

March 21, 2014

Mr. Kevin Walsh, Executive Vice President
Chicago Bridge & Iron Lake Charles
3191 West Lincoln Road
Lake Charles, LA 70605

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION REPORT
NO. 99901425/2014-201, NOTICE OF NONCONFORMANCE

Dear Mr. Walsh:

From February 3–7, 2014, U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Chicago Bridge & Iron Lake Charles (CB&I LC) facility in Lake Charles, LA. The purpose of this limited-scope routine inspection was to assess CB&I LC's 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 LC's implementation of quality activities associated with the fabrication and inspection activities of Westinghouse Electric Company's AP1000 reactor design structural sub-modules for commercial nuclear power plant applications. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of CB&I LC's overall quality assurance (QA) program. During this inspection, the NRC inspection team reviewed inspection and manufacturing activities associated with inspections, tests, analyses, and acceptance criteria (ITAAC) from Revision 19 of the certified AP1000 Design Control Document (DCD), Tier 1. Specifically, these activities were associated with the future closure of ITAAC 3.3.0.0.02a.i.a. The NRC inspection team did not identify any findings associated with the ITAAC contained in Section (4) of the attachment to this report.

The NRC inspection team also evaluated CB&I LC's safety conscious work environment (SCWE) and actions taken to address the April 18, 2013 Chilled Environment Letter. The SCWE has improved since previous inspections. Most personnel said that they were willing and able to raise concerns through multiple avenues without fear of harassment, intimidation, retaliation or discrimination. The team has concluded, that the corrective actions taken, if continued to be implemented, will result in a sustained SCWE.

Based on the results of 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 LC was not fully implementing its QA program in the areas of corrective action and control of nonconforming items. The enclosed notice of nonconformance (NON) with this letter identifies the specific findings and references to the pertinent requirements, and the enclosed inspection report describes in detail the circumstances surrounding it.

It is important to note that the NRC inspection team performed a limited scope inspection. Issues were not identified in all areas reviewed; however, the NRC inspection team was hindered by the ongoing CB&I LC initiated Stop-Work Order in effect. The NRC inspection team noted the CB&I LC's continued challenges with the corrective action program to prevent reoccurrence of conditions adverse to quality. Additionally, the NRC inspection team identified several missed opportunities that should have led to an earlier initiation of the Stop-Work Order. In your response to the NON, CB&I LC should document the progress of the Stop-Work Order and determine if there are impacts on previously fabricated sub-modules.

Please provide a written explanation or statement within 30 days of this letter in accordance with the instructions specified in the enclosed NON. The agency 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 (ADAMS), which is accessible at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible (and if applicable), your response 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/

Kerri A. Kavanagh, Chief
Quality Assurance Vendor Inspection Branch
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901425

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901425/2014-201
and Attachment

It is important to note that the NRC inspection team performed a limited scope inspection. Issues were not identified in all areas reviewed; however, the NRC inspection team was hindered by the ongoing CB&I LC initiated Stop-Work Order in effect. The NRC inspection team noted the CB&I LC's continued challenges with the corrective action program to prevent reoccurrence of conditions adverse to quality. Additionally, the NRC inspection team identified several missed opportunities that should have led to an earlier initiation of the Stop-Work Order. In your response to the NON, CB&I LC should document the progress of the Stop-Work Order and determine if there are impacts on previously fabricated sub-modules.

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Docket No.: 99901425

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1. Notice of Nonconformance
2. Inspection Report No. 99901425/2014-201
and Attachment

DISTRIBUTION:

See next page

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NRO-002

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OFFICE	RII/DCI/CIB3	RII/DCI/CIB2	RII/DCI/CIB3	NRO/DCIP/MVIB	NRO/DCIP/MVIB
NAME	AArtayet	APonko	JChristensen	RPatel	MAnderson
DATE	03/17/14	03/17/14	03/14/14	03/14/14	03/18/14
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NOTICE OF NONCONFORMANCE

Chicago Bridge & Iron Lake Charles
3191 West Lincoln Road
Lake Charles, LA 70605

Docket No. 99901425
Report No. 2014-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Chicago Bridge & Iron Lake Charles (CB&I LC) facility in Lake Charles, LA, from February 3, 2014 through February 7, 2014, it appears that certain activities were not conducted in accordance with NRC requirements contractually imposed on CB&I LC by its customers or NRC licensees:

- A. Criterion XV, "Nonconforming Materials, Parts, or Components," 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 in part that, "Measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation. These measures shall include, as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations."

Section 15.0, "Control of Nonconforming Items," CB&I LC's Quality Assurance Manual (QAM), Revision 8, dated September 13, 2013, states, "Items that do not conform to specified requirements shall be identified and controlled to prevent inadvertent installation or use, and further processing beyond a point where the non-conforming condition can no longer be corrected."

Section 6.12, "Implementing instructions for NCRs," of CB&I LC Administrative Procedure QP-CA-215, "Control of Nonconforming Items," Revision 0, dated October 31, 2012, step 6.12.2 states in part, "the initiator completes appropriate blocks in the software form or on a hard copy", and attachment 1 block 15 to QP-CA-215 is where the initiator describes the "Nonconforming Condition". Also in QP-CA-215 the Manager QC is designated as responsible to perform step 6.12.4.a, which states, "Reviews the identified condition on the NCR and determines if nonconforming condition is valid."

Contrary to the above, as of February 7, 2014, CB&I LC failed to adequately implement measures to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation. Specifically, CB&I LC failed to correctly identify unresolved nonconformances on a safety-related sub-module being prepared to ship: one stud that had an incomplete weld was incorrectly located in the documentation; one stud that was identified on the documentation as being added and having incomplete weld did not appear to exist on the module; and one stud was documented as having an incomplete weld, but was actually missing.

