3 CA04 WPS 1-1-107 Non-Compliance to AWS Code Requirements," Rev. 0
- SV3-CA04-GNR-000022, "CA04-03 Horizontal Stiffener now Inaccessible," Rev. 0
- SV3-CA04-GNR-000027, "CA04-03 Horizontal Stiffener Now Inaccessible," Rev. 0
- APP-CB65-GNR-850006, "SV3-CB65 WPS 1-1-107 Non-Compliance to AWS Code Requirements," Rev. 0
- APP-CB66-GNR-850001, "SV3 CB66 WPS 1-1-107 Non-Compliance to AWS Code Requirements," Rev. 0
- APP-CB66-GNR-850003, "SV3-CB66 WPS 1-1-107 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

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

- 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 was 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; and
- repaired or reworked items were re-examined in accordance with applicable procedures and the original acceptance criteria.

c. Findings

No findings were identified.

1P06 Quality Assurance Implementation, Appendix 15, Inspection of Criterion XV – Nonconforming Materials, Parts, or Components (IP35007)

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, Rev. 0) and CB&I procedure QS 15.1, "Nonconformance & Disposition Report," Revision 5. The inspectors reviewed N&D reports associated with both Units 3 and 4.

The inspectors toured several of the on-site storage areas to confirm that the licensee had established areas for segregating and controlling non-conforming items. The inspectors selected a sample of nonconforming items in storage to determine if the items were segregated or marked to preclude inadvertent use, further processing, delivery, or installation.

The inspectors selected the following evaluations of nonconforming items that the licensee either rejected, repaired, reworked, or accepted through evaluation:

- APP-CA20-GNR-850109, "NCR13-620 SV3 CA20-CA01-CA03-CA05 Thermal Cutting on Duplex," Revision 0;
- SV3-CA20-GNR-000444, "CA20 Hold Down Bracket Welding Issues," Revision 0;
- SV3-CA20-GNR-000445, "Engine Blocks Installed Over Temporary Attachments without NDE Performance," Revision 0;
- SV3-CA20-GNR-000430, "CA20 Attachment Brackets," Revision 0; and
- SV3-CA20-GNR-000447, "Studs Welded Over Temporary Attachments Requiring NDE," Revision 0;

During the review of the above 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.

1P07 Quality Assurance Implementation, Appendix 16, Inspection of Criterion XVI – Corrective Action (IP35007)

a. Inspection Scope

Daily Corrective Action Program Review

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

- classification, prioritization, and evaluation for reportability (i.e., 10 CFR 50.55(e)) of conditions adverse to quality;
- complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery;
- screening of items entered into the corrective action program to determine the proper level of evaluation;
- identification and correction of procurement documents errors, deviations from procurement document requirements, defective items, poor workmanship, incorrect vendor instructions, significant recurring deficiencies at both vendor shops and on site, and generic procurement related deficiencies;
- identification and correction of design deficiencies;

- consideration of extent of condition, generic implications, common cause, and previous occurrences;
- classification and prioritization of the resolution of the problem commensurate with its safety significance;
- identification of corrective actions that are appropriately focused to correct the problem;
- identification of root and contributing causes, as well as actions to preclude recurrence for significant conditions adverse to quality;
- completion of corrective actions in a timely manner commensurate with the safety significance of the issue;
- provisions for escalating to higher management those corrective actions that are 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.

Routine Review of Items Entered into the Corrective Action Program

On a routine basis, the inspectors screened a sample of issues entered into the licensee and the engineering, procurement, and construction (EPC) consortium's corrective action programs. The inspectors attended several weekly management review committee meetings at the site and held discussions with licensee and EPC consortium personnel responsible for the screening and correction of the issues to determine if:

- the licensee and the EPC consortium were identifying equipment, human performance, and program issues at an appropriate threshold and were entering the issues into their respective corrective action programs;
- the licensee and the EPC consortium appropriately classified the issues and took appropriate short-term corrective actions;
- conditions adverse to quality were controlled in accordance with each company's quality assurance program; and
- potential adverse trends were appropriately identified and corrected by the licensee or their contractors.

The inspectors also observed the integrated corrective action program corrective action review board meeting held on July 28, 2014.

