



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
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August 14, 2013

Mr. B. L. Ivey
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SUBJECT: ERRATA - SOUTHERN NUCLEAR OPERATING COMPANY VOGTLE
ELECTRIC GENERATING PLANT UNITS 3 AND 4 - NRC INTEGRATED
INSPECTION REPORTS 05200025/2012-002 AND 05200026/2012-002

Dear Mr. Ivey:

On May 11, 2012, the United States Nuclear Regulatory Commission (NRC) issued the subject NRC Integrated Inspection Reports 05200025/2012-002 AND 05200026/2012-002 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4 (Agencywide Documents Access and Management System ML12132A040). In reviewing this report it was noted that paragraph 2503.1, ITAAC-Related Inspections portion of the report combined two separate ITAAC into one paragraph. It was also noted that some content of paragraphs 2503.1 and 2503.3 should have been placed in other more applicable paragraphs. Paragraph 2503.1 therefore has been split into; Paragraph 1a, ITAAC No / Family: 2.2.01.02a / B06, and Paragraph 1b, ITAAC No / Family: 2.2.01.03a / B06. Additionally the non-applicable content in paragraphs 2503.1 and 2503.3 has been moved into the appropriate portions of paragraphs 2503.1a, 2503.1b, and 2503.3. Please replace pages 1-9 of the original report with attached pages 1-9a.

Should you have any questions concerning this letter, please contact me at 404-997-4603.

Sincerely,

/RA/

Randall A. Musser, Chief
Construction Inspection Branch 3
Division of Construction Inspection

Docket No.: 05200025 and 05200026
Combined Licenses (COL) No.: NPF-91 (Unit 3), NPF-92 (Unit 4)

cc: (See page 2)

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Letter to B. L. Ivey from Randall A. Musser dated August 14, 2013

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REPORT DETAILS

2503 ITAAC-RELATED INSPECTIONS

.1a ITAAC No / Family: 2.2.01.02a / B06

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC 2.2.01.02a (described in Table 1 below):

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2.a) The components identified in Table 2.2.1-1 as American Society of Mechanical Engineers (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 directly observed Chicago Bridge & Iron (CB&I) survey activities associated with the Unit 3 fuel transfer tube sleeve, to determine if the survey layout was performed in accordance with the following requirements:

- CMS-720-03-PR-17051, "Containment Vessel Dimensional Inspection Procedure for Bottom Head," Revision (Rev.) 0
- 165766-000-CN-WI-00011, "Vogtle Project Penetration Layout CV Bottom Head Ground Assembly," Rev. 1
- Drawing 19, Sheet 1, "Nozzle P11 – Field Details," Rev. 1

The inspectors also reviewed completed containment vessel bottom head layout verification report number U3-BH3-C33, to determine if the location was in accordance with the approved drawing.

The inspectors reviewed procurement specifications to determine if they were in conformance with the Design Control Document (DCD), ASME Section III Subsection NE, and 10 CFR Part 50 Appendix B. The inspectors reviewed seven Certified Material Test Reports (CMTRs) for CV base metal: the CV bottom head plate C-1, CV lower ring plates A-4, A-11, and A-12, and three electrical penetration sleeves. The reports were reviewed to determine if chemical composition and mechanical properties (including impact testing) met the requirements of the applicable portions of ASME Section II, ASME Section III Subsection NE, and the Design Specification. In addition, the inspectors reviewed the site receipt inspections for the C-1, A-4, A-11,

and A-12 plates to determine if they were in conformance with the applicable purchase orders.

The inspectors reviewed the CMTRs for three BH2 containment vessel bottom head plates to determine if the pressure boundary material met the following requirements:

- Section 3.8.2, "Steel Containment," of the AP1000 Design Control Document, Rev. 19
- Section 3, "Functional Requirements," of Design Specification APP-MV50-Z0-001, "Containment Vessel," Rev. 7
- SA-738, "Specification for Pressure Vessel Plates, Heat-treated, Carbon-Manganese-Silicon Steel, for Moderate and Lower Temperature Service"
- APP-MV50-Z0-037, "AP1000 Containment Vessel: SA-738 Grade B Plates," Rev. 2
- Article NE-2000, "Material," of 2001 edition of the ASME Code, Section III, Subsection NE, "Metal Containment," including the 2002 Addenda
- CB&I Procedure: MS-SA-738B-2889, "Material Specification For SA 738 Grade B Steel Plate AP1000 Nuclear Containment Vessel," Rev. 4