This issue has been identified as Nonconformance 99901425/2014-201-01.

ENCLOSURE

- B. Criterion XVI, "Corrective Action," of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, states, in part, that "measures shall be established to assure that conditions adverse to quality, such as deficiencies and nonconformances are promptly identified and corrected."

Criterion III, "Design Control," of Appendix B to 10 CFR Part 50 states, in part, that "design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design".

Section 16, "Corrective Action," of CB&I LC's Quality Assurance Manual (QAM), Revision 8, dated September 13, 2013, states, in part, that in classifying conditions adverse to quality, the review shall consider repetition of specific conditions adverse to quality, as well as the relationship or similarity between different conditions.

Contrary to the above, as of February 7, 2014, CB&I LC did not ensure that conditions adverse to quality, such as deficiencies and nonconformances are promptly identified and corrected. Specifically, CB&I LC did not take timely and effective corrective action for a previously identified NRC finding 99901401/2011-202-03 from 2011 for red lining of drawings for safety-related AP1000 sub-modules. CB&I LC had closed the corrective action on April 30, 2012, for the NRC finding. Through a focused sample, the NRC identified 20 corrective action reports in 2013 related to inadequate implementation of red lining (which includes annotating design changes) to drawings.

This issue has been identified as Nonconformance 99901425/2014-201-02.

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, Quality Assurance Vendor Inspection 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 taken 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 (ADAMS), 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, 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 SGI 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 21st day of March 2014.

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

Docket No.: 99901425

Report No.: 99901425/2014-201

Vendor: Chicago Bridge & Iron Lake Charles
3191 West Lincoln Road
Lake Charles, LA 70605

Vendor Contact: Kevin Walsh
Executive Vice President
kevin.walsh@cbi.com
980-322-8193

Nuclear Industry Activity: Chicago Bridge & Iron Lake Charles is under contract to Chicago Bridge & Iron Power to fabricate, assemble, inspect, transport, and deliver Westinghouse Electric Company's AP1000 reactor design structural sub-modules for commercial nuclear power plant applications. Specifically, the structural sub-modules are for the Vogtle & V.C. Summer new construction sites.

Inspection Dates: February 3-7, 2014

Inspection Team:

Paul Prescott	NRO/DCIP/QVIB	Team Leader
Tom Kendzia	NRO/DCIP/QVIB	
Rich Laura	NRO/DCIP/QVIB	
Yamir Diaz-Castillo	NRO/DCIP/MVIB	
Dori Wills	NRR/DIRS/IPAB	
Molly Keefe	NRR/DRA/APHB	
Alain Artayet	RII/DCI/CIB3	
Anthony Ponko	RII/DCI/CIB2	
Jason Christensen	RII/DCI/CIB3	
Raju Patel	NRO/DCIP/MVIB	
Mary Anderson	NRO/DCIP/MVIB	

Approved by: Kerri A. Kavanagh, Chief
Quality Assurance Vendor Inspection Branch
Division of Construction Inspection
and Operational Programs
Office of New Reactors

EXECUTIVE SUMMARY

Chicago Bridge & Iron Lake Charles
99901425/2014-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Chicago Bridge & Iron Lake Charles (hereafter referred to as CB&I LC) 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 team also verified that CB&I LC had 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 February 3 through 7, 2014.

This technically focused inspection specifically evaluated CB&I LC's implementation of quality activities associated with the fabrication activities of Westinghouse Electric Company's AP1000 reactor design structural sub-modules for commercial nuclear power plant applications. Specifically, the structural sub-modules are for the Vogtle & V.C. Summer new construction sites. It is important to note that the NRC inspection team performed a limited scope inspection. Specifically, a self-imposed Stop-Work Order was in effect prior to and during the time of the NRC inspection that limited the ability to observe ongoing fabrication activities.

Some of the specific activities observed by the NRC inspection team included:

- Visual inspection of nonconformances for three sub-modules which were ready to be shipped to Vogtle and V.C. Summer.
- Observed a daily corrective action report screen meeting.
- Observed the weekly Corrective Action Review Board meeting.
- Observed the weekly Senior Leadership Staff meeting.
- Observed numerous training classes. Specific examples include training on the corrective program, documentation and procedure adherence.
- Observed welding and nondestructive examination qualification and certification activities at the weld test facility.
- Measured fillet weld leg and throat dimension on several sub-modules.
- Observed in-process weld stud grid markings on 10-stud qualifier areas on several sub-modules.
- Observed mechanical test activities being performed for welded test coupons.

- Assessed dropped sub-module CA01-20 and observed rigging activities on sub-module CA01-03.
- Observed ongoing inspections and peer checks on the shop floor.
- Interviewed numerous management and other staff on the current state of CB&I LC's safety conscious work environment.

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 inspectors also walked down CB&I LC'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) 43003, "Reactive Inspections of Nuclear Vendors;" supplemented by IP 43002, "Routine Inspection of Nuclear Vendors;" IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance," and IP 65001.B, "Inspection of the ITAAC-Related Welding Program." Other relevant inspection guidance included: IP40100, "Independent Safety Culture Assessment Followup;" IP 93100, "Safety Conscious Work Environment Issue of Concern Followup," and IP 95003.02, "Guidance for Conducting an Independent NRC Safety Culture Assessment."

This was the fourth NRC inspection at the CB&I LC facility. CB&I LC is currently under contract to Chicago Bridge and Iron Power to fabricate structural sub-modules for the Vogtle and V.C. Summer construction projects.