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4A06 Meetings, Including Exit

.1 Exit Meeting

On October 8, 2014, the inspectors presented the inspection results to Mr. 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

D. Carlson, SNC Engineering
B. Dockery, SNC ITAAC
S. Hand; Quality Manager
R. Henderson, SNC Licensing
J. Hurst, WEC Engineering
K. Kroll, WEC Licensing
D. Murphy, SNC Engineering Supervisor
J. Tull, WEC Site QA Manager
F. Willis, SNC Licensing Supervisor
J. Wright; CB&I QC
M. Yox, SNC Licensing Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Type</u>	<u>Status</u>	<u>Description</u>
05200025/2014004-01	NCV	Open/Closed	Failure to Correctly Translate Shear Reinforcement Design Requirements Into Design Drawings (Section 1A05 b.1)
05200025/2014004-02	NCV	Open/Closed	Failure to Install Structural Reinforcement in Accordance with ACI 349-01 Development Length Requirements (Section 1A05 b.2)

LIST OF DOCUMENTS REVIEWED

Section 1A01

Doosan, Dwg. No. D-AA-11104-M01, "Vogtle #3 Vessel As-Built," Rev. 0
 Doosan, Dwg. No. D-AA-11104-M02, "Vogtle #3 Vessel As-Built," Rev. 0
 Japan Steel Works, CMTR JQA-09-101, Record of Dimensional Inspection & Visual Examination IR-No. 7042-1-16-3 (2 pages) of RV Lower Shell, dated June 8, 2009
 Japan Steel Works, CMTR JQA-09-174, Record of Dimensional Inspection & Visual Examination IR-No. 7044-1-20-3 (2 pages) of RV Lower Head, dated December 4, 2009
 Japan Steel Works, CMTR JQA-09-060, Record of Dimensional Inspection & Visual Examination IR-No. 7041-1-17-3 (3 pages) of RV Upper Shell, dated March 19, 2009

Section 1A02

WEC, ASME Code Data Report Form N-1 for the Plant Vogtle Unit 3 Reactor Vessel, Serial Number SV3-RCS-MV-01, and National Board No. 109 with "N" stamped nameplate
 Doosan, ASME Code Data Report Form N-2 for Vogtle Plant Unit 3 Reactor Vessel Assembly, Part Serial Number N07049-10101, Doosan No. DN-3198 with "NPT" stamped nameplate
 Doosan, Tabulation of Material, Record No. VG3-RV-VSL-001, page 2 of 8
 Doosan, Dwg.-No. D-AA-11121-M01, Upper Vessel Assembly Nozzle Installation, Rev. 1
 Japan Steel Works (JSW), Certified Material Test Report (CMTR) JQA-09-174, dated 12/18/2009 (includes the Nikko Inspection Services CMTR MET-09-160, dated 12/14/2009, for testing services), ASME SA-508, Grade 3, Class 1, Heat-No. 09D295-1-1 for the lower head of the AP1000 Vogtle 3 reactor vessel
 JSW, Dwg.-No. N149521-1, Lower Head, for test coupon removal locations, Rev. 0
 JSW, Dwg.-No. N149521-M, Lower Head, for detail of mechanical and impact testing specimen removal locations
 JSW, IR-No. 7044-1-20-2, Record of Magnetic Particle Examination, Lower Head, dated 12/14/2009
 JSW, IR-No. 7044-1-20-1, Record of Ultrasonic Examination, Lower Head, dated 12/15-16/2009
 Doosan, U100826-002-001, dated 9/6/2010, Report of Ultrasonic Thickness Measurement, Lower Head Assembly Joint-No. 203-40 for internal cladding
 Doosan, P100617-011-001, dated 6/18/2010, Report of Liquid Penetrant Examination, Lower Head Assembly Joint-Nos. 204-40 and 208-40 for lower dome internal cladding
 Doosan, U100617-023-001, dated 6/21/2010, Report of Ultrasonic Examination, Lower Head Assembly Joint-Nos. 204-40 and 208-40 for lower dome internal cladding
 Doosan, IW-11-05-0818, dated 05/25/2011, Chemical Analysis Report (with ferrite number), Lower Head Assembly Joint-No. 204-40 for lower dome internal cladding
 Doosan, 100878753, dated 06/17/2010, Inspection Record of Ferrite Number Measurement (during strip cladding), Lower Head Assembly Joint-No. 208-40
 Doosan, CMTR CN2010010037, dated 1/29/2010, ASME SA-508, Grade 3, Class 1, Heat-No. 2C95995, Serial/I.D. Nos. F09178 010, 020, 030, and 040 for all four inlet nozzles A, B, C, and D
 Doosan, Dwg.-No. ST-AP1000-RV-107, Sampling of Test Specimens (Inlet Nozzle), Rev. 0, dated 7/10/2009, for mechanical and impact testing specimen removal locations
 Doosan, M091230-049-001, Report of Magnetic Particle Examination, dated 1/7/2010 for Part No. F09178 010, 020, 030, and 040
 Doosan, U091211-021-001, Report of Ultrasonic Examination, dated 12/14/2009 for Part No. F09178 010, 020, 030, and 040
 Doosan, U101005-057-001, dated 10/7/2010, Report of Ultrasonic Thickness Measurement, Inlet Nozzle Assembly Joint-Nos. 101-24A and 102-24A for internal cladding