Specifically the inspectors reviewed the CMTRs for the following plates:

- A3-B17: CMTR 5903-24, ID BCAY, Heat 4-8088/KF001 A
- A3-B18: CMTR 5903-15, ID BCAZ, Heat 4-8049/HG048 A
- A3-B22: CMTR 5903-19, ID BCBD, Heat 4-8049/HE191 A

The inspectors reviewed these CMTRs to determine the following:

- Whether the material met the minimum mechanical properties for tensile strength and yield strength
- Whether the material had the appropriate chemical composition and required grain size
- Whether the material met the maximum carbon equivalent
- Whether the material was subjected to the appropriate heat treatment

The inspectors reviewed the Ultrasonic Testing (UT) inspection Records for plates C-1, A-11, A-12 and A-4 to determine if this UT examination was performed in accordance with Section 3.4, "Nondestructive Examination," of APP-MV50-Z0-037. Specifically, the inspectors reviewed the following UT reports: H21-213 (BCAY), H22-131 (BCAZ), H22-131 (BCBD).

The inspectors also reviewed CB&I's Receipt Inspection Records (RIRs) for these plates to determine if the receipt inspection activities were adequate to ensure that the material met the requirements of the purchase documents. Specifically, the inspectors reviewed the following RIR Report Nos.: U3-054 (A3-B17), U3-055 (A3-B18), and U3-059 (A3-B22).

The inspectors reviewed the qualification records for the CB&I inspectors who performed the receipt inspections of the CVBH plate material to determine if they had the proper training and certifications according to the CB&I training program.

The inspectors also reviewed the calibration records for the following M&TE to determine if the equipment was properly calibrated and approved for use during the receipt inspections referenced above:

- Visible light meter Serial Number (S/N) Q574892
- 1" – 2" Starrett micrometer S/N 11235326
- UT thickness gauge S/N 55717 with 093J probe
- Topsy Step Block S/N 22423
- Fluke 62 mini infrared thermometer S/N 16600499

b. Findings

No findings were identified

.1b ITAAC No / Family: 2.2.01.03a / B06

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC 2.2.01.03a. (described in Table 2 below):

Table 2. ITAAC 2.2.01.03a		
Design Commitment	Inspections, Tests, Analyses	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 observed the installation of the fuel transfer tube sleeve to determine if the welding of the sleeve to the containment vessel bottom head pressure boundary material was performed in accordance with the following:

- Article NE-4000, "Fabrication and Installation," of 2001 edition of the ASME Code, Section III, Subsection NE, "Metal Containment," including the 2002 Addenda
- APP-MV50-V1-017, "AP1000 Containment Vessel Fuel Transfer Sleeve," Rev. 0
- Drawing 13, Sheet 1, "Field Edge Preps & Weld Details, Rev. 5
- Drawing 19, Sheet 1, "Nozzle P11 – Field Details," Rev. 1
- Welding Procedure Specification (WPS) E911TG-H4, Rev. 4
- CMS-830-15-PR-45158, "Visual Inspection – Welds ASME Section III, Division 1 – Subsection NE," Rev. 0

Specifically, the inspectors observed the in-process welding of the fuel transfer tube sleeve from the inside of the CVBH to determine if the welding was performed within

the ranges allowed by the WPS and the requirements of ASME Section III, Article NE-4000. During the welding, the inspectors also observed CB&I's process for maintaining the required preheat requirements established by section 7.2.2.5 of the CV design specification.

The inspectors also reviewed the welding records (Traveler Set U3-BH3-C33, "weld nozzle P11 to bottom head," and repair traveler set U3-BH3-C33-R/T1, "weld repairs nozzle P11) associated with this weld to determine if:

- The welding activity was properly documented in the work traveler
- Records provided adequate traceability to all aspects of the welding activity
- 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, Nondestructive Examination (NDE) records
- The records were appropriately retained and stored in accordance with Quality Assurance (QA) program requirements
- Accepted, rejected, and repaired items were documented in written reports
- Records of receipt inspections were appropriately referenced

The inspectors performed an independent visual inspection of the completed weld to determine if the surface of the final weld met the requirements of Subsection NE-4424, "Surfaces of Welds," of ASME Section III, Article NE-4000. Specifically, the inspectors observed the surface condition of the finished weld, measured the amount of reinforcement, and measured any locations of undercut to determine if the as-welded condition was acceptable per ASME Section III, Article NE-4000, subsection NE-4424 and CB&I visual inspection procedure CMS-830-15-PR-45158.