With the exception of the nonconformances described below, the NRC inspection team determined that, in general, the fabrication activities that CB&I LC conducted for the structural sub-modules were performed in accordance with the Commission's rules and regulations and the technical and quality requirements passed down to CB&I LC from NRC licensees or its contractors. The information below summarizes the results of this inspection.

Nonconforming Materials, Parts, and Components

The NRC inspection team issued Nonconformance 99901425/2014-201-01 because of CB&I LC's failure to implement the regulatory requirements of Criterion XV, "Nonconforming Material, Parts, and Components," of Appendix B to 10 CFR Part 50. Nonconformance 99901425/2014-201-01 cites CB&I LC for failing to correctly identify unresolved nonconformances on a safety-related sub-module prepared to ship: one stud that had an incomplete weld was incorrectly located in the documentation; one stud that was identified on the documentation as being added and having incomplete weld did not appear to exist on the module; and one stud was documented as having an incomplete weld, but was actually missing. Specifically, CB&I LC determined that their original Nonconformance Report 2013-2261 incorrectly documented the nonconforming conditions.

Corrective Action

The NRC inspection team issued Nonconformance 99901425/2014-201-02 because of CB&I LC's failure to implement the regulatory requirement of Criterion XVI, "Corrective Action," in accordance with the applicable regulatory requirements of Appendix B to 10 CFR Part 50. Nonconformance 99901425/2014-201-02 cites CB&I LC failing to correct a condition adverse to quality. Specifically, CB&I failed to take timely and effective corrective action for a previously identified NRC finding 99901401/2011-202-03 from 2011 for redlining of drawings for safety-related AP1000 sub-modules. CB&I LC had closed the corrective action on April 30, 2012 for the NRC finding. Through a focused sample, the NRC inspection team identified 20 corrective action reports in 2013 related to inadequate implementation of red lining (which includes annotating design changes).

Other Inspection Areas

The NRC inspection team determined that CB&I LC is implementing its programs for 10 CFR Part 21; control of special processes; inspection control; identification and control of materials, parts and components; personnel training and qualification; instructions, procedures, and drawings; and oversight of contracted activities, independent assessments, internal audits and surveillances 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 LC is implementing its policies and procedures associated with these programs. As a result of this inspection, CB&I LC generated seven quality assurance corrective action reports (CARs) to address concerns of low significance identified by the NRC inspection team that did not meet the threshold of more than minor concerns as defined by Inspection Manual Chapter 0617, "Vendor and Quality Assurance Implementation Inspection Reports." No findings of significance were identified.

REPORT DETAILS

1. Nonconforming Materials, Parts, or Components

a. Inspection Scope

The NRC inspection team (hereafter referred to as the inspectors) reviewed Chicago Bridge and Iron Lake Charles' (CB&I LC's) processes and procedures to verify compliance with the requirements of Criterion XV, "Nonconforming Material, Parts, or Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. The inspectors reviewed the basis for the stop work order to evaluate if it was due to a failure in CB&I LC's processes and procedures to meet the regulatory requirements for nonconformances and corrective action.

The inspectors reviewed the nonconformance reports (NCRs) associated with the three sub-modules released from the stop work order to prepare for shipping, to ensure that technical deficiencies, including but not limited to, technical deficiencies associated with the key elements of the fabrication, assembly, and inspection of the sub-modules had been appropriately evaluated, dispositioned, and reported to customers. The inspectors reviewed the NCRs to ensure that they were closed with sufficient objective evidence and that they were reviewed by qualified personnel. The inspectors verified, that NCRs dispositioned as "repair" included supplemental work instructions to address the repairs and that the quality control (QC) inspectors inspected and signed-off on the repairs when required.

The inspectors observed ongoing work activities associated with preparation and cutting of material for sub-module work, to ensure reporting of nonconformances and conditions adverse to quality was being performed.

The inspectors interviewed the CB&I LC's customer quality representatives to verify that there is no hesitation to write NCRs and CARs, and to assess their perspective of the nuclear culture at CB&I LC. The inspectors also verified that Customer NCRs and CARs are entered into the corrective action/nonconformance process and are addressed. The inspectors interviewed a large sample CB&I LC and contract supervisory and nonsupervisory personnel to determine if they understood what nonconforming or condition adverse to quality was, what the CB&I LC procedural requirements were, and if they were able to initiate the correct documentation.

The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

The inspectors verified that the CB&I LC policies and procedures related to nonconforming conditions adequately address the regulatory requirements. The inspectors observed that an NCR was submitted during the inspection when a nonconforming condition was identified.

The inspectors verified that for two sub-modules ready to be shipped to Vogtle, there was clear documentation showing how CB&I LC had resolved all the nonconformances in accordance with their procedures and regulatory requirements.

