May 22, 2015

Mrs. Tammy Watson
Plant Manager
Chicago Bridge & Iron
366 Old Airport Road
Laurens, SC 29360

SUBJECT: CHICAGO BRIDGE & IRON'S NUCLEAR REGULATORY COMMISSION INSPECTION REPORT NO. 99901432/2015-201, AND NOTICE OF NONCONFORMANCE

Dear Mrs. Watson:

From March 16-19, 2015, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Chicago Bridge & Iron (hereafter referred to as CB&I Laurens) facility in Laurens, SC. The purpose of this limited-scope routine inspection was to assess CB&I Laurens' compliance with provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," and selected portions of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

This technically-focused inspection specifically evaluated CB&I Laurens' implementation of the quality activities associated with the fabrication and testing of piping spools for the Westinghouse Electric Company AP1000 reactor design. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of CB&I Laurens overall quality assurance (QA) program.

During this inspection, the NRC inspection team found that the implementation of your QA program did not meet certain regulatory requirements imposed on you by your customers or NRC licensees. Specifically, the NRC inspection team determined that CB&I Laurens was not fully implementing its QA program in the areas of corrective action, control of special processes, and control of purchased material, equipment, and services. The specific findings and references to the pertinent requirements are identified in the enclosures to this letter. In response to the enclosed notice of nonconformance (NON), CB&I Laurens should document the results of the extent of condition review for these findings and determine if there are any effects on other safety-related components.

Please provide a written statement or explanation within 30 days of this letter in accordance with the instructions specified in the enclosed NON. We will consider extending the response time if you show good cause for us to do so.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make available electronically for public inspection a copy of this letter, its enclosure, and your response through the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response (and if applicable), should not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., explain why the disclosure of information would create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Sincerely,

/RA/ (RMcIntyre for)

Edward H. Roach, Chief
Mechanical Vendor Branch
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901432

Enclosures:
1. Notice of Nonconformance
2. Inspection Report No. 99901432/2015-201
   and Attachment

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make available electronically for public inspection a copy of this letter, its enclosure, and your response through the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response (and if applicable), should not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., explain why the disclosure of information would create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Sincerely,

/RA/ (RMcIntyre for)

Edward H. Roach, Chief
Mechanical Vendor Branch
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901432

Enclosures:
1. Notice of Nonconformance
2. Inspection Report No. 99901432/2015-201 and Attachment

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ADAMS Accession No.: ML15132A240

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OFFICE	NRO/DE/MCB	NRO/DCIP	NRO/DCIP/MVIB	
NAME	JHoncharik	TFrye	ERoach	
DATE	05/13/2015	05/13/2015	05/22/2015	

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Letter to Tammy Watson from Edward Roach dated May 22, 2015

SUBJECT: CHICAGO BRIDGE & IRON'S NUCLEAR REGULATORY COMMISSION INSPECTION REPORT NO. 99901432/2015-201, AND NOTICE OF NONCONFORMANCE

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NOTICE OF NONCONFORMANCE

Chicago Bridge & Iron
366 Old Airport Road
Laurens, SC 29360

Docket No. 99901432
Report No. 2015-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Chicago Bridge & Iron (hereafter referred to as CB&I Laurens) facility in Laurens, SC, from March 16, 2015 through March 19, 2015, it appears that CB&I Laurens did not conduct certain activities in accordance with NRC requirements that were contractually imposed upon CB&I Laurens by its customers or NRC licensees:

A. Criterion XVI, "Corrective Action," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," states that "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management."

   Paragraph 16.2.5 of Section 16, "Corrective Action," of CB&I Laurens Quality Assurance Manual, Revision 21, dated November 15, 2014, states, in part, that "The Department Manager responsible for the corrective/preventive action shall evaluate the significance of the problem affecting quality..." Paragraph 16.2.8, states, in part, that "Preventive action shall be included as part of the corrective/preventive action to a degree appropriate to the magnitude of potential future problems." In addition, paragraph 16.2.9 states, in part, that "The Department Manager responsible for recommending the corrective/preventive action shall return the C/PAR, with their recommendations and a completion date to the Quality Manager promptly for further review and processing." Furthermore, paragraph 16.2.10 states, in part, that "The person(s) responsible for completing the corrective/preventive action shall return the completed C/PAR to the Quality Manager."

   Contrary to the above, as of March 19, 2015, CB&I Laurens failed to establish adequate measures to assure: (1) conditions adverse to quality are promptly identified and corrected; (2) the cause of the condition is determined and corrective action taken to preclude repetition for significant conditions adverse to quality; and (3) adequate documentation of the identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken. Specifically, for the sample of Corrective/Preventive Action Requests (C/PARs) reviewed by the NRC inspection team,

CB&I Laurens did not: (1) identify and correct significant conditions adverse to quality in a timely manner; and (2) provide objective evidence that the actions associated with the C/PAR were adequately implemented and completed. For example:

1. Corrective actions taken in response to NRC finding NON 99901432/2013-201-03 regarding the inadequate commercial-grade dedication of seamless pipes were not adequate. In its letter, CB&I committed to send samples of the materials to an approved testing laboratory as part of the commercial-grade dedication process. The NRC inspection team identified that CB&I Laurens chose to utilize a commercial supplier, Welding Testing Laboratory, for the chemical and physical testing of the seamless pipes to verify the critical characteristics to ensure that the seamless pipes would perform their intended safety function, but did not adequately dedicate the testing services provided by Welding Testing Laboratory.

2. Corrective actions taken in response to NRC finding NON 99901432/2013-201-04 regarding the failure to conduct commercial-grade surveys or source surveillance have not been implemented. CB&I Laurens committed to (1) perform a documented annual and semiannual evaluation of commercial suppliers providing items for commercial-grade dedication and (2) perform a documented review of the suppliers' Non Conformance Report (NCR) log to identify any developing trends that could be adverse to quality and initiate corrective action and to complete the corrective actions by January 14, 2014. The NRC inspection team determined that CB&I Laurens has not performed the documented annual and semiannual evaluation of commercial suppliers or the documented review of the supplier's NCR log to identify any adverse trends.

3. CB&I Laurens failed to ensure that C/PAR No. 408, dated April 21, 2014 contained objective evidence of the corrective actions taken and that it was completed in a timely manner. C/PAR No. 408 was generated as a result of CB&I Laurens receiving pipes from Tioga Pipe that had an outside diameter above 3 percent of the acceptable tolerance. As part of the corrective actions, CB&I Laurens opened NCRs No. S2/V1219, S3/V1083, S3/V1103, and V41147. The NRC inspection team identified that these NCRs did not contain objective evidence of the engineering evaluation performed to disposition the use-as-is and close the C/PAR.

4. CB&I Laurens failed to ensure that C/PAR No. 419, dated May 27, 2014; C/PAR No. 499, dated January 9, 2015; C/PAR No. 508, dated January 29, 2015; and C/PAR No. 517, dated February 20, 2015; contained objective evidence of the corrective actions taken, and that they were completed in a timely manner. CB&I Laurens could not present any objective evidence of the corrective actions associated with these C/PARs and whether the actions were completed. The only documentation available for these C/PARs was the completed initial form that initiated the C/PAR.

This issue has been identified as Nonconformance 99901432/2015-201-01.

B. Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50, states that "Measures shall be established to assure that special processes, including welding, heat treating, and nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements."

Sections 8.6 and 8.7 of CB&I Procedure SP-VT-1, "Visual Examination Procedure," Revision 4, AP1000 Addendum 2, dated March 12, 2012, states, in part, that "The surface of welds shall be sufficiently free from coarse ripples, grooves, overlaps abrupt ridges and valleys…The surface smoothness shall be such that no depression of greater than 1/32-inch per inch exists." The above sections in SP-VT-1 are based on the same requirements in Westinghouse Electric Company (WEC) Specification APP-GW-P0-008, "AP1000 Specification for Field Fabricated Piping and Installation, ASME III, Code Classes 1,2, and 3 and ASME B31.1," Revision 6.

Welding Procedure Specification (WPS) N4/803, Revision 1, dated May 26, 2014, states, in part, that "Welds shall be made with the minimum preheat and maximum interpass temperatures stated in WPS N4/803." WPS N1/803, Revision 0, June 4, 2012, states, in part, that "Welds shall be made with the minimum preheat and maximum interpass temperatures stated in WPS N1/803." Both WPS N1/803 and N4/803 are currently used for welding name plates on safety-related piping spools.

Contrary to the above, as of March 19, 2015, CB&I Laurens failed to perform visual testing inspection in accordance with applicable codes, specifications and criteria, and failed to use welding procedures in accordance with the applicable code requirements. Specifically,

1. CB&I Laurens visually inspected and accepted welds (weld numbers 2, 3, 5, 6, 25, 26 and 27) on pipe spool 8927-40-010-00031, serial number VS2-RNS-PLW-014-1A, (10-inch, Class 2 piping for the Normal Residual Heat Removal (RNS) system for V.C. Summer Unit 2) which did not meet the visual inspection criteria of procedure SP-VT-1 and WEC Specification APP-GW-P0-008. The NRC inspection team found that the pipe spool had abrupt ridges and valleys, and depressions of greater than 1/32-inch that did not meet the pre-service and in-service inspection surface condition requirements of Sections 8.6 and 8.7 of CB&I Procedure SP-VT-1 and WEC Specification APP-GW-P0-008. If the surface area is not conducive to the pre-service and in-service inspection examinations (ultrasonic (UT) examination), the UT probe will not have direct contact with the material and induce lift-off which will not detect defects such as cracking.