The inspectors reviewed the Radiographic Testing (RT) film for the completed fuel transfer tube sleeve to CVBH weld (Weld # BH3-A3-C33-P11) to determine if 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 U3-060 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. 0.

The inspectors reviewed the welding and NDE records for the field welds associated with CVBH 3-plate assembly "E" to determine if the welding and NDE were performed in accordance with the following:

- Article NE-4000, "Fabrication and Installation," of 2001 edition of the ASME Code, Section III, Subsection NE, "Metal Containment," including the 2002 Addenda

- Article NE-5000, "Examination," of 2001 edition of the ASME Code, Section III, Subsection NE, "Metal Containment," including the 2002 Addenda
- Design Specification APP-MV50-Z0-001, "Containment Vessel," Rev. 7

Specifically, the inspectors reviewed the welding and NDE records, which were documented in traveler set number U3-BH2-2, for the two field welds which make-up the BH2, 3-plate assembly "E." These two welds were A3-B22 to A3-B18, and A3-B18 to A3-B17. The inspectors reviewed these records to determine the following:

- Whether CB&I has adequately documented that the fit-up and weld edge preparations were adequate
- Whether CB&I had achieved and maintained the minimum preheat temperature
- Whether the welder identification was properly recorded on the traveler
- Whether CB&I had adequately documented the acceptability of the seam fit-up (visual inspection performed by Quality Control (QC))
- Whether CB&I had adequately documented the welding of the joint
- Whether the completion of the final RT was recorded along with a reference to the RT report number.

The inspectors performed an independent review of the RT film, and associated RT reports, for the two field welds (A3-B18 to A3-B22 [RT report No. U3-017] and A3-B18 to A3-B17 [RT report No. U3-016]) associated with 3-plate assembly "E" to determine if the completed welds met the acceptance standards specified by Subsection NE-5320, "Radiographic Acceptance Standards," of ASME Section III, Article NE-5000, "Examination."

The inspectors observed in-process welding of the BH1 to BH1 outside weld and BH1 to BH2 inside weld on the CVBH (Tag number CNS-MV-01).

Specifically, the inspectors observed the in-process welding of the BH1 to BH1 outside weld and BH1 to BH2 inside weld to determine if the welding was performed within the ranges allowed by the WPS and the requirements of ASME Section III, Article NE-4000. During the welding, the inspectors also observed CB&I's process for maintaining the required preheat requirements established by section 7.2.2.5 of the CV design specification.

The inspectors observed the final visual examination for the P19 sleeve (RCS to RHR Pump Outlet Mechanical Penetration) weld in the CVBH (Tag number CNS-MV-01).

The inspectors observed the final visual examination for the P19 penetration sleeve weld in the CVBH to determine if this nondestructive examination was performed in accordance with the following:

- Article NE-5000, "Examination," of 2001 edition of the ASME Code, Section III, Subsection NE, "Metal Containment," including the 2002 Addenda
- CMS-830-15-PR-45158, "Visual Inspection – Welds ASME Section III, Division 1 – Subsection NE," Rev. 0

- CMS-830-15-PR-45154, "Radiographic Examination ASME Section III, Division 1 – Subsection NE," Rev. 0

The inspectors reviewed two purchase orders for weld filler material. The inspectors reviewed five weld material CMTRs. The reports were reviewed to determine if chemical composition and mechanical properties met the requirements of the applicable portions of ASME Section II, ASME Section III Subsection NE, and the Design Specification. In addition, the inspectors reviewed the site receipt inspections for the weld filler metal to determine if they were in conformance with the applicable purchase orders.