Specifically, the inspectors reviewed the documentation and inspected sub-module CA05-05 for V.C. Summer. This sub-module had been released from the stop work order to prepare for shipping, and was proposed to ship with nonconformances to be resolved at the site. The inspectors visually examined accessible sides of the sub-module and noted that six nonconformances existed and were marked (uncontrolled marking) on the sub-module. The inspectors compared the observed physical condition to the documented condition. CB&I LC had closed their open NCR 2013-2261 that documented the nonconformances to an AP1000 Nonconformance and Disposition (N&D) Report APP-CA05-GNR-850019, which was to include all of the nonconforming conditions on the sub-module to be shipped and resolved at V.C. Summer. In reviewing the N&D report versus the actual sub-module conditions, the inspectors determined that the documentation did not match the actual conditions observed. Specifically, of the observed nonconformances: one stud that had an incomplete weld was incorrectly located in the documentation; one stud that was identified on the documentation as being added and having incomplete weld did not appear to exist on the module; and one stud was documented as having an incomplete weld but was actually missing. These errors demonstrated inadequate implementation of CB&I LC's nonconformance program. The inspectors identified this issue as Nonconformance 99901425/2014-201-01 for CB&I LC's failure to properly identify nonconformances on a sub-module prepared for shipment. CB&I LC determined that their original NCR 2013-2261 incorrectly documented the nonconforming conditions and initiated CAR 2014-128, and NCR 2014-123 to address this issue.

c. Conclusions

The inspectors concluded that CB&I LC is not effectively implementing its nonconforming materials, parts, or components program in accordance with the regulatory requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B to 10 CFR Part 50. The inspectors issued Nonconformance 99901425/2014-201-01 for CB&I LC's failure to correctly identify open nonconformances in the documentation of a sub-module prepared to be shipped. Specifically, the documentation, (N&D) Report APP-CA05-GNR-850019, that was to identify all open nonconformances for sub-module CA05-05 for V.C. Summer to be resolved at site, did not correctly identify some of the nonconforming conditions (including location and type).

2. Corrective Action

a. Inspection Scope

The inspectors reviewed CB&I LC's policies and procedures that govern the programs for the control of corrective actions to verify compliance with Criterion XVI, "Corrective Action," of Appendix B, to 10 CFR Part 50.

The inspectors reviewed a sample of CARs associated with the fabrication of safety-related AP1000 sub-modules to verify the adequacy of CB&I LC's implementation and control of the corrective action program.

Additionally, the inspectors evaluated the adequacy of CB&I LC's implementation of corrective actions for findings previously identified in NRC inspection reports.

The inspectors observed a daily CAR screening meeting to determine if meeting attendees demonstrated knowledge of the corrective action program, provided adequate review of the CARs, including proposed categorization (significant condition adverse to quality, condition adverse to quality, or other) and appropriate screening for 10 CFR Part 21 applicability. Additionally, the inspectors observed a weekly CAR Review Board meeting to see if CB&I LC supervisors demonstrated knowledge of the regulatory requirements and CB&I LC procedures for corrective action, and maintained a Safety Conscious Work Environment (SCWE) perspective when performing their CAR Review Board function.

The inspectors determined through interviewing a large sample CB&I LC and contract supervisory and nonsupervisory personnel that they understood what a nonconforming or condition adverse to quality was, understood what the reporting requirements were, and that they were able to initiate the correct documentation.

The inspectors determined from a review of the various trend reports and of the brief description in the CAR listing from 2012 to present that the trend reports did identify the adverse trends in conditions adverse to quality, and that CB&I LC initiated corrective action. The inspectors determined from their review of CARs and the trends in conditions adverse to quality that the scope of the CB&I LC's stop work order appeared to be appropriate.

The inspectors reviewed implementation of the corrective action program at CB&I LC that focused on the areas of programmatic issues related to welding, nondestructive examination (NDE), inspection, sub-module construction, training and the nonconformance and corrective action programs. In addition, the inspectors reviewed CB&I LC's CARs associated with the stop work order, as well as condition reports for the V.C. Summer sub-module that was dropped.

The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

b.1 Internal Audit of Corrective Actions

The inspectors reviewed corrective actions initiated by CB&I LC in response to a quality assurance (QA) internal audit report concerning indoctrination and training (Number I-13-001). The audit was conducted in February 2013 and the report was completed in May 2013. CAR 2013-530 was initiated in order to conduct the apparent cause evaluation and identify corrective actions for the audit report

findings. The CAR was screened as a Level 2 corrective action. The inspectors identified that the apparent cause evaluation had been conducted two times; however, both were rejected. The apparent cause was revised and subsequently approved on January 31, 2014. The inspectors observed that while the apparent cause was not completed and approved in a timely manner, CB&I LC did make changes to the training program to move toward correcting the deficient condition. No findings of significance were identified.

b.2 Corrective Action Program Training

The inspectors witnessed new employee training classes that included training on the function and use of the corrective action program. In addition, inspectors interviewed personnel on the shop floor to determine if personnel felt free to initiate both corrective actions and non-conformances. No findings of significance were identified.

b.3 Corrective Actions Associated with the Stop-Work Order

The inspectors interviewed personnel and reviewed the stop work order documentation to gain an understanding of the actions that were being conducted to review the QA documentation for the sub-modules. CB&I LC was in the process of conducting a review of all in process travelers and associated documents (i.e., drawings, weld logs, NCRs and engineering and design change reports (E&DCRs)). This review was being completed by three groups: engineering, production and QC. During the review, if errors were identified, CB&I LC corrected those errors using objective evidence. In order to document the resolution of the errors, CB&I LC was opening CARs and NCRs as appropriate. In addition to the documentation, CB&I LC reviewed and verified the training documentation for all personnel working on the sub-modules as part of the stop work order. In order for a sub-module to be released from the stop work order, all QA documentation and training records were required to be verified and then the Management Review Board (MRB) approved the release of each individual sub-module to a designated team of personnel.

The inspectors reviewed CARs and NCRs associated with qualification records of personnel. No findings of significance were identified.

b.4 CB&I LC's Corrective Actions for Previous NRC Inspection Report Findings

As a note, CB&I acquired Shaw Modular Solutions (SMS) on February 13, 2013. At that time, the Lake Charles facility became known as CB&I LC.