Doosan, P101005-040-001, dated 10/7/2010, Report of Liquid Penetrant Examination, Inlet Nozzle Assembly Joint-Nos. 101-24A and 102-24A for internal cladding

Doosan, U100915-030-001, dated 9/17/2010, Report of Ultrasonic Examination, Inlet Nozzle Assembly Joint-Nos. 101-24A and 102-24A for internal cladding

Doosan, IW-11-01-0117, dated 1/31/2011, Chemical Analysis Report (with ferrite number), Inlet Nozzle Assembly Joint-No. 101-24A for internal cladding

Lenape Forged Products Corporation, CMTR 4881, dated 5/26/2011, ASME SA-182, Grade F316LN stainless steel inlet nozzle safe-ends, Melter Heat-No. G15834 (Lenape heat code PLN1), Serial No. 4881-2

Lenape Forged Products Corporation, Liquid Penetrant Inspection Record, Mill Order No. 4881, dated 12/22/2009, for PC No. 2

Lenape Forged Products Corporation, Ultrasonic Inspection Record, Mill Order No. 4881, dated 12/22/2009, for PC Nos. 2 and 3

Doosan, CMTR CN2010010035, dated 1/29/2010, ASME SA-508, Grade 3, Class 1, Heat-No. 2C95859, Serial/I.D. Nos. F09177 010 and 020 for both outlet nozzles A and B

Doosan, Dwg.-No. ST-AP1000-RV-106, Sampling of Test Specimens (Outlet Nozzle), Rev. 0, dated 6/4/2009, for mechanical and impact testing specimen removal locations

Doosan, M091230-052-001, Report of Magnetic Particle Examination, dated 1/8/2010 for Part No. FF09177 010 and 020

Doosan, U091230-051-001, Report of Ultrasonic Examination, dated 1/8/2010 for Part No. FF09177 010 and 020

Doosan, U101125-031-001, dated 11/27/2010, Report of Ultrasonic Thickness Measurement, Outlet Nozzle Assembly Joint-Nos. 102-25A and 104-25A for internal cladding

Doosan, P101125-020-001, dated 11/27/2010, Report of Liquid Penetrant Examination, Outlet Nozzle Assembly Joint-Nos. 102-25A and 104-25A for internal cladding

Doosan, U101008-051-001, dated 10/12/2010, Report of Ultrasonic Examination, Outlet Nozzle Assembly Joint-Nos. 102-25A and 104-25A for internal cladding

Doosan, IW-11-01-0123, dated 1/31/2011, Chemical Analysis Report (with ferrite number), Outlet Nozzle Assembly Joint-No. 104-25A for internal cladding

Lenape Forged Products Corporation, CMTR 4882, dated 2/13/2012, ASME SA-182, Grade F316LN stainless steel outlet nozzle safe-ends, Melter Heat-No. G15834 (Lenape heat code PLN1), Serial No. 4882-5

Lenape Forged Products Corporation, Liquid Penetrant Inspection Record, Mill Order No. 4882, dated 3/8/2010, for PC Nos. 4882-1 through 4882-6

Lenape Forged Products Corporation, Ultrasonic Inspection Record, Mill Order No. 4882, dated 3/8-12/2010, for PC Nos. 1 thru 6

Doosan, CMTR CN2010030041, dated 8/30/2010, ASME SA-508, Grade 3, Class 1, Heat-No. 2C96127, Serial/I.D. Nos. F09179 010 and 020 for both Direct Vessel Injection (DVI) nozzles A and B

Doosan, Dwg.-No. ST-AP1000-RV-108, Sampling of Test Specimens (DVI Nozzle), Rev. 1, dated 12/11/2009, for mechanical and impact testing specimen removal locations

Doosan, M091107-002-001, Report of Magnetic Particle Examination, dated 3/23/2010 for Part No. F09179 010, 020, (050, 060 for Unit # 4)

Doosan, U091107-003-001, Report of Ultrasonic Examination, dated 2/11/2010 for Part No. F09179 010, 020, (050, 060 for Unit # 4)

Doosan, U101129-011-001, dated 11/30/2010, Report of Ultrasonic Thickness Measurement, DVI nozzle Joint-No. 102-26B and 104-26B for internal cladding of DVI nozzle