The inspectors reviewed implementing procedures for the fabrication of the containment vessel to determine if they were approved in accordance with the CB&I QA program, and met fabrication specifications including the DCD, ASME Design Specification, and containment vessel purchase order. Procedures reviewed included those for quality control visual inspection, welding filler metal storage, CB&I's NDE Written Practice, and the CB&I QA record storage procedures and weld travelers.

The inspectors reviewed two WPSs for semi-automatic Gas Metal Arc Welding (GMAW) welding from IHI Corporation (IHI) to determine if they were qualified in conformance with the ASME Section IX 2001 edition through 2002 addenda, and were available, current, and accurate. The inspectors reviewed the supporting Procedure Qualification Records (PQRs) to determine if they specified the applicable essential variables referenced in the ASME code.

The inspectors reviewed Measuring and Test Equipment (M&TE) to determine if the equipment and gauges used for process monitoring are calibrated, maintained, and periodic preventive maintenance is implemented for welding and test equipment. The inspectors reviewed records for the following M&TE:

- Wire Feeder Voltmeter LN10V-4
- Wire Feeder Voltmeter LN25V-19
- Wire Feeder Voltmeter LN25V-12
- Tractor Voltmeter SAWV-12
- Clamp Meter 101101307

The inspectors reviewed welder and operator qualification records to determine if welding personnel were qualified and had demonstrated and maintained their skill to perform the prescribed welding activities in accordance with ASME Section IX. The inspectors reviewed qualification records to determine if individuals performing quality-related welding activities were certified, where required according to the work performed. A sample of three welder qualification packages were reviewed by the inspectors to determine if each welder was qualified to the specific WPS they used for welding activities associated with CV bottom head.

The inspectors observed in-process welding activities to determine if welding was within the parameters permitted by the associated WPS. The inspectors observed semiautomatic Flux Core Arc Welding (FCAW) activities on the CV bottom head BH-3 to BH-2 horizontal weld. The inspectors verified that welding activities were

performed in accordance with a controlled weld traveler with appropriate references to procedures, drawings and QC hold points and that welding was performed under conditions suitable to welding and appropriate consideration was given to inclement conditions such as rain. The inspectors interviewed QC personnel to ensure adequate checks were being performed on the weld joint prior to welding and were in accordance with the CB&I procedures which met the requirements of ASME Section III, Subsection NE, including cleanliness and joint offset. The inspectors verified base metal preheat was checked prior to and during welding in accordance with the WPS. The inspectors conducted walkdowns of filler metal storage areas, conducted interviews with CB&I personnel, and reviewed storage procedures to ensure welding filler metals for FCAW and Shielded Metal Arc Welding (SMAW) were stored, issued and controlled in a manner consistent with vendor recommendations and the CB&I Quality Assurance Program Description (QAPD). The inspectors verified interpass temperatures were monitored by welders and QC personnel, and that temperatures were below the maximum allowed by the WPS. The inspectors interviewed QC personnel and confirmed measurements taken to ensure essential variables such as heat input were monitored, recorded, reviewed and within allowable ranges as required by the WPS. The inspectors reviewed QA records which documented the locations of welding and traced each portion of a weld back to the welder using a unique identifier.

The inspectors reviewed welding inspection records to determine if the welding activities were performed in accordance with the CB&I QAPD and 10 CFR Part 50, Appendix B. The inspectors reviewed the weld traveler for the CV bottom head BH-3 to BH-2 horizontal weld to determine if the appropriate inspections were included, in accordance with the applicable ASME Code and CB&I QAPD requirements. The inspectors reviewed qualification and certification for two RT Level II personnel to ensure they were qualified in accordance with the CB&I Written Practice and ASME Section III, Subsection NE 2001 edition through 2002 addenda.

The inspectors evaluated RT practices to determine if the method and acceptance criteria met ASME Code and QA requirements. The inspectors reviewed the procedures for calibration of the densitometer and step wedge, as well as the associated calibration records to determine if they had been calibrated and maintained.

The inspectors reviewed final RT film and records to determine if RT was performed and accepted in accordance with ASME Section III, Subsection NE 2001 edition through 2002 addenda. The inspectors reviewed RT records and films for the following welds:

- BH3 plates C7 to C10
- BH2 plates B18 to B17
- BH2 plates B5 to B3
- Knuckle plate C1
- Lower personnel airlock shell
- Insert plate (H03) to shell plate A4

Four samples were obtained for the CV bottom head and two samples were obtained for the CV lower ring.