Nonconformance 99901401/2011-202-03

Nonconformance (NON) 99901401/2011-202-03 documented that SMS failed to ensure that design changes were subject to the design control

measures commensurate with those applied to the original design, SMS procedure QP-G-05a-00, and Westinghouse Specification APP-GA-G1-001. Specifically, the SMS Product Manager redlined detailed drawing APP-CA20-S5-02-000-0201, Revision 0, dated April 11, 2011, to add supports to sub-module CA20-02; however, the Product Manager failed to confirm with the Detailer Manager that the redline changes were in accordance with the approved drawings prior to change. In addition, the redlined drawings did not indicate that the subject angle iron supports were to be considered temporary.

The inspectors reviewed the corrective actions taken by SMS and CB&I LC specific to redlining of design changes. The inspectors observed SMS and CB&I LC evaluated the previous NRC finding in this area but failed to adequately implement actions of CAR 11-450 to prevent recurrence.

Additionally, the inspectors observed that CB&I LC had not included redlining of drawings in the stop work order dated January 13, 2014. The inspectors observed that CB&I LC had included the redlining of shop travelers in the stop work order, but lifted the restriction on January 14, 2014. The inspectors requested all CARs related to redlining of drawings since CAR 11-450 be compiled for the inspectors review. The inspectors observed that there were more than 20 CARs in 2013 related to redlining of drawings (separated from shop travelers) since the NRC finding documented in NON 99901401/2011-202-03.

The inspectors reviewed a drawing for the safety-related module CA01-01-19-310-1902 and its associated four versions. The inspectors further observed that the current version (1.4) introduced a red line that was not previously documented in versions 1.2 or 1.3. As a result, the inspectors determined that the subject drawing did not reflect all applicable redlines for a time period of at least one month. This issue is significant because this was a previous NRC finding and the redlining process is essential in maintaining proper design configuration of safety-related AP1000 sub-modules. As a result of the NRC identification of this concern, CB&I LC issued CAR 2014-162. The inspectors determined that CB&I LC's previous corrective actions associated with NRC's NON 99901401/2011-202-03 were ineffective and issued Notice of Nonconformance 99901425/2014-201-02.

Nonconformance 99901401/2011-202-01

NON 99901401/2011-202-01 documented that SMS failed to provide control over activities affecting quality in the SMS Quality Assurance Manual (QAM) and failed to define the regulatory and industry standards to which SMS is committed in the QAM.

SMS and CB&I LC evaluated the previous NRC findings in this area by initiating, evaluating, and implementing actions in CAR 2011-485. After the NRC inspection in 2011, SMS and CB&I LC identified additional examples of problems with the control of activities affecting quality in the

QAM. The programmatic issues of controlling activities affecting quality were addressed by QAM changes to add additional guidance. The inspectors verified that the additional guidance provided was adequate. This issue is closed.

Nonconformance 99901401/2011-202-02

NON 99901401/2011-202-02 documented that SMS failed to provide indoctrination and training to personnel who; 1) manage or implement activities affecting quality, 2) adequately document the training of auditors, and 3) appropriately requalify a lead auditor in accordance with SMS procedures.

The inspectors reviewed the corrective actions taken by SMS and CB&I LC specific to indoctrination and training of these personnel. The inspectors observed that SMS and CB&I LC evaluated the previous NRC findings in this area by initiating, evaluating and implementing actions of CARs 11-484, 11-455 and 12-054.

Through an evaluation of training records, procedural changes, and qualification records, the inspectors verified the CB&I LC management had the requisite training and that it was properly documented. Additionally, the inspectors reviewed a sample of CB&I LC lead auditor qualification and requalification packages per QP-QA-01. The inspectors found that the lead auditors were qualified and documented consistent with CB&I LC requirements.

The inspectors interviewed various CB&I-LC staff and verified adequate worker awareness of the indoctrination and training of personnel.

The inspectors determined that CB&I LC's implementation of corrective actions was adequate. This issue is closed.

Nonconformance 99901401/2011-202-04

NON 99901401/2011-202-04 documented that SMS failed to include the applicable technical requirements in procurement documents, which are necessary to assure that adequate quality is suitably included or referenced.

The inspectors reviewed the corrective actions taken to address the inclusion of applicable technical requirements in procurement documents which are necessary to assure that adequate quality is suitably included or referenced. The inspectors observed that SMS and CB&I LC evaluated the previous NRC findings in this area by initiating, evaluating and implementing actions of CAR 11-448.

The inspectors determined that CB&I LC's implementation of corrective actions was adequate. This issue is closed.

Nonconformance 99901401/2011-202-05

NON 99901401/2011-202-05 documented that the SMS American Welding Society (AWS) welder qualification program, including the welder qualification records and Welder Qualification History Log, did not provide adequate records to demonstrate that welding was accomplished by qualified personnel.

The inspectors observed that SMS and CB&I LC evaluated the previous NRC findings in this area by initiating, evaluating and implementing actions of CARs 11-439 and 11-460. The inspectors evaluated the CB&I LC AWS welder qualification program through a review of Welder Roster, a sampling of Welding Operator Qualification Continuity Logs, shop travelers for welding, and witnessing of welder testing qualifications.

The inspectors determined that CB&I LC's implementation of corrective actions was adequate. This issue is closed.

Nonconformance 99901401/2011-202-06

NON 99901401/2011-202-06 documented that SMS failed to properly control and calibrate safety-related measurement and test equipment (M&TE).

The inspectors observed that SMS and CB&I LC evaluated the previous NRC findings in this area by initiating, evaluating and implementing actions of CARs 11-448 and 11-456.

The inspectors interviewed various CB&I-LC staff and physically verified proper control and calibration of safety-related M&TE. The inspectors determined that CB&I LC's implementation of corrective actions was adequate. This issue is closed.