2. When a WPS specifies preheat and interpass temperatures for welding two different materials, the limiting temperatures (as supported by the procedure qualification reports) should be used, which would be the maximum (higher) preheat temperature and the minimum (lower) interpass temperature of the two different materials. However, contrary to this, WPSs N1/803 and N4/803 specifies that when welding two different materials with different preheat and interpass temperatures, the minimum preheat and maximum interpass temperature of the applicable procedure shall be used. For example, WPS N1/803 specifies that for a 1 inch thick weld, the minimum preheat for P-1 material is 200°F, while the minimum preheat for P-8 material is 50°F, and therefore the WPS is requiring that the 50°F preheat be used, even though the limiting preheat temperature of 200°F should be specified in the WPS, as supported by the applicable PQRs. Welding of name plates using the incorrect preheat and interpass temperatures could lead to changes in the mechanical properties of the base material.

This issue has been identified as Nonconformance 99901432/2015-201-02.

C. Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50, states, in part, that "Measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, and examination of products upon delivery."

Contrary to the above, as of March 19, 2015, CB&I Laurens failed to establish adequate measures for source evaluation and selection of contractors and subcontractors. Specifically, CB&I Laurens did not adequately qualify several suppliers by the conduct of an audit. CB&I Laurens used its Audit Checklist for Nuclear Material Organizations as the basis for qualifying Palmetto Plating Company, Wyman Gordon Pipe and Fittings, Pinson Valley Heat Treating, and Welding Testing Laboratory even though these are commercial suppliers without an Appendix B to 10 CFR Part 50 and 10 CFR Part 21 programs. CB&I Laurens used Palmetto Plating Company for the procurement of safety-related pickle and passivation of stainless steel bends, Wyman Gordon Pipe and Fittings for the procurement of safety-related piping, Pinson Valley Heat Treating for the procurement of heat treating services for safety-related piping, and Welding Testing Laboratory for destructive testing to determine the acceptability of procedure qualification records as required by Section III, "Rules for Construction of Nuclear Facility Components," and Section IX, "Welding and Brazing Qualifications of the American Society of Mechanical Engineers Boiler & Pressure Vessel Code.

This issue has been identified as Nonconformance 99901432/2015-201-03.

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Chief, Construction Mechanical Vendor Branch, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this Notice of Nonconformance. This reply should be clearly marked as a "Reply to a Notice of

Nonconformance" and should include for each noncompliance: (1) the reason for the noncompliance or, if contested, the basis for disputing the noncompliance; (2) the corrective steps that have been and the results achieved; (3) the corrective steps that will be to avoid further noncompliance; and (4) the date when the corrective action will be completed. Where good cause is shown, the NRC will consider extending the response time.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html, to the extent possible, it should not include any personal privacy, proprietary, or Safeguards Information (SGI) so that the NRC can make it available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information would create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Dated this 22nd day of May 2015.

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NEW REACTORS
DIVISION OF CONSTRUCTION INSPECTION AND OPERATIONAL PROGRAMS
VENDOR INSPECTION REPORT

Docket No.:	99901432
Report No.:	99901432/2015-201
Vendor:	Chicago Bridge & Iron 366 Old Airport Road Laurens, SC 29360
Vendor Contact:	Mr. Sven G. Akerman Acting Quality Assurance Manager E-mail: sven.akerman@cbi.com
Nuclear Industry Activity:	Chicago Bridge & Iron (hereafter referred to as CB&I Laurens), located in Laurens, SC, has been providing pipe bending and piping fabrication services for over 25 years. CB&I Laurens' scope of supply includes fabrication and assembly of pressure piping, American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel (B&PV) Code Class 1, 2 & 3 fabrication of supports, and ASME B&PV Class 1, 2 & 3 shop assemblies. CB&I's services include pipe bending, piping fitting and assembly of safety-related piping, and piping modules for the Westinghouse Electric Company AP1000 new reactor construction.
Inspection Dates:	March 16-19, 2015
Inspectors:	Yamir Diaz-Castillo NRO/DCIP/MVIB Raju Patel NRO/DCIP/MVIB Jose Jimenez NRO/DCIP/EVIB Frank Talbot NRO/DCIP/QVIB John Honcharik NRO/DE/MCB
Approved by:	Edward H. Roach, Chief Mechanical Vendor Branch Division of Construction Inspection and Operational Programs Office of New Reactors

Enclosure 2

EXECUTIVE SUMMARY

Chicago Bridge & Iron
99901432/2015-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Chicago Bridge & Iron (hereafter referred to as CB&I Laurens) facility to verify that it had implemented an adequate quality assurance (QA) program that complies with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." In addition, the NRC inspection also verified that CB&I Laurens implemented a program under 10 CFR Part 21, "Reporting of Defects and Noncompliance," that met the NRC's regulatory requirements. The NRC inspection team conducted the inspection from March 16-19, 2015. This was the second NRC inspection at the CB&I Laurens facility.

This technically-focused inspection specifically evaluated CB&I Laurens' implementation of quality activities associated with the fabrication and testing activities of piping and piping modules for the Westinghouse Electric Company (WEC) AP1000 reactor design. On March 17, 2015, the NRC inspection team was notified by CB&I Laurens that a stop work was ordered on all safety-related components at the facility due to a programmatic breakdown on the implementation of CB&I Laurens' QA program. As such, the NRC inspection was unable to observe all planned areas of inspection.

Specific activities observed by the NRC inspection team before the stop work was issued included:

- Liquid penetrant examination of pipe spool 890300-42-00711, drawing number SV3-RCS-PLW-030, weld numbers 2, 3, 4 and 5, for Virgil C. Summer Unit 3, Reactor Coolant System, ASME Code Section III, Code Class 1 piping

- Activities associated with the storage of welding rods, issuance of welding rods, and return of unused welding rods

In addition to observing these activities, the NRC inspection team verified that measuring and test equipment (M&TE) was properly identified, marked, calibrated, and used within its calibrated range. The NRC inspection team also walked down CB&I Lauren's assembly floor and verified that nonconforming components were properly identified, marked, and segregated when practical, to ensure that they were not reintroduced into the manufacturing processes.

These regulations served as the bases for the NRC inspection:

- Appendix B to 10 CFR Part 50
- 10 CFR Part 21

During the course of this inspection, the NRC inspection team implemented Inspection Procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," dated April 25, 2011, and IP36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," dated February 13, 2012.

With the exception of the nonconformances described below, the NRC inspection team concluded that CB&I Laurens' QA policies and procedures comply with the applicable requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21, and that CB&I Laurens' personnel are implementing these policies and procedures effectively. The results of this inspection are summarized below.

Corrective Action

The NRC inspection team issued Nonconformance 99901432/2015-201-01 in association with CB&I Laurens' failure to implement the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. Nonconformance 99901432/2015-201-01 cites CB&I Laurens' for failing to establish adequate measures to assure: (1) conditions adverse to quality are promptly identified and corrected; (2) the cause of the condition is determined and corrective action taken to preclude repetition for significant conditions adverse to quality; and (3) the documentation of the identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken. Specifically, for the sample of C/PARs reviewed by the NRC inspection team, CB&I Laurens did not: (1) identify and correct significant conditions adverse to quality in a timely manner; and (2) provide objective evidence that the actions associated with the C/PAR were adequately implemented and completed.

Manufacturing Control

The NRC inspection team issued Nonconformance 99901432/2015-201-02 in association with CB&I Laurens' failure to implement the regulatory requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50. Nonconformance 99901432/2015-201-02 cites CB&I Laurens for failing to perform visual testing inspection in accordance with applicable codes, specifications and criteria, and failed to use welding procedures in accordance with the applicable code requirements. Specifically, CB&I Laurens visually inspected and accepted welds (weld numbers 2, 3, 5, 6, 25, 26 and 27) on pipe spool 8927-40-010-00031, Serial number VS2-RNS-PLW-014-1A, (10 inch, Class 2 piping for the Normal Residual Heat Removal system for V. C. Summer Unit 2) which did not meet the visual inspection criteria of procedure SP-VT-1, "Visual Examination Procedure," Revision 5, dated July 28, 2011, and WEC Specification APP-GW-P0-008, "AP1000 Specification for Field Fabricated Piping and Installation, ASME III, Code Classes 1, 2, and 3 and B31.1," Revision 6, dated June 12, 2014. The NRC inspection team found that the pipe spool had abrupt ridges and valleys, and depressions of greater than 1/32-inch that did not meet the pre-service and in-service inspection surface condition requirements of Sections 8.6 and 8.7 of CB&I Procedure SP-VT-1 and WEC Specification APP-GW-P0-008. In addition, when a welding procedure specification (WPS) specifies preheat and interpass temperatures for welding two different materials, the limiting temperatures (as supported by the procedure qualification reports) should be used, which would be the maximum (higher) preheat temperature and the minimum (lower) interpass temperature of the two different materials. However, contrary to this, WPSs N1/803 and N4/803 specify that when welding two different materials with different preheat and

interpass temperatures, the minimum preheat and maximum interpass temperature of the applicable procedure shall be used. Both WPS N1/803 and N4/803 are currently used for welding name plates on safety-related piping spools.