The inspectors conducted interviews, reviewed procedures and QA records and conducted walkdowns of record storage facilities to determine if the records, including RT film, were reviewed, approved, and stored in accordance with the requirements of the purchase order and 10 CFR Part 50, Appendix B.

The inspectors reviewed a sample of corrective actions reports to determine if issues were being identified and documented in the licensee and its contractors' corrective action programs as applicable.

b. Findings

No findings were identified

.2 ITAAC No / Family: 2.2.01.04a.i / C06

a. Inspection Scope

The inspectors performed procedure review for testing activities associated with ITAAC 2.2.01.04a.i (described in Table 3 below):

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

The inspectors interviewed CB&I personnel and reviewed relevant procedures related to the vacuum box testing to determine if the procedures adequately prescribed the applicable quality and technical requirements to accomplish the testing. Specifically, the inspectors reviewed CB&I procedure CMS-830-15-PR-45164, "Solution Film Testing Vacuum Box Technique ASME Section III, Division 1 – Subsection NE" to determine if the procedure addressed the following:

- Test objectives were clearly stated and are accomplished in the body of the procedure
- The acceptance criteria against which the test will be judged was clearly identified
- The procedure required comparison of the test results to the acceptance criteria and a provision was made for the evaluator to indicate whether test data was or was not acceptable
- Step-by-step instructions for the performance of the procedure were included to ensure that test objectives were met
- Provision was made for recording details of the conduct of the test, including any observed deficiencies, their resolution, and any necessary retesting

- The procedure provided for the identification of personnel conducting the test
- Test equipment range and accuracy were consistent with the application and complied with applicable ASME Section III code requirements

b. Findings

No findings were identified.

.3 ITAAC No / Family: 2.2.01.04a.ii / F06

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC 2.2.01.04a.ii (described in Table 4 below):

Table 4. ITAAC 2.2.01.04a.ii		
Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
4.a) The components identified in Table 2.2.1-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	ii) Impact testing will be performed on the containment and pressure retaining penetration materials in accordance with the ASME Code Section III, Subsection NE, to confirm the fracture toughness of the materials.	ii) A report exists and concludes that the containment and pressure retaining penetration materials conform with fracture toughness requirements of the ASME Code Section III.

The inspectors reviewed seven Certified Material Test Reports (CMTRs) for CV base metal: the CV bottom head plate C-1, CV lower ring plates A-4, A-11, and A-12, three electrical penetration sleeves, and five weld material CMTRs. The reports were reviewed to determine if fracture toughness, i.e. impact testing, met the requirements of the applicable portions of ASME Section II, ASME Section III Subsection NE, and the Design Specification.

The inspectors reviewed the CMTRs for the following three BH2 containment vessel bottom head plates to determine if the pressure boundary material met the requirements for fracture or impact toughness:

- A3-B17: CMTR 5903-24, ID BCAY, Heat 4-8088/KF001 A
- A3-B18: CMTR 5903-15, ID BCAZ, Heat 4-8049/HG048 A
- A3-B22: CMTR 5903-19, ID BCBD, Heat 4-8049/HE191 A

The inspectors reviewed 12 CMTRs to determine if pressure retaining materials conformed to the fracture toughness requirements of the CV Design Specification and ASME Section III, Subsection NE. The inspection included a review of CV bottom head and lower ring material plate reports for plates C-1, A-11, A-12 and A-4. In addition, the inspectors reviewed CMTRs for three lower ring penetrations and reports for flux core

wire and weld filler metal materials for site and shop welds. The inspectors reviewed the reports to determine if the impact testing temperatures and average minimum absorbed energy acceptance criteria for Charpy V-notch testing specimens complied with the CV Design Specification, and ASME Section II and ASME Section III, Subsection NE requirements.

b. Findings

No findings were identified

- .4 ITAAC No / Family: 3.3.00.02a.i.c / F01
ITAAC No / Family: 3.3.00.02a.i.d / F01

a. Inspection Scope

The inspectors performed direct inspections of ITAAC 3.3.00.02a.i.c and 3.3.00.02a.i.d (described in Table 6 below):