Nonconformance 99901401/2011-202-07

NON 99901401/2011-202-07 documented that SMS failed to control a sub-module that had open nonconformances identified on it.

SMS and CB&I LC evaluated the previous NRC findings in this area by initiating, evaluating and implementing actions for CARs 11-440, 11-446, and 11-452. Subsequent to the NRC inspection in 2011, SMS identified additional examples of problems with control of nonconformances as documented in CAR 12-076 which was classified as a significant condition adverse to quality (SCAQ).

The inspectors reviewed a sample of sub-modules and confirmed that NCRs identified in shop traveler packages were appropriately physically tagged as required. During interviews with CB&I LC staff, the inspectors

verified adequate worker awareness of the controls for nonconforming conditions.

The inspectors concluded that CB&I-LC developed adequately addressed the controls for NON. This issue is closed.

Nonconformance 99901401/2011-202-09

NON 99901401/2011-202-09 documented that SMS failed to perform a trend analysis of conditions adverse to quality as required by the licensee's POs. This NON was followed up during an NRC inspection conducted September 10-14, 2012. The inspection results were documented in NRC Inspection Report No. 99901401/2012. In 2012, the inspectors found some progress had been made in trend analysis; but SMS did not complete trending procedure revisions by August 31, 2012 as committed to the NRC. The NRC subsequently issued NON 99901401/2012-201-01 for untimely corrective actions for not completing the trending procedure revisions.

In the response to NON 99901401/2012-201-01, SMS indicated the reason they did not meet the commitment to issue the trending procedure was that it took longer to procure and implement new software, understand the trending capabilities, and gather data to develop the necessary procedural guidance. In 2013, Procedure QP-CA-303, "Trending Manual," was issued which contained guidance for assigning trend codes to condition reports, establishing timeframes for formal trending reports, and specifies that when a potential adverse trend is identified, a CAR should be initiated.

The inspectors reviewed a sample of completed trend reports involving the corrective action program. The individual trends were followed by an overall site condition report trending summary which included a quarterly comparison broken down by causal factors.

The trend data showed a clear increase in condition report overdue analysis and action items from May 2013 through August 2013. These overdue actions were part of the reason why CB&I LC initiated a stop work order in January 2014 to work down the backlog of procedure revisions that were action items from condition reports. The inspectors also interviewed several site personnel including managers and determined there was a good awareness of problem areas and corrective actions being implemented to improve performance.

The inspectors determined that the initiation of CARs to evaluate and correct adverse trends was being performed. The inspectors concluded that CB&I LC developed an adequate trending program which addressed previous NRC findings in the area of trending. This issue is closed.

Nonconformance 99901401/2012-201-01

NON 99901401/2012-201-01 documented several examples where SMS failed to promptly correct conditions adverse to quality and SCAQ.

These previous NRC findings, NONs 99901401/2011-202-08 and 2012-201-01 were examples of problems with the effective implementation of the corrective action program. SMS and CB&I LC have implemented a number of corrective actions to address the NRC findings to improve the overall timeliness and effectiveness of the corrective action program. The inspectors reviewed the corrective actions implemented for the corrective action program and also the related performance indicators.

The inspectors attended a corrective action review board (CARB) meeting, and also reviewed the performance indicators developed to track the timeliness of completing evaluation and action items associated with CARs. The inspectors reviewed a listing of open SCAQs and determined that the root cause analysis reviews were scheduled and completed within a reasonable time period. Further, CB&I LC was under a stop work order to reduce the backlog of CAR action items. The CAR action item backlog peaked in November 2013 and has trended down since then. Many of the CAR action items in the backlog were related to procedure revisions. The inspectors concluded that there was enhanced management attention on the implementation of the corrective action program.

The CB&I LC review of the control of weld wire, which was a previous NRC finding, determined that the previous weld wire CAR evaluations were too narrowly focused and did not focus on programmatic or process issues. Further, the management sponsor for the evaluations was not sufficiently engaged. Procedure QP-CA-216, "Corrective Action Program," was enhanced to define department owner responsibilities. Effectiveness reviews were initiated to confirm that corrective actions implemented for a SCAQ were effective. The inspectors determined that CB&I LC took adequate corrective actions for the control of weld wire.

The inspectors reviewed the corrective actions taken in response to an NRC finding related to the documentation of late entries contained in Procedure QP-G-17, "Quality Records." CB&I LC initiated CAR 12-857 to evaluate and implement corrective actions as necessary. The inspectors determined that CB&I LC's implementation of corrective actions was adequate. This issue is closed.

c. Conclusions

The inspectors concluded that CB&I LC is not effectively implementing its corrective program in accordance with the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. The inspectors issued Nonconformance 99901425/2014-201-02 for CB&I LC's failure to take

timely and effective corrective action for a previously identified NRC finding from 2011 for redlining of drawings for safety-related AP1000 sub-modules. CB&I LC had closed the issue of ineffective corrective action for the NRC finding. Through a focused sample, the NRC inspection team identified 20 CARs in 2013 related to inadequate implementation of red lining (which includes annotating design changes).

3. 10 CFR Part 21 Program

a. Inspection Scope

The inspectors verified the adequacy of the evaluations and corrective actions, for selected 10 CFR Part 21 and 10 CFR 50.55(e) reports by CB&I LC to the NRC. For the 10 CFR 50.55(e) reports, which were for a programmatic breakdown in QA, the inspectors reviewed the CB&I LC corrective actions to ensure they addressed the entire scope of the QA program and implementation issue.