Oversight of Contracted Activities

The NRC inspection team issued Nonconformance 99901432/2015-201-03 in association with CB&I Laurens' failure to implement the regulatory requirements of Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. Nonconformance 99901432/2015-201-03 cites CB&I Laurens for failing to establish adequate measures for source evaluation and selection of contractors and subcontractors. Specifically, CB&I Laurens did not adequately qualify Palmetto Plating Company, Wyman Gordon Pipe and Fittings, Pinson Valley Heat Treating and Welding Testing Laboratory by the conduct of an audit. CB&I Laurens used its Audit Checklist for Nuclear Material Organizations as the basis for qualifying Palmetto Plating Company, Wyman Gordon Pipe and Fittings, Pinson Valley Heat Treating, and Welding Testing Laboratory even though these are commercial suppliers without an Appendix B to 10 CFR Part 50 and 10 CFR Part 21 programs.

Other Inspection Areas

The NRC inspection team determined that CB&I Laurens is implementing its programs for design control, procurement document control, nonconforming material, parts, or components, test control, M&TE, and internal audits in accordance with the applicable regulatory requirements of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team also determined that CB&I Laurens is implementing its policies and procedures associated with these programs. No findings of significance were identified.

REPORT DETAILS

1. Corrective Action

   a. Inspection Scope

      The NRC inspection team reviewed CB&I Laurens' policies and implementing procedures that govern the corrective action program (CAP) to verify compliance with the requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50.

      The NRC inspection team reviewed a sample of Corrective/Preventive Action Requests (C/PARs) to verify the adequacy of CB&I Laurens' implementation and control of its CAP. In addition, the NRC inspection team verified that CB&I Laurens' corrective action process provides a connection to the 10 CFR Part 21 program.

      The NRC inspection team also observed a management meeting where C/PARs are discussed to determine if CB&I Laurens' staff demonstrated sufficient knowledge of the CAP and whether the meeting provided an adequate review of the C/PARs, including proposed categorization (significant condition adverse to quality, condition adverse to quality, or other as applicable) and appropriate screening for 10 CFR Part 21 applicability.

      The NRC inspection team also reviewed CB&I Laurens' proposed corrective actions as stated in their October 31, 2013 (Agency Document and Management System (ADAMS) Accession No. ML13310A551) and December 18, 2013 (ADAMS Accession No. ML14002A401) letters in response to the NRC's findings documented in inspection report No. 99901432/2013-201, dated October 2, 2013 (ADAMS Accession No. ML13263A411), and to a request for additional information dated November 25, 2013 (ADAMS Accession No. ML13326A982).

      The NRC inspection team discussed the CAP with CB&I Laurens' management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

   b. Observations and Findings

      b.1 Corrective Action Associated with Violation 99901432/2013-201-01

         Following an August 2013 inspection, the NRC issued Violation 99901432/2013-201-01 for CB&I Laurens' failure to submit to the Commission an interim report for the evaluation of shipped safety-related pipe sleeves without the verification of the chemical and physical properties.

         In its response to the NRC dated October 31, 2013, CB&I Laurens stated that it had initiated C/PAR No. 355 to determine and document the causes and corrective actions for this condition. In addition, the response stated that procedure BFS-QC-10CFR21, "Procedure for Compliance with 10CFR21," Revision 4, dated October 29, 2014, was revised to incorporate more detailed instructions for

identifying, evaluating, tracking, and reporting potentially reportable 10 CFR Part 21 deviations or failures to comply that may constitute a substantial safety hazard. Furthermore, the response stated that training in the implementation of the revised procedure BFS-QC-10CFR21 will be provided for all current and new CB&I Laurens employees.

The NRC inspection team reviewed the documentation that provided the objective evidence for the completion of the corrective actions. The NRC inspection team confirmed that CB&I Laurens revised BFS-QC-10CFR21 and provided training to current employees as well as new employees on the revisions to BFS-QC-10CFR21. The NRC inspection team determined that CB&I Laurens' corrective actions were adequate to address the identified finding. Based on its review, the NRC inspection team closed Violation 99901432/2013-201-01.

b.2 Corrective Action Associated with Nonconformance 99901432/2013-201-02

The NRC also issued Nonconformance 99901432/2013-201-02 for CB&I Laurens' failure to maintain weld heat input limits while welding pipe spool 890300-40-00647, serial number SV3-RNS-PLW-015-3, weld number 10 for Vogtle Electric Generating Plant Unit 3.

In its response to the NRC dated October 31, 2014, CB&I Laurens stated that it had initiated C/PAR No. 355 to determine and document the causes and corrective actions for this condition. In addition, the response stated that the welding procedure specification (WPS) was revised to indicate the appropriate weld heat limit input and that training will be provided to the welders qualified to weld stainless steel materials and their supervisors for identifying when the requirement for heat input control applies and how to control the heat input within the limits provided in the applicable WPS.

The NRC inspection team reviewed the documentation that provided the objective evidence for the completion of the corrective actions. The NRC inspection team confirmed that CB&I Laurens' revised the applicable welding procedure, AP1000-803, Revision 3, dated August 20, 2013, and provided training for welders on the use of weld heat input charts specified in the applicable welding procedures. The NRC inspection team also verified that the requirement for heat input control was only for Type 304 and 316 stainless steel materials with a carbon content greater than 0.030 percent in accordance with Regulatory Guide 1.44, "Control of the Processing and Use of Stainless Steel," Revision 0, dated May 1973. The NRC inspection team determined that CB&I Laurens' corrective actions were adequate to address the identified finding. Based on its review, the NRC inspection team closed Nonconformance 99901432/2013-201-02.

b.3 Corrective Action Associated with Nonconformance 99901432/2013-201-03

The NRC also issued Nonconformance 99901432/2013-201-03 for CB&I Laurens' failure to perform an engineering evaluation and consider qualitative factors (e.g., supplier performance, historical quality controls, complexity of item, and safety significance of the item) for the selection of the sampling plan's sample size used for dedicating commercial-grade seamless pipes to provide reasonable assurance that when used as basic components they will perform their intended safety function.

In its response to the NRC dated October 31, 2013, CB&I Laurens stated that it had initiated C/PAR No. 344 to determine and document the causes and corrective actions for this condition. The response also stated that that a commercial-grade survey of the primary supplier had been completed with no findings or observations. In addition, the response stated that the commercial-grade dedication procedure BFS-AP1000-CGD-1, "Commercial Grade Dedication Procedure for AP1000 Projects," Revision No. 5, dated January 31, 2014, and commercial-grade dedication plan had been revised to include additional controls and to also include the sampling plans consistent with industry guidance for commercial-grade dedication, Electric Power Research Institute 017218-R1, "Guideline for Sampling in the Commercial-Grade Item Acceptance Process," dated January 1999. Furthermore, the response stated that samples of the materials will be sent to an approved testing laboratory for further testing, if required, and that training in the implementation of the revised procedure and commercial-grade dedication plan would be provided to all current and new CB&I Laurens employees assigned to activities related to commercial-grade dedication.

The NRC inspection team reviewed the documentation that provided the objective evidence for the completion of the corrective actions. The NRC inspection team confirmed that CB&I Laurens' had performed a commercial-grade survey of the primary supplier, revised procedure BFS-AP1000-CGD-1, and provided training to current employees as well as new employees on the revisions to BFS-AP1000-CGD-1. However, during the review of the chemical and physical test reports that provided the objective evidence for the completion of the corrective action, the NRC inspection team noted that CB&I Laurens chose to utilize a commercial supplier, Welding Testing Laboratory, for the chemical and physical testing of the seamless pipes to verify the critical characteristics to ensure that the seamless pipes would perform their intended safety function, but did not adequately dedicate the testing services provided by Welding Testing Laboratory. The NRC inspection team determined that CB&I Laurens' corrective actions were inadequate to address the identified finding. The NRC inspection team identified this issue as an example of Nonconformance 99901432/2015-201-01 for CB&I Laurens' failure to assure that conditions adverse to quality are promptly identified and corrected.

b.4 Corrective Action Associated with Nonconformance 99901432/2013-201-04

The NRC also issued Nonconformance 99901432/2013-201-04 for CB&I Laurens' failure to (1) perform triennial audits and adequate annual evaluations of its safety-related suppliers; (2) conduct a commercial-grade survey or source surveillance to verify that DuBose National Energy's quality program included the requisite processes, such as material traceability and lot/batch controls, for the control of critical characteristics necessary to provide reasonable assurance that commercial-grade materials to be used as basic components will perform their intended safety function, and (3) verify that the test controls used in the testing of the demineralized water for the hydrostatic testing and final cleaning of safety-related pipe sub-assemblies were adequately controlled.

In its response to the NRC dated October 31, 2013, CB&I Laurens stated that it had initiated C/PAR Nos. 346, 351, 352, and 353 to determine and document the causes and corrective actions for this condition. In addition, the response also stated that the Quality Assurance (QA) manual had been revised to include a requirement for triennial audits, annual evaluations, and triennial commercial-grade surveys; and that training on the revisions to the QA manual would be provided to personnel affects by revisions. Furthermore, the response stated that a commercial-grade survey of DuBose National Energy's quality program was completed on September 24, 2013; and that a commercial-grade survey of ALS Environmental's quality program had been scheduled.