Doosan, P101129-013-001, dated 11/30/2010, Report of Liquid Penetrant Examination, DVI nozzle Joint-No. 102-26B and 104-26B for internal cladding of DVI nozzle

Doosan, U101117-033-001, dated 11/18/2010, Report of Ultrasonic Examination, DVI nozzle Joint-No. 102-26B and 104-26B for internal cladding of DVI nozzle

Doosan, IW-11-01-0125, dated 01/29/2011, Chemical Analysis Report (with ferrite number), DVI nozzle Joint-No. 104-26B for internal cladding of DVI nozzle

Doosan, CMTR NQC-11-208, dated 8/31/2011, with Lenape Forged Products Corporation, CMTR 4880, dated 5/26/2011, ASME SA-182, Grade F316LN stainless steel DVI nozzle safe-end, Melter Heat-No. G15834 (Lenape heat code PLN1), Serial No. 4880-1

Doosan, Nonconformance Report (NCR) 110704, dated 7/25/2011, UT frequency of 5 MHz in lieu of 2.25 MHz required by ASME Section II, SA-745.

Lenape Forged Products Corporation, Liquid Penetrant Inspection Record, Mill Order No. 4880, dated 12/22, 23, 28/2009, for PC Nos. 1 through 6

Doosan, U110823-016-001, Report of Ultrasonic Examination (UT), dated 8/24/2011 for Material I.D. Nos. 4880-1, 4880-2, 4880-3 and 4880-6

Doosan, CMTR NQC-11-209, dated 8/31/2011, with Lenape Forged Products Corporation, CMTR 4880, dated 5/26/2011, ASME SA-182, Grade F316LN stainless steel DVI nozzle safe-end, Melter Heat-No. G15834 (Lenape heat code PLN1), Serial No. 4880-2

Kiswel Ltd, CMTR-F10-DS07, Lot-Nos. 521004N02 and 541004N01, SFA-5.22, E308LT-1 and E309LT1-1, respectively, 1.2 mm diameter, dated 5/27/2010

Chosun Welding Co., Ltd., CMTR TR-P0950, Heat-Nos. H01999 and A19296, SFA-5.9, ER309L and ER308L, respectively, 1.2 mm diameter, dated 10/28/2009

Chosun Welding Co., Ltd., CMTR TR-P1007, Lot-Nos. H540696 and G741096, SFA-5.4, E309L-16 and E308L-16, respectively, 4.0 mm diameter, dated 3/12/2010

Soudakay, CMTR 09041, Heat-Nos. 95781 and 95782, SFA-5.9, EQ308L and EQ309L, respectively, 60 X 0.5 mm strip, dated 10/08/2009

Doosan, EPAU1106, Ultrasonic Examination Procedure of Cladding Area for AP1000 RV, dated 7/13/2010, Rev. 4

Doosan, EPAU1108, Ultrasonic Procedure For Thickness Measurement of Cladding and Buttering/Build-up of RV, dated 01/22/2010, Rev. 1

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CMTR for welds 201-40, 101-21A, and 102-21A, No. KN-1453 for Heat/Lot No. GZ906289727/9LGY610

CMTR for weld 103-21B, No. NQC-09-103 for Heat/Lot No. GZ812069727/9BGY610

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CMTR for welds 201-20A and 401-20B, No. NQC-11-241 for Heat/Lot No. NX8040TK

CMTR for weld 301-20A, No. FN-0486 for Heat/Lot No. FHB2245

A-M-0303-152, Welding Procedure Specification for welds 101-51 and 101-40, Rev. 1

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A-MA-0303-217, Welding Procedure Specification for welds 201-40, 101-21A, 102-21A, and 103-21B, Rev. 4

A-T-0843-129, Welding Procedure Specification for welds 201-20A, 301-20A, and 401-20B, Rev. 1

A-T-0843-130, Welding Procedure Specification for welds 201-20A, 301-20A, and 401-20B, Rev. 1

A-TM-0843-150, Welding Procedure Specification for welds 201-20A, 301-20A, and 401-20B, Rev. 1

A-T-0343-153, Welding Procedure Specification for welds 103-24, 103-25, and 103-26, Rev. 2

A-T-0343-155, Welding Procedure Specification for welds 103-24, 103-25, and 103-26, Rev. 2

A-T-0343-156, Welding Procedure Specification for welds 103-24, 103-25, and 103-26, Rev. 3

A-T-0343-180, Welding Procedure Specification for welds 103-24, 103-25, and 103-26, Rev. 2