The inspectors reviewed CB&I LC's processes and procedures to verify compliance with the requirements of 10 CFR Part 21. The inspectors observed a daily CAR meeting for potential 10 CFR Part 21 screening applicability. For the NCRs and CARs reviewed, the inspectors verified that 10 CFR Part 21 was properly screened, evaluated and reported when applicable.

The inspectors reviewed 10 CARs associated with 10 CFR Part 21 and 10 CFR 50.55(e) reports. The inspectors determined that the threshold for determining 10 CFR Part 21 reportability appeared adequate, and that corrective action was initiated for the conditions adverse to quality. For the 10 CFR 50.55(e) reports, the inspectors determined that CB&I LC's documented corrective actions appeared to address the entire scope of the QA program and implementation issue.

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. Conclusions

The inspectors determined that CB&I LC's processes and procedures complied with the requirements of 10 CFR Part 21. Based on the limited sample of documents reviewed and observation of CAR screening activities at the CB&I LC facility, the inspectors determined that CB&I LC is adequately implementing its QAM and the associated procedures for 10 CFR Part 21. No findings of significance were identified.

4. Control of Special Processes

a. Inspection Scope

The inspectors reviewed CB&I LC's policies and implementing procedures that govern the control of special processes (i.e., welding, visual test (VT), penetrant test (PT) and ultrasonic test (UT) inspections) to verify compliance with the regulatory requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50 as well as with the requirements of the AWS D1.1, "Structural Welding Code-Steel," 2000 Edition, AWS D1.4, "Structural Welding Code – Reinforcing Steel," 1998 Edition, and American Society for Nondestructive Testing (ASNT) SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing," 1992 Edition.

The inspectors reviewed a sample of welding and NDE documents, observed welding and NDE activities being performed at the weld test facility, and reviewed completed NDE and welding records associated with the fabrication and inspection of the AP1000 structural sub-modules.

The NRC inspection team interviewed welders and NDE inspectors to assess their understanding of the applicable codes and standards, CB&I LC processes and procedures, and the stop work requirements.

The inspectors measured fillet weld leg and throat dimensions on several sub-modules with grinding marks in the areas of the toes for fillet welds, start and stop locations, intricate inner and outer radius corners, and edges of weldments to determine whether the minimum size of fillet weld dimensions were in accordance with the requirements of engineering drawings; CB&I LC Quality Procedure QP-QC-310, Visual Weld Inspection Procedure, Revision 7, October 9, 2013; and AWS D1.1 – 2000, Structural Welding Code – Steel.

The inspectors observed in-process weld stud grid markings and 10-stud qualifier areas on several sub-modules, reviewed shop weld travelers, and interviewed subject matter experts to determine whether the new stud and weld mapping process with pictorials showing the sub-assembly number, unique stud identifier, and weld number (e.g. 110-10-1892, respectively) for the location and dimension for each traceable stud was performed in accordance with the requirements of the CB&I LC Quality Procedure QP-QC-301, Implementation of Shop Traveler, Revision 3, October 23, 2013, using paragraphs 6.5.3 thru 6.5.5 along with Attachment 3, Stud Weld Map (6 pages), and Attachment 4, Studs Recorded by Grid System (5 pages), and AWS D1.1 – 2000, Structural Welding Code – Steel.

The inspectors interviewed subject matter experts on the use of the Gas Metal Arc Welding process to repair carbon steel plates damaged by the removal of studs to determine whether substitution of the Shielded Metal Arc Welding process required by paragraph 7.7.5 of the AWS D1.1 Code was properly exempted by the Westinghouse engineer in accordance with the provisions of paragraph 1.1 of the AWS D1.1 – 2000, Structural Welding Code – Steel.

The inspectors interviewed a shop supervisor on using thermal air carbon arc gouging (not considered a cutting process or oxygen gouging) on duplex stainless steel to determine whether using both scarfing and remnant weld metal grinding techniques prevented temperatures to exceed 300°F and carbon deposits on the final surface of the CA01-11 sub-module in accordance with the requirements of CB&I LC Quality Procedure QP-PC-09, Rework/Repair of Welds and Effective Weld Area, Revision 5, June 28, 2013.

The inspectors reviewed several duplex stainless steel Welding Procedure Specifications (WPS) with supporting Procedure Qualification Records (PQRs) that were qualified in accordance with the AWS D1.6, Structural Welding Code – Stainless Steel, to determine whether the weld filler metal, maximum interpass temperature, Charpy V-notch testing temperature and minimum absorbed energy, maximum heat input energy, and ferrite content testing was in accordance with the WEC APP-VW20-Z0-023, Welding Specification for American Society for Testing and Materials (ASTM) A240 UNS S32101 Duplex Stainless Steel Plate.

The inspectors witnessed 9 welders undergo re-test at CB&I LC's welding test facility to address a welding qualification issue documented in CAR 2014-11 related to a single complete joint penetration (CJP) "V," groove joint for carbon steel to carbon steel material and for carbon steel to duplex stainless steel material. The inspectors observed traceable weld materials, calibrated welding machine, use of the latest revision of the WPS, welder performance in accordance with the WPS welding parameters (including preheat temperature, root pass, interpass temperature, electrical characteristics and the travel speed) and how the welder evaluation was evaluated.

The inspectors selected a sample of five WPSs and their associated PQRs used during fabrication of sub-modules CA05-70 and CA01-32 for V.C. Summer to verify that the sample documents used were qualified in accordance with the requirements of AWS D1.1, AWS D1.6 and the applicable CB&I LC procedures. The inspectors also verified that the applicable welding data such as weld material and heat/lot number, WPS, etc. and inspection procedures used and the final inspection results were recorded in accordance with the applicable CB&I LC procedures and instructions. The welding data was recorded on the associated weld log data sheet for each weld joint along with the applicable NDE results.