The NRC inspection team reviewed the documentation that provided the objective evidence for the completion of the corrective actions. The NRC inspection team confirmed that CB&I Laurens had performed a commercial-grade survey of DuBose National Energy and ALS Environmental quality programs, revised the QA manual, and provided training on the revisions to the QA manual to affected employees.

With regards to CB&I Laurens' statement that it would revise the QA manual to perform triennial commercial-grade surveys, the NRC inspection team issued a request for additional information dated November 25, 2013. In its response dated December 18, 2013, CB&I Laurens stated that it would establish written procedures to conduct surveys of commercial suppliers at a sufficient frequency to ensure that the process controls applicable to the critical characteristics of the item procured continue to be effectively implemented. The procedures will include consideration of the complexity of the item, frequency of procurement, receipt inspection, item performance history, and knowledge of changes in the vendor's controls, with a limit such the frequency of survey would not exceed three years. In addition, the response stated that commercial suppliers will be subject to a documented annual evaluation and semi-annually evaluation. Furthermore, the response stated that CB&I Laurens' QA manager would complete a documented review of the vendor's Non Conformance Report (NCR) log to identify any suppliers developing trends that could be adverse to quality and initiate corrective action. CB&I Laurens stated that it would complete the corrective actions above by January 31, 2014.

During the review of the documentation that provided the objective evidence for the completion of the corrective action, the NRC inspection team determined that CB&I Laurens had not performed the documented annual and semiannual evaluation of commercial suppliers or the documented review of the supplier's NCR log to identify any adverse trends. The NRC inspection team identified this issue as another example of Nonconformance 99901432/2015-201-01 for CB&I Laurens' failure to assure that conditions adverse to quality are promptly identified and corrected.

b.5 Implementation of CB&I Laurens' Corrective Action Program

During a review of a sample of C/PARs, the NRC inspection team noted that various C/PARs were not completed in accordance with CB&I Laurens' QA manual. For example, C/PAR 408, dated April 21, 2014; was generated as a result of CB&I Laurens' receiving pipes from Tioga Pipe that had an outside diameter above 3 percent of the acceptable tolerance. As part of the corrective actions, CB&I Laurens opened NCRs Nos. S2/V1219, S3/V1083, S3/V1103, and V41147. The NRC inspection team noted that C/PAR No. 408 did not contained objective evidence of the corrective actions taken, and that it was not completed in a timely manner. The NRC inspection team also noted that the NCRs opened in response to C/PAR 408 did not contain objective evidence of the engineering evaluation performed to disposition the use-as-is and close the C/PAR. The NRC inspection team identified this issue as another example of Nonconformance 99901432/2015-201-01 for CB&I Laurens' failure to assure that conditions adverse to quality are promptly identified and corrected; and provide objective evidence that the actions associated with the C/PAR were adequately implemented and completed.

In addition, the NRC inspection team noted that C/PAR No. 419, C/PAR No. 499, C/PAR No. 508, and C/PAR No. 517 did not contained objective evidence of the corrective actions taken, and that they were completed in a timely manner. Upon questioning by the NRC inspection team, CB&I Laurens could not present any objective evidence of the corrective actions associated with these C/PARs and whether the actions were completed. The only documentation available for these C/PARs was the completed initial form that initiated the C/PAR. The NRC inspection team identified this issue as another example of Nonconformance 99901432/2015-201-01 for CB&I Laurens' failure to provide objective evidence that the actions associated with the C/PAR were adequately implemented and completed.

c. Conclusion

The NRC inspection team issued Nonconformance 99901432/2015-201-01 in association with CB&I Laurens' failure to implement the regulatory requirements of Criterion XVI of Appendix B to 10 CFR Part 50.
Nonconformance 99901432/2015-201-01 cites CB&I Laurens' for failing to establish adequate measures to assure: (1) conditions adverse to quality are promptly identified and corrected; (2) the cause of the condition is determined and corrective action taken to preclude repetition for significant conditions adverse to quality; and (3) the

documentation of the identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken. Specifically, for the sample of C/PARs reviewed by the NRC inspection team, CB&I Laurens did not: (1) identify and correct significant conditions adverse to quality in a timely manner; and (2) provide objective evidence that the actions associated with the C/PAR were adequately implemented and completed.

2. Manufacturing Control

a. Inspection Scope

The NRC inspection team reviewed CB&I Laurens' policies and implementing procedures that govern the control of special processes to verify compliance with the regulatory requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50 and with the requirements in Subsection NCA, "General Requirements for Division 1 and Division 2," Subsection NB, "Class 1 Components," Subsection NC, "Class 2 Components," and Subsection ND, "Class 3 Components," of Section III, "Rules for Construction of Nuclear Facility Components," Section V, "Nondestructive Examination," and Section IX, "Welding and Brazing Qualification," of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, 1998 Edition, 2000 Addenda.

The NRC inspection team also reviewed a sample of welding and nondestructive examination (NDE) documents. The NRC inspection team observed a liquid penetrant examination of pipe spool 890300-42-00711, drawing number SV3-RCS-PLW-030, weld numbers 2, 3, 4 and 5, for Virgil C. Summer Unit 3, Reactor Coolant System, ASME Code Section III, Code Class 1 piping. In addition, the NRC inspection team reviewed the process associated with the storage of welding rods, issuance of welding rods, and return of unused welding rods. The NRC inspection team verified that the control, issuance, and return of unused welding rods was performed in accordance with CB&I Laurens's procedure number BFS-NWC-1, "Nuclear Welding Material Control," Revision 1, dated August 28, 2010.

The NRC inspection team discussed the special processes program with CB&I Laurens' management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observation and Findings

During a walkdown of the CB&I Laurens facility, the NRC inspection team noted that CB&I Laurens visually inspected and accepted welds (weld numbers 2, 3, 5, 6, 25, 26 and 27) on pipe spool 8927-40-010-00031, Serial number VS2-RNS-PLW-014-1A, (10-inch, Class 2 piping for the Normal Residual Heat Removal (RNS) system for V. C. Summer Unit 2) which did not meet the visual inspection criteria of procedure SP-VT-1, "Visual Examination Procedure," Revision 5, dated July 28, 2011, and WEC Specification APP-GW-P0-008, "AP1000 Specification for Field Fabricated Piping and Installation, ASME III, Code Classes 1, 2, and 3 and B31.1," Revision 6, dated June 12, 2014. The NRC inspection team found that the pipe spool had abrupt ridges

and valleys, and depressions of greater than 1/32-inch that did not meet the pre-service and in-service inspection surface condition requirements of Sections 8.6 and 8.7 of CB&I Procedure SP-VT-1 and WEC Specification APP-GW-P0-008. If the surface area is not conducive to the pre-service and in-service inspection examinations (ultrasonic (UT) examination), the UT probe will not maintain direct contact with the material and induce lift-off which will prevent detection defects such as cracking. The NRC inspection team identified this issue as an example of Nonconformance 99901432/2015-201-02 for CB&I Laurens' failure to perform visual testing inspection in accordance with applicable codes, specifications and criteria. CB&I Laurens initiated NCR S2/1489 to address this issue.

When a welding procedure specification (WPS) specifies preheat and interpass temperatures for welding two different materials, the limiting temperatures (as supported by the procedure qualification reports (PQRs)) should be used, which would be the maximum (higher) preheat temperature and the minimum (lower) interpass temperature of the two different materials. However, contrary to this, WPSs N1/803 and N4/803 specify that when welding two different materials with different preheat and interpass temperatures, the minimum preheat and maximum interpass temperature of the applicable procedure shall be used. For example, WPS N1/803 specifies that for a 1-inch thick weld, the minimum preheat for P-1 material is 200°F, while the minimum preheat for P-8 material is 50°F, and therefore the WPS is requiring that the 50°F preheat be used, even though the limiting preheat temperature of 200°F should be specified in the WPS, as supported by the applicable PQRs. Welding of name plates using the incorrect preheat and interpass temperatures could lead to changes in the mechanical properties of the base material. Name plates are used to provide information on the type of pipe such as the pipe material, class, etc. The NRC inspection team identified this issue as another example of Nonconformance 99901432/2015-201-02 for CB&I Laurens' failure to use welding procedures in accordance with the applicable code requirements. CB&I Laurens initiated C/PAR No. 568 to address this issue.

c. Conclusion

The NRC inspection team issued Nonconformance 99901432/2015-201-02 in association with CB&I Laurens' failure to implement the regulatory requirements of Criterion IX of Appendix B to 10 CFR Part 50. Nonconformance 99901432/2015-201-02 cites CB&I Laurens for failing to perform visual testing inspection in accordance with applicable codes, specifications and criteria, and failed to use welding procedures in accordance with the applicable code requirements. Specifically, CB&I Laurens visually inspected and accepted welds on pipe spool 8927-40-010-00031, Serial number VS2-RNS-PLW-014-1A, which did not meet the visual inspection criteria of procedure SP-VT-1 and WEC Specification APP-GW-P0-008. The NRC inspection team found that the pipe spool had abrupt ridges and valleys, and depressions of greater than 1/32-inch that did not meet the pre-service and in-service inspection surface condition requirements of Sections 8.6 and 8.7 of CB&I Procedure SP-VT-1 and WEC Specification APP-GW-P0-008In addition, when a WPS specifies preheat and interpass temperatures for welding two different materials, the limiting temperatures (as supported by the PQRs) should be used, which would be the maximum (higher) preheat temperature and the minimum (lower) interpass temperature of the two different

materials. However, contrary to this, WPSs N1/803 and N4/803 specify that when welding two different materials with different preheat and interpass temperatures, the minimum preheat and maximum interpass temperature of the applicable procedure shall be used. Both WPS N1/803 and N4/803 are currently used for welding name plates on safety-related piping spools.