A-T-0343-183, Welding Procedure Specification for welds 103-24, 103-25, and 103-26, Rev. 0

A-M-0343-171, Welding Procedure Specification for welds 103-24, 103-25, and 103-26, Rev. 1

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QA-A-0303-032, Procedure Qualification Record for welds 101-51, 101-40, 201-40, 101-21A, 102-21A, and 103-21B, Rev. A

QA-A-0303-032-1, Procedure Qualification Record for welds 101-51 and 101-40, Rev. A

QA-M-0303-030, Procedure Qualification Record for welds 201-40, 101-21A, 102-21A, and 103-21B, Rev. A

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QA-A-0303-041, Procedure Qualification Record for welds 201-40, 101-21A, 102-21A, and 103-21B, Rev. A

QA-T-0843-029, Procedure Qualification Record for welds 201-20A, 301-20A, and 401-20B, Rev. A

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Record of Welder or Welding Operator Qualification Tests for weld 101-51: APM, EYJ, BWM

Record of Welder or Welding Operator Qualification Tests for weld 201-40: BXG

Record of Welder or Welding Operator Qualification Tests for weld 101-21A: BWM, BVS

Record of Welder or Welding Operator Qualification Tests for weld 201-20A: EYJ, BVH, BXP, AXT, BVS, BWG, BWK, BTT, UCS, APM, BWM, BVV

Record of Welder or Welding Operator Qualification Tests for weld 301-20A: BNO, BGQ, BVT, BWH, BVR, BTN, BXP, BWG, BWK, UCS, EYJ, BTT, BXF

Record of Welder or Welding Operator Qualification Tests for weld 401-20B: BTO, AXT, BVS, EYJ, BVH, BXP, BWG, BWH, BTT, UCS, BGQ, BNO, BVT, BXG, BTS

Personnel Qualification Certificates of Nondestructive Examination: N503101, N508215, N507618, N505558, N508217, N505379, N507929, N505381, N506755, N501070, N505348, N503879, A-CII-103005, A-CII-091006, A-CII-101002, A-CII-108008, JI-CERT-456, JI-CERT-1209, HY-20369, HY-24133, HY-2608, HY-2484, HY-24145, HY-20485, HY-2425, HY-2445, HY-20444, HY-20201, HY-24130, HY-20260, HY-20516, JI-CERT-1103, JI-CERT-1030, JI-CERT-1140, JI-CERT-1119

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 M120515-023-001, Report of Magnetic Particle Examination for weld 101-51, After Intermediate PWHT
 M110704-020-001, Report of Magnetic Particle Examination for weld 101-40, After PWHT
 M101122-025-001, Report of Magnetic Particle Examination for weld 201-40, After PWHT
 M110304-009-001, Report of Magnetic Particle Examination for weld 101-21A, Weld Preparation
 M110506-039-001, Report of Magnetic Particle Examination for weld 101-21A, After PWHT
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 SV3-CA20-GNR-000430, "CA20 Attachment Brackets," Rev. 0
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LIST OF ACRONYMS

ACI	American Concrete Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CB&I	Chicago Bridge and Iron
CMTR	Certified Material Test Report
CRWMO	Corrosion-Resistant Weld Metal Overlay
CV	Containment Vessel
CVBH	Containment Vessel Bottom Head
DFT	Dry Film Thickness
DVI	Direct Vessel Injection
E&DCR	Engineering and Design Coordination Report
EPC	Engineering, Procurement, and Construction
FCAW	Flux-Cored Arc Welding
GMAW	Gas Metal Arc Welding
GTAW	Gas Tungsten Arc Welding
IMC	Inspection Manual Chapter
ITAAC	Inspections, Tests, Analyses, and Acceptance Criteria
MEK	Methyl Ethyl Ketone
N&D	Nonconformance and Disposition
NCR	Nonconformance Report
NCV	Non-cited Violation
NDE	Non-destructive Examination
NRC	Nuclear Regulatory Commission
PQR	Procedure Qualification Records
QA	Quality Assurance
QC	Quality Control
QVD	Quality Verification Documentation
Rev	Revision
RIR	Receiving Inspection Report
RT	Radiographic Testing
RV	Reactor Vessel
SAW	Submerged Arc Welding
SMAW	Shielded Metal Arc Welding
SNC	Southern Nuclear Operating Company
SSC	System, Structure, or Component
UFSAR	Updated Final Safety Analysis Report
USE	Upper Shelf Energies
UT	Ultrasonic Examination
VEGP	Vogtle Electric Generating Plant
WDN	Welding Defect Notices
WEC	Westinghouse Electric Company
WPS	Welding Procedure Specifications