3. Oversight of Contracted Activities and Internal Audits

a. Inspection Scope

The NRC inspection team reviewed CB&I Laurens' policies and implementing procedures that govern the implementation of its oversight of contracted activities and internal audits program to verify compliance with the requirements of Criterion IV, "Procurement Document Control," Criterion VII, "Control of Purchased Material, Equipment, and Services," and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed a sample of purchase orders (POs), external and internal audits, and receipt inspection records to evaluate compliance with CB&I Laurens's program and technical requirements. In addition, the NRC inspection team reviewed the disposition of audit findings to resolve for adequacy and timeliness.

The NRC inspection team reviewed a sample of training and qualification records of CB&I Laurens's lead auditors, auditors and inspection personnel and confirmed that auditing and inspection personnel had completed all the required training and had maintained qualification and certification in accordance with CB&I Laurens's policies and procedures.

The NRC inspection team discussed the oversight of contracted activities and internal audits program with CB&I Laurens' management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

During the review of a sample of external audits, the NRC inspection team noted that for Palmetto Plating Company, Wyman Gordon Pipe and Fittings, Pinson Valley Heat Treating and Welding Testing Laboratory, CB&I Laurens used its Audit Checklist for Nuclear Material Organizations as the basis for qualifying these suppliers; even though these are commercial suppliers without an Appendix B to 10 CFR Part 50 and 10 CFR Part 21 programs. CB&I Laurens used Palmetto Plating Company for the procurement of safety-related pickle and passivation of stainless steel bends, Wyman Gordon Pipe and Fittings for the procurement of safety-related piping, Pinson Valley Heat Treating for the procurement of heat treating services for safety-related piping, and Welding Testing Laboratory for destructive testing to determine the acceptability of procedure qualification records as required by Section III and Section IX of the ASME B&P Code. The NRC inspection team identified this issue as an example of

Nonconformance 99901432/2015-201-03 for CB&I Laurens' failure to adequately qualify Palmetto Plating Company, Wyman Gordon Pipe and Fittings, Pinson Valley Heat Treating and Welding Testing Laboratory by the conduct of an audit. CB&I Laurens initiated C/PAR No. 565 to address this issue.

c. Conclusion

The NRC inspection team issued Nonconformance 99901432/2015-201-03 in association with CB&I Laurens' failure to implement the regulatory requirements of Criterion VII, of Appendix B to 10 CFR Part 50.
Nonconformance 99901432/2015-201-03 cites CB&I Laurens for failing to establish adequate measures for source evaluation and selection of contractors and subcontractors. Specifically, CB&I Laurens did not adequately qualify Palmetto Plating Company, Wyman Gordon Pipe and Fittings, Pinson Valley Heat Treating and Welding Testing Laboratory by the conduct of an audit. CB&I Laurens used its Audit Checklist for Nuclear Material Organizations as the basis for qualifying Palmetto Plating Company, Wyman Gordon Pipe and Fittings, Pinson Valley Heat Treating, and Welding Testing Laboratory even though these are commercial suppliers without an Appendix B to 10 CFR Part 50 and 10 CFR Part 21 programs.

4. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspection team reviewed CB&I Laurens' policies and implementing procedures that govern CB&I Laurens' 10 CFR Part 21, "Reporting of Defects and Noncompliance," program to verify compliance with the regulatory requirements. In addition, the NRC inspection team evaluated the 10 CFR Part 21 postings and a sample of CB&I Laurens' POs for compliance with the requirements of 10 CFR 21.21, "Notification of Failure to Comply or Existence of a Defect and its Evaluation," and 10 CFR 21.31, "Procurement Documents." The NRC inspection team also verified that CB&I Laurens' nonconformance and corrective action procedures provide a link to the 10 CFR Part 21 program.

The NRC inspection team discussed the 10 CFR Part 21 program with CB&I Laurens' management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that CB&I Laurens is implementing its 10 CFR Part 21 program in accordance with the regulatory requirements of 10 CFR Part 21. Based on the limited sample of documents reviewed, the NRC inspection team also

determined that CB&I Laurens is implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

5. Design Control

a. Inspection Scope

The NRC inspection team reviewed CB&I Laurens' policies and implementing procedures that govern the design-control program to verify their compliance with the regulatory requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed procedures, work packages, shop drawings, and as-built pipe sub-assemblies to determine whether the design control process was performed in a planned, controlled, and orderly manner. The NRC inspection team also reviewed the process for implementing design changes initiated by WEC through an Engineering & Design Coordination Report (E&DCR).

The NRC inspection team confirmed that CB&I Laurens is using the latest approved design drawings for fabrication, that the appropriate quality standards were specified and included in design documents, that sufficient coordination between WEC and CB&I Laurens was taking place for the design and fabrication of the pipe sub-assemblies, and that any design changes were being effectively controlled and approved.

The NRC inspection team selected a sample of four E&DCRs for pipe sub-assemblies, documented on purchase order change from CB&I Power, to determine whether the design changes were subject to design control measures commensurate with those applied to the original design. The NRC inspection team confirmed that the design changes were adequately translated into CB&I Laurens' job instructions, shop sketches, and travelers. The NRC inspection team verified that the materials of construction utilized conform to the material specification identified and translated from WEC Transmittal Data List (TDL). The NRC inspection team also verified that shop sketches previously issued for fabrication that required change, were retrieved and marked "void copy," and replaced with a revised version with the shop traveler updated.

The NRC inspection team also reviewed the WEC reference drawings, and TDL transferred from CB&I Power to CB&I Laurens and compared them with the CB&I Laurens detailed shop sketches, job instructions and travelers used for fabrication to determine whether the structural dimensions, weld types, weld sizes, and materials matched those originally specified for AP1000 Section III piping sub-assemblies for the construction of the AP1000 Passive Core Cooling System, Passive Containment Cooling System, Normal Residual Heat Removal System, Spent-Fuel Pool Cooling System, and Sanitation Drainage System.

The NRC inspection team discussed the design control program with CB&I Laurens' management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that CB&I Laurens is implementing its design control program in accordance with the regulatory requirements of Criterion III of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that CB&I Laurens' is implementing its policies and procedures associated with the design control and program. No findings of significance were identified.

6. Nonconforming Materials, Parts, or Components

a. Inspection Scope

The NRC inspection team reviewed CB&I Laurens' policies and implementing procedures that govern the control of nonconformances to verify compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B to 10 CFR Part 50.

For the sample of NCRs reviewed, the NRC inspection team verified that CB&I Laurens implemented an adequate program to assess and control nonconforming items, including appropriate identification, documentation, segregation, evaluation, and disposition of these items. This process properly applies the principles of acceptable repair, rework, hold, scrap, or use-as-is, and it provides for the necessary technical justifications to be adequately supported and properly documented. The NRC inspection team also toured the shop floor to verify that there are designated areas to segregate and control the various classes of nonconforming materials. In addition, the NRC inspection team also verified that CB&I Laurens' nonconformance process provides a link to the 10 CFR Part 21 program.

The NRC inspection team discussed the nonconformance program with CB&I Laurens' management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that CB&I Laurens is implementing its nonconforming materials, parts, or components program in accordance with the regulatory requirements of Criterion XV of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that CB&I Laurens is implementing its policies and procedures associated with the control of nonconforming materials, parts, or components. No findings of significance were identified.

7. Test Control

a. Inspection Scope

The NRC inspection team reviewed CB&I Laurens' policies and implementing procedures that govern the test control program to verify compliance with the requirements of Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed CB&I Laurens procedure BFS-AP1000-WT-1, "Hydrostatic Testing Procedure," Revision 2, dated October 15, 2012, and confirmed that BFS-AP1000-WT-1 adequately includes the technical, quality, and regulatory requirements identified in the associated AP1000 specifications. In addition, the test procedure provided an adequate description of the test responsibilities, objectives, sequences, instructions, parameters, M&TE usage, acceptance criteria, post-test activities, and water quality specifications for the demineralized water used in the hydrostatic testing. The NRC inspection team also verified that BFS-AP1000-WT-1 met the applicable requirements of Section III of the ASME B&PV Code.

During the week of NRC inspection, there was no hydrostatic testing being conducted because of the stop work issued by CB&I Laurens, however, the NRC inspection team selected a sample of five completed hydrostatic test reports, three for ASME Section III Class 2 and Class 3 pipe sub-assemblies for use in the construction of the AP1000 Passive Core Cooling System and Sanitation Drainage System for the V.C. Summer Unit 2, and two of ASME Section III, Class 3 pipe sub-assemblies for use in the construction of the AP1000 Passive Containment Cooling System for the Vogtle Units 3 & 4. The NRC inspection team verified that the hydrostatic test report adequately recorded the test parameters, water quality test analysis results, M&TE used, test procedure revision and date, test technician and test results verification. The NRC inspection team also reviewed the qualification records for a sample of test engineers and verified water quality test analysis report.

The NRC inspection team discussed the test control program with CB&I Laurens' management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that CB&I Laurens' is implementing its test control program in accordance with the regulatory requirements of Criterion XI of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that CB&I Laurens is implementing its policies and procedures associated with the test control program. No findings of significance were identified.

8. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed CB&I Laurens' policies and implementing procedures that govern the M&TE program to verify compliance with the requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50.

For a sample of M&TE, the NRC inspection team determined that the M&TE had the appropriate calibration stickers and current calibration dates, including the calibration due date. The NRC inspection team also verified that the M&TE had been calibrated, adjusted, and maintained at prescribed intervals prior to use. In addition, the calibration records reviewed by the NRC inspection team indicated the as-found or as-left conditions, accuracy required, calibration results, calibration dates, and the due date for recalibration. The NRC inspection team also verified that the selected M&TE was calibrated using procedures traceable to known industry standards.

The NRC inspection team performed a walk down to ensure that equipment located in the M&TE storage area, M&TE hold area and fabrication shop were labeled, handled, and stored in a manner that indicated the calibration status of the instrument and ensured its traceability to calibration test data.

The NRC inspection team discussed the M&TE program with CB&I Laurens' management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that CB&I Laurens is implementing its M&TE program in accordance with the regulatory requirements of Criterion XII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that CB&I Laurens is implementing its policies and procedures associated with the M&TE program. No findings of significance were identified.

9. Entrance and Exit Meetings

On March 16, 2015, the NRC inspection team discussed the scope of the inspection with Kamlesh Panwala, Quality Director, CB&I Fabrication and Manufacturing, (F&M), and members of CB&I Laurens', CB&I Power, and CB&I F&M management and technical staff. On April 23, 2015, the NRC inspection team presented the inspection results and observations during an exit meeting by teleconference with Luke Scorsone, Executive Vice President Fabrication Services Group; Adam Mohr, CB&I F&M President; and other members of CB&I Laurens, CB&I Power, and CB&I F&M management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

ATTACHMENT

1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit	Interviewed
Luke Scorsone*	Executive Vice President Technology	Chicago Bridge & Iron (CB&I) Fabrication & Manufacturing (F&M)		X	
Adam Mohr*	President	CB&I F&M		X	
Tracey O'Keefe*	Senior VP Operation Services	CB&I F&M			
Pierre De Jager*	Not Available	CB&I F&M		X	
Sachin Singh*	Not Available	CB&I F&M		X	
Michael Cusick	Director Quality Assurance (QA) Nuclear	CB&I F&M	X	X	X
Kamlesh Panwala	Quality Director	CB&I F&M	X		X
Brian Gibson	Director Quality	CB&I F&M	X	X	X
Bradley Kelly	Quality Manager	CB&I Power	X		
Ed Brewer*	Not Available	CB&I Power		X	
Rick Fay*	Not Available	CB&I Power		X	
Darrel Fujiyoshi*	Not Available	CB&I Power		X	
Randy Vigor*	Not Available	CB&I Power		X	
Ron Stevens*	Not Available	CB&I Power		X	
Virgil Barton*	Not Available	CB&I Power		X	

Name	Title	Affiliation	Entrance	Exit	Interviewed
Dave Jantosik*	Not Available	CB&I Power		X	
Danny Williams*	Not Available	CB&I Power		X	
Brad McLung*	Not Available	CB&I Power, V.C. Summer Site		X	
Steven Bell*	Not Available	CB&I Power, Vogtle Site		X	
Ricky Erwin*	Not Available	CB&I Power, Vogtle Site		X	
Tammy Watson	Plant Manager	CB&I Laurens	X		
Wilson Bazen*	Assistant Plant Manager	CB&I Laurens		X	
Keith Batson	Production Manager	CB&I Laurens	X		X
Sven Akerman	QA Manager	CB&I Laurens	X		X
Clyde Livingston	Quality Control (QC) Manager	CB&I Laurens	X	X	X
Grace Hyatt	Materials Manager	CB&I Laurens	X		
Melissa Lorenz	Health, Safety & Environment Manager (HSE)	CB&I Laurens	X		
T. J, Jennings	Shop Foreman	CB&I Laurens			X
Robert Starck	Lead QC Inspector	CB&I Laurens			X
Mike Campbell	Pipe Fitter	CB&I Laurens			X
Reggie Martin	Welding Engineer	CB&I Laurens			X
Daniel Burnside	Nondestructive Examination (NDE) Inspector	CB&I Laurens			X

Name	Title	Affiliation	Entrance	Exit	Interviewed
Richard S. Crow, Jr.	Project Manager	CB&I Laurens	X		
Rick Pottmeyer	Project Engineer III	CB&I Laurens	X		X
Ray Tumbling	QA Technician	CB&I Laurens			X
Bill Williams	QA Technician	CB&I Laurens			X
Darren Stain	QA Specialist II	CB&I Laurens			X
Louise Irby	QA Specialist	CB&I Laurens			X
Steven Smeal	QA Specialist	CB&I Laurens			X
Barry Byram	Quality Specialist	CB&I Laurens	X		
Robert Kuhns	Production Manager	CB&I Lake Charles			X
Dan Grannan	Manager	CB&I	X		
Thomas Sutton	Area HSE Manager	CB&I	X		
AJ Marciano*	Not Available	CB&I	X		
Sherry Martin*	Not Available	CB&I	X		
Curt Castell*	Not Available	CB&I	X		
Cindi Serge*	Not Available	CB&I	X		
Gabriel Mahdi*	Not Available	Southern Nuclear Operating Co. (SNC)	X		
Thomas Saunders*	Not Available	SNC		X	
Curt Shiley*	Not Available	SNC		X	

Name	Title	Affiliation	Entrance	Exit	Interviewed
Josh Olson*	Not Available	SNC		X	
Forrest Hunley*	Not Available	SNC		X	
Yamir Diaz-Castillo	Inspection Team Leader	NRC	X	X	
Raju Patel	Inspector	NRC	X	X	
Jose Jimenez	Inspector	NRC	X	X	
Frank Talbot	Inspector	NRC	X	X	
John Honcharik	Inspector	NRC	X	X	

***Participated by Teleconference**

2. INSPECTION PROCEDURES USED

Inspection Procedure (IP) 36100, “Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance,” dated February 13, 2012.

IP 43002, “Routine Inspections of Nuclear Vendors,” dated April 25, 2011.

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Type	Description	Applicable ITAAC
99901432/2013-201-01	CLOSED	NOV	10 CFR Part 21	N/A
99901432/2013-201-02	CLOSED	NON	Criterion IX	N/A
99901432/2013-201-03	DISCUSSED	NON	Criterion III	N/A
99901432/2013-201-04	DISCUSSED	NON	Criterion VII & XVIII	N/A
99901432/2015-201-01	OPENED	NON	Criterion XVI	N/A
99901432/2015-201-02	OPENED	NON	Criterion IX	N/A
99901432/2015-201-03	OPENED	NON	Criterion VII	N/A

4. DOCUMENTS REVIEWED

Policies and Procedures

- CB&I Laurens' Quality Assurance Manual, Revision 20, dated March 21, 2013
- Quality Manual Addendum, "AP1000 Addendum," Revision 21, dated November 15, 2014
- BFS-AP1000-CGD-1, "Commercial Grade Dedication Procedure for AP1000 Projects," Revision 5, dated January 31, 2014
- BFS-AP1000-WT-1, "Hydrostatic Testing Procedure," Revision 2, dated October 15, 2012
- BFS-Code-PL-1, "Code Name Plating and Code Stamping," Revision 8, dated February 28, 2015
- BFS-ICC-1, "Iron Contamination Control," Revision 1, dated December 5, 2012
- BFS-J1-1, "General Fabrication Procedure," Revision 9, dated February 19, 2015
- BFS-NWC-1, "Nuclear Welding Material Control," Revision 1, dated August 28, 2012
- BFS-PQ-2, "Training and Qualification Procedure for QC Inspection Personnel," Revision 2, May 4, 2012
- BFS-PS-1, Piping Subassembly Preparation for Shipping and Jobsite Storage," Revision 0, dated July 2, 2014
- BFS-QC-10CFR21, "Procedure for Compliance with 10CFR21," Revision 4, dated October 29, 2013
- PF1 Standard ES-5, "Cleaning of Fabricated Piping," dated September 2002
- SP-DF-1, "Delta-Ferrite Control Stainless Steel," Revision 9, dated September 8, 2011
- SP-MRC-1, "Material Receiving and Control Procedure," Revision 1, dated July 8, 2011
- SP-MT-1, "Magnetic Particle Examination Procedure," Revision 19, dated July 8, 2011
- SP-MTE-1 with Addendum, "Measuring and Test Equipment Calibration," Revision 5, dated August 21, 2013
- SP-PMI-1, "Positive Material Identification," Revision 4, dated August 3, 2011

- SP-PT-1, “Liquid Penetrant Examination Procedure,” Revision 16, dated September 16, 2010

- SP-PT-1, “Liquid Penetrant Examination Procedure Addendum,” AP1000 Addendum Revision 2, dated March 15, 2012

- SP-SCI-1, “Suspect/Counterfeit Items Control Procedure,” Revision 1, dated August 1, 2011

- SP-TP-1, “Training of Personnel,” Revision 3, dated July 26, 2011

- SP-WT-1, “Hydrostatic Testing,” Revision 7, dated July 28, 2011

- SP-SP-1, “Supplier Performance,” Revision 3, dated July 26, 2011

- SP-VT-1, “Visual Examination Procedure,” Revision 5, dated July 28, 2011

- SP-VT-1, “Visual Examination Procedure Addendum,” AP1000 Addendum Revision 4, dated March 12, 2012

Drawings and Specifications

- Shop sketch for spool No. 892700-40-00031, American Society of Mechanical Engineers (ASME) Section III, Class 2 serial No. VS2-RNS-PLW-295014-1A, Revision 0, dated April 15, 2014

- Shop sketch No. 892400-40-00560, “1”S/80S Seamless Pipe SA312 Grade Type 304L, ASME Section III, Class 2, for V.C. Summer Unit 2,” Revision No. 1, dated June 14, 2013

- Shop sketch No. 892300-40-00333, 4” S/40S Seamless Pipe SA312 Grade Type 304L, ASME Section III, Class 2, for V.C. Summer Unit 2,” Revision No. 3, dated October 6, 2014

- Shop sketch No. 892400-40-00563, “1”S/80S Seamless Pipe SA312 Grade Type 304L, ASME Section III, Class 3, for Vogtle Unit 3,” Revision No. 1, dated June 14, 2013

- Shop sketch No. 892400-40-00004, “1”S/80S Seamless Pipe SA312 Grade Type 304L, ASME III, Class 3,” for V.C. Summer Unit 2, Revision No.1, dated December 4 , 2014

- Shop sketch No. 892300-40-00333, Reference Drawing No. VS2-SDS-PLW-204, Revision 0, for Sanitary Drainage System for V.C. Summer Unit 2, PO No. J132177-C601.02, Revision 3a

- Shop sketch No. 892400-40-00563, Reference Drawing No. VS2-ML05-V2-311 Revision 2, with ASME NPP-1 Code form dated December 18, 2014, for Normal Residual Heat Removal System for V.C. Summer Unit 2, PO No. J132177-C601.02, Revision 1

- Shop sketch No. 892400-40-00560, Reference Drawing No. VS2-ML05-V2-311 Revision 2, with ASME NPP-1 Code form dated December 18, 2014, for Passive Core Cooling System for V.C. Summer Unit 2, PO No. J132177-C601.02, Revision 1,

- Shop sketch No. 892400-40-00560, Reference Drawing No. VS2-ML05-V2-311, Revision 2, with ASME NPP-1 Code form dated December 18, 2014, for Passive Core Cooling System for V.C. Summer Unit 2, PO No. J132177-C601.02, Revision 1,

- Shop sketch No. 891300-40-04-00006, Reference Drawing No. SV4-ML05-V2-451, Revision 3, with ASME NPP-1 Code form dated December 23, 2014, for Spent-Fuel Pool Cooling System for Vogtle Unit 4, PO No. J132176-C601.02, Revision 5

- Shop sketch No. 890400-40-04-00563, Reference Drawing No. SV3-ML05-V2-311 Revision 1, with ASME NPP-1 Code form dated December 18, 2014, for Passive Containment Cooling System for Vogtle Unit 4, PO No. J132176-C601.02, Revision 1

- Westinghouse Electric Company (WEC) Specification APP-GW-PO-008, "AP1000 Specification for Field Fabricated Piping and Installation, ASME III, Code Classes 1, 2, and 3 and B31.1," Revision 6, dated June 12, 2014

- WEC Drawing No. VS2-ML05-V2-311, "AP1000 Standard Penetration Embedded Pipe with Anchor Details," Revision 2, dated February 9, 2012

- WEC Drawing No. APP-CA04-S4-121, "Containment Building Areas 1, 2, 3, & 4 Module CA04 Source Range Detector Well Titanium Well Assembly," Revision 0

- WEC Drawing. No. VS2-SDS-PLW-204," Sanitary Drainage System Auxiliary Building Room 12300 Drain to Annex Building Embedded Piping," Revision 0

- WEC Drawing No. SV3-ML05-V2-311, "AP1000 Standard Penetration Embedded Pipe with Anchor Details," Revision No. 1, reviewed and accepted by CB&I dated February 11, 2013

- WEC Drawing No. SV4-ML05-V2-451, "AP1000 Duplex Penetration Embedded Pipe W/Anchor Details," Revision 3, dated July 6, 2012

- WEC Document No. VS2-PCS-GDY-002, "V.C. Summer Unit 2 Technical Release Package for Passive Containment Cooling System (PCS) ASME Piping, Supports, and Components," Revision 2, dated July 27, 2011

- WEC Document No. VS2-SDS-GDY-002, "V.C. Summer Unit 2 Technical Release Package for Sanitary Drainage System (SDS) ASME Piping, Supports, and Components," Revision 1, dated April 17, 2012

- WEC Document No. SV3-RNS-GDY-002, "Vogtle Unit 3 Technical Release Package for Normal Residual Heat Removal System (RNS) ASME Section III Piping, Supports, and Components," Revision 7, dated December 13, 2014

- WEC Document No. SV3-RCS-GDY-002, "Vogtle Unit 3 Technical Release Package for Reactor Coolant System (RCS) ASME Piping, Supports, and Components," Revision 5, dated October 15, 2012

- WEC Document No. SV3-PCS-GDY-002, "Vogtle Unit 3 Technical Release Package for Passive Containment Cooling System (PCS) ASME Section Piping, Supports, and Components," Revision 2, dated July 27, 2011

- WEC Document No. SV3-SFS-GDY-002, "Vogtle Unit 3 Technical Release Package for Spent Fuel Pool Cooling System (SFS) ASME Piping, Supports, and Components," Revision 9, dated May 24, 2014

- WEC Engineering & Design Coordination Report (E&DCR) No. APP-SDS-GEF-011, "Corrected ASME Class Break Location on APP-SDS-PLW-102," Revision 2, dated October 15, 2014

- WEC E&DCR No. APP-PXS-GEF-850107, "APP-PXS-PLW-W-130 Conditioning," Revision 0, dated March 12, 2014

- WEC E&DCR No. APP-RCS-GEF-173, "Isometric Changes to APP-RCS-PLR-020," Revision 0, dated December 26, 2013

- WEC E&DCR No. APP-PCS-GEF-068, "Piping Changes associated with PCS-PLR-100," Revision 0, dated February 28, 2014

Calibration, Heat Treatment, NDE, Inspection and Test Reports

- J.A. King & Company LLC's A2LA Accreditation Certificate No. 1741.02, valid through May 31, 2015 for calibration services

- Conrad Kacsik Instrument Systems, Inc., A2LA Accreditation Certificate No. 1385.01, valid through December 31, 2015

- CMI Technology Service Certificate of Calibration No. 1000346984 for Fluke Clamp-on-meter S/N 17020014, calibrated date November 18, 2013

- Conrad Kacsik Certificate of Conformance No. 5447 for Infrared Pyrometer S/N 18795421, calibration date May 12, 2014

- CMI Technology Service Certificate of Calibration No. 1000351335 for Dead Weight Tester S/N No. 426, calibrated date February 12, 2014

- Laboratory Testing Inc., Certified Test Report No. BFS001-14-10-39126-1, for chemical analysis of water sample per CB&I Laurens procedure BFS-AP1000-WT-1, Revision No. 2, Table 1, Grade A. performed on October 22, 2014

- Oxford Alloys Inc., Certified Material Test Report (CMTR) for 3/32" X 36" GTAW AWS A5.16, Schedule F, Heat No. 13W-1485, Lot No. 2-130716, Code 21-109, dated September 18, 2013

- Calibration Record and Label, Temperature Gage, Serial No. 123536, dated November 26, 2014

- Calibration Record and Label, Temperature Gage, Serial No. 123052, dated February 13, 2015

- Calibration Record and Label, Temperature Gage, Serial No. 123537, dated November 20, 2014

- Calibration Record and Label, Light Meter, Serial No. 071081, dated October 2, 2014

- Certificate of Certification for Spotcheck, SKC-S, Batch 14J035

- Certificate of Certification for Spotcheck Penetrant, SKL-SP2, Batch 11J06K

- Certificate of Certification for Spotcheck Developer, SKC-S2, Batch 14B08K

- Liquid Penetrant Testing (PT) Report for Spool Serial Number SV3-RCS-PLW-030-1, VC Summer Unit 3 Reactor Coolant System, Weld Nos. 1, 2, 3, 4 and 5, dated March 16, 2015.

- Certificate of Compliance/Conformance and CMTR for ER308/308L, Heat No. 744508, Lot No. CDT9824, for PO No. 859322 OI, dated June 24, 2013

- CB&I Laurens Welding Procedure Specification (WPS) Number AP1000-803, Revision 5, dated February 24, 2015

- CB&I Laurens WPS Number General Addendum, Revision 13, dated June 11, 2011

- CB&I Laurens WPS Number N1/803, Revision 0, dated June 4, 2012

- CB&I Laurens WPS Number N4/803, Revision 1, dated May 26, 2014

- Welder Qualification Summary and Continuity Record, dated February 1, 2015

- Hydrostatic test report for Job No. 890400-40-00563 (SV3-11300-ML-P12) for 1" S/805 seamless pipe SA312, Type 304L tested at 3250 psig performed to BFS-AP1000-WT-1 Revision 2, for Vogtle Unit 2 Passive Containment Cooling System on PO No. J131275-C601.02, dated December 9, 2014

- Hydrostatic test report for Job No. 891300-40-04-00006 (SV4-ML05-V2-11504-ML-P01 & PO2) for 6" S/40S seamless pipe SA312, Type 304L tested at 190 psig for 10 minutes to BFS-AP1000-WT-1 Revision 2, for Vogtle Unit 4 Spent Fuel Pool Cooling System on PO No. J1321276-C601.02, dated December 9, 2014

- Hydrostatic test report for Job No. 8912400-40-00560 (VS2-11300-ML-P15) for 1" S/80S seamless pipe SA312, Type 304L tested at 3250 psig at 64ºF performed to BFS-AP1000-WT-1 Revision 2, for V.C. Summer Unit 2 Passive Core Cooling System on PO No. J1321277-C601.02, dated December 9, 2014

- Hydrostatic test report for Job No. 8912400-40-00566 (VS2-11300-ML-P17) for 1" S/80S seamless pipe SA312, Type 304L tested at 3250 psig at 64ºF performed to BFS-AP1000-WT-1 Revision 2, for V.C. Summer Unit 2 Passive Core Cooling System on PO No. J1321277-C601.02, dated December 9, 2014

- Hydrostatic test report for Job No. 892300-40-00333 (VS2-SDS-PLW-204-1B) for 4" S/80S seamless pipe SA312, Type 304L tested at 25.5 psig at 60ºF performed to BFS-AP1000-WT-1 Revision 2, for V.C. Summer Unit 2 Sanitary Drainage System on PO No. J1321277-C601.02, dated December 9, 2014

- Hydrostatic test report for Job No. 892400-40-00563 (VS2-11300-ML-P12) for 1" S/80S seamless pipe SA312, Type 304L tested at 3250 psig at 64ºF performed to BFS-AP1000-WT-1 Revision 2, for V.C. Summer Unit 2 Normal Residual Heat Removal System on PO No. J1321277-C601.02, dated December 9, 2014

- CB&I Commercial Grade Dedication Package for Titanium Filler Metal AWS A 5.16:90, ERTi-2 size 3/32" Heat No. 13W-1485/2-130716, on CGD Plan Serial No. 004, dated November 4, 2013

- Welding Testing Laboratory Test Report No. 35366 for chemical analysis (subcontracted to NSL Analytical) for CB&I Laurens supplied AWS ERTi-2, 3/32" Heat No. 13W-1485, Lot No. 2-130716, for PO No. 876190, dated October 31, 2013

- CB&I Laurens pH Water Analysis Log for pH Meter Model No. MW 100 Serial No. 1086166, analysis performed on January 9, 2015

- Receiving Report No. 29431, Job Number 8933, VS-893400-1014, 1015, 1017, 1019, 1020, 1023, HT 977952, R/O Anchor PLATSA 240 GR304/304L SECTION III, Class 2, Dubose National Energy Services CMTR attached for Material Traceability, dated June 10, 2014

- Receiving Report PO 886541, Quantity: 48, ½" and 1-3/4" Hex Bolt Fully Thread FST A307 GRA, MMCT 13-18B HT# A0732, 1-1/16" Flat Washers FST F833, HT# 10200090, CMTR attached for Material Traceability, dated March 18, 2014

- Receiving Report No. 39756, Job Number 8903, 1" 3000 Full SW CPLNG (couplings) SA182 F304L Section III Class 3, HT# 7010ANA, ½ XXH on 3" WOL OLT SA182 F304L Section III Class III A=1.25" HT# 7092ANA, WFI International Material Test Report Attached, dated January 22, 2015

- Receiving Report No. 29409, Quantity 3.52, 24" STD OD Pipe A106B SMLS, HT# MA0187, Dubose National Energy Services CMTR attached for Material Traceability, dated June 13, 2014

- Receiving Report No. 28651, Quantity 17, 6" STD OD Pipe A106B SMLS, HT# 030257, Dubose National Energy Services CMTR attached for Material Traceability, dated May 14, 2014

- Receiving Report No. 27391, Quantity 2, 3" STD Pipe A106B SMLS, HT# FA1210, Quantity 13, 10" STD OD Pipe A106B SMLS, HT# 1836, Dubose National Energy Services CMTR attached for Material Traceability, dated April 23, 2014

Purchase Orders and Audit Reports

- CB&I Power Purchase Order (PO) No. J132176-C601.02, "Shop Fabrication of Safety Related ASME Section III Piping for Vogtle EPC Unit 4," Revision No. 14, dated February 13, 2014,

- CB&I Power PO No. J132175-C601.02, "Shop Fabrication of Safety Related ASME Section III Piping for Vogtle EPC Unit 3," Revision No. 25, dated December 24, 2014

- CB&I Power PO No. J132177-C601.02, "Shop Fabrication of ASME Section III Piping for V.C. Summer EPC Unit 2," Revision No. 22, dated November 5, 2014

- CB&I Power PO No. 132175-C607.02, "Fabrication of Safety-Related Class C Ex-Core Detector Wells for installation in the CA04 Module," Revision No. 19, dated April 10, 2013

- PO No. 874958 OI, to BR Welding Supply LLC (DBA TNT-GAS & Supply), for procurement of 3/32" X 36" ERTi-2 GTAW Electrodes from Oxford Alloys with one stick of filler metal from Heat # 13W-1485 to be delivered to Welding Testing Labs for additional testing

- PO No. 884432 to J.A.King & Company, LLC, dated January 8, 2014 issued to perform calibration of 10-50' torque wrench, S/N 4030952625 in accordance with CB&I SP-MTE-1 Revision 5, Addendum Revision 5

- PO No. 846615 to Conrad Kacsik Instrument for calibration services of A Land Cyclops 100lb-1F optical Pyrometer S/N 18795421 to +/- 1%, dated April 8, 2013
- PO No. 878975 to Conrad Kacsik Instrument for calibration service of 18 contact pyrometers, 2 induction benders, 9 portable recorders, and one stress furnace, dated November 14, 2013
- PO No. 878912 to Certified Measurement Inc., Metrology Services, for calibration of Fluke clamp-on-meter S/N 17020014
- PO No. 230040-006 to Shaw Alloy Piping Products, dated June 14, 2012
- PO No. 230040-013 to Nu-Tech Precision Metals, dated June 18, 2013
- PO No. 230041-012 to Nu-Tech Precision Metals, dated June 18, 2013
- PO No. 230039-014 to Tioga Pipe Supply, dated July 16, 2013
- PO No. 230040-014 to Tioga Pipe Supply, dated July 16, 2013
- PO No. 230039-018 to Dubose National Energy, dated January 23, 2014
- PO No. 230039-025 to Dubose National Energy, dated May 21, 2014
- PO No. 230041-014 to Tioga Pipe Supply, dated July 16, 2013
- PO No. 20041-022 to Dubose National Energy, dated March 13, 2014
- PO No. 230039-031 to Dubose National Energy, dated February 09, 2015
- PO No. 230039-034 to Dubose National Energy, dated February 25, 2015
- PO No. 230041-035 to Dubose National Energy, dated February 25, 2015
- PO No. 230040-034 to Dubose National Energy, dated February 25, 2015
- PO No. 230041-036 to Dubose National Energy, dated February 25, 2015
- Commercial Grade Survey (CGS) Report No. SA-13-011, of ALS Group USA (ALS Environmental), dated December 3-4, 2013
- CGS Report No. SA-13-001, of DuBose National Energy Service, dated December 17, 2013
- CGS of Oxford Alloys Inc., dated September 26-27, 2013

- Survey Audit (SA) No. 13-01 of Dubose National Energy Services, dated December 17, 2013
- SA No. 14-003 of IBF, S.p.A, dated January 10, 2014
- SA No. 14-007 of Sandvik Material Technology, dated April 21, 2014
- SA No. 14-008, Sandvik Material Technology, dated April 21, 2014
- SA No. 13-011 of ALS Group USA, dated January 29, 2014
- SA No. 13-014 of Taylor Forge Stainless, Inc, dated April 21, 2014
- SA No. 14-023 of Welding Testing Laboratory, Revision 1, dated November 26, 2014
- Audit Plan/Checklist Report of Wyman Gordon Pipe & Fittings, dated May 24, 2013
- Audit Plan/Checklist Report of Palmetto Plating Company, dated October 3, 2012
- Audit Plan/Checklist Report of Pinson Valley Heat Treating, dated August 12, 2013
- Audit Checklist, ASME NCA-3800 & NQA-1 (Tier 3 QA Checklist)
- Master Approved Vendor List, Revision 11, dated February 23, 2015
- Approved Vendor List, Revision 12, dated March 14, 2015
- Audit Checklist 2014 (ISO=AP1000 & ISO9001, NQA-1, ASME Section III, NCA-3800, and 10 CFR Part 50)
- Audit Checklist Form F-CBI-17-002, Revision 1

Nonconformance Reports

Previously opened: S2/V1228R2, S2/1220, S2/V1219, S2/V1229R1A, S2/V1258, S2/V1286 S2/1269, S2/1284, S2/1444, S2/1456, S2/1459, V3/1576, V4/1234, and V4/1121

Opened during the inspection: S2/1489

Corrective Action Request

Previously Opened: 344 Revision 1, 346 Revision 1, 348 Revision 3, 351 Revision 1, 352 Revision 1, 355 Revision 1, 408, 414, 419, 443, 489, 499, 501, 508, 512, 516, 517, 519 Revision 2, 534, and 565

Opened during the inspection: 566, 567, 568, and 569