The inspectors witnessed the mechanical test activity being performed on the test coupons welded by the welders. From each weld test coupon, two side bend test specimen were cut and bend tested as specified in the Table 4.9, "Welder and Welding Operator Qualification – Number and Type of Specimen and Range of Thickness and Diameter Qualification," of AWS D1.1 and visually inspected by CB&I LC welding inspector to ensure there were no visible cracks as specified in Section 3, "Acceptance Criteria," of Attachment 2, "Requirements for Conducting Welder/Operator Performance Qualification Tests," of QP-WE-302 procedure in accordance with AWS D1.1 and AWS D1.6 acceptance requirements.

The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

The inspectors concluded that the implementation of the CB&I LC program for control of special processes is consistent with the regulatory requirements of Criterion IX of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and with limited observation of work activities due to the stop work order at the CB&I LC facility, the inspectors determined that CB&I LC was taking adequate steps in improving its welding program and that it was effectively implementing its QAM and the associated procedures for control of special processes. No findings of significance were identified.

5. Document Control

a. Inspection Scope

The inspectors reviewed CB&I LC's processes and procedures that govern CB&I LC's document control program to verify compliance with the regulatory requirements of Criterion VI, "Document Control," of Appendix B of 10 CFR 50. The inspectors observed two training sessions, interviewed the trainer, reviewed two post-training quizzes, and interviewed shop floor supervisors, process engineers, QC inspectors, and welders to determine whether personnel understand the importance and integrity of signatures, adhering to welding procedures and drawing dimensions, reviewing welder/operator qualification roster before assigning work, not bypassing inspection hold points, and accurate recording of welder stencils and weld/base metal heat numbers during the fabrication of safety-related modules in accordance with the CB&I LC Quality Procedure QP-PC-301, Implementation of Shop Travelers, Revision 3, November 6, 2013.

The inspectors interviewed shop supervisors and process engineers, and reviewed the "scrubbing" of shop weld travelers associated with safety-related sub-modules to determine whether updating of documents for completeness, consistency, and accuracy was performed in accordance with the applicable requirements of the AWS D1.1, Structural Welding Code – Steel, AWS D1.3, Structural Welding Code – Sheet Steel, and CB&I LC's QA Program.

The inspectors interviewed QC inspectors, shop supervisors, process engineers, and craft personnel, and observed training discussions on the reluctance of working multiple sub-modules in parallel to determine whether the reduction of error traps will minimize incorrectly recording information on shop travelers for safety-related sub-modules in accordance with the requirements of CB&I LC's QA Program. The inspectors noted that the practice of personnel working multiple sub-modules in parallel has been halted.

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

The inspectors concluded that the implementation of the CB&I LC program for document control is consistent with the regulatory requirements of Criterion VI of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and with limited observation of work activities due to the stop work order at the CB&I LC facility, the inspectors determined that CB&I LC was taking adequate steps to improve its document control program and that it was effectively implementing its QAM and the associated procedures for document control. No findings of significance were identified.

6. Handling, Storage, and Shipping

a. Inspection Scope

The inspectors reviewed CB&I LC's policies and implementing procedures that govern the control of handling, storage and shipping to verify compliance with the regulatory requirements of Criterion XIII, "Handling, Storage, and Shipping," of Appendix B to 10 CFR Part 50. Specifically, the inspectors reviewed the activities associated with the handling and rigging of sub-modules CA01-20 and CA01-03.

b. Observations and Findings

The inspectors visually assessed sub-module CA01-20 after it was dropped on the ground during transportation in the laydown area outside the shop and did not identify any damage or repair that would be required in accordance with the requirements of CB&I LC's QA Program.

The inspectors observed rigging activities of sub-module CA01-03 to determine whether the rigging procedure and lift plan were readily available and followed by the rigging crew at the lifting location with supervisory oversight in accordance the requirements of CB&I LC's rigging procedures and QA Program.

No findings of significance were identified.

c. Conclusions

The inspectors concluded that the implementation of the CB&I LC program for control of handling, shipping, and storage is consistent with the regulatory requirements of Criterion XIII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and with limited observation of work activities due to the stop work order at the CB&I LC facility, the inspectors determined that CB&I LC was taking adequate steps to improve its handling, shipping and storage control program and that it was effectively implementing its

QAM and the associated procedures for handling, shipping, and storage control. No findings of significance were identified.

7. Inspections

a. Inspection Scope

The inspectors reviewed CB&I LC's QA processes and procedures to verify compliance with the requirements of Criterion X, "Inspection," of Appendix B to 10 CFR Part 50 for activities affecting quality and the applicable welding code requirements in the AWS D1.1, "Structural Welding Code – Steel." The inspectors verified that CB&I LC had procedures for inspection that provided measures for the generation of inspection control documents, such as travelers, process sheets, instructions, checklists, or other appropriate means.

The inspectors reviewed a sample of drawings, shop travelers, and welder sign-off sheets, to verify the CB&I LC procedure requirements were being met. The inspectors observed QC inspections on the shop floor to verify that CB&I LC is performing inspections in accordance with its policies and procedures and applicable codes and standards.

The inspectors interviewed QC inspectors and personnel performing peer checks to assess their understanding of the applicable codes and standards, and CB&I LC processes and procedures, and the stop work order requirements.

The inspectors interviewed the Vogtle and V.C. Summer customer quality representatives to gather their perspective on CB&I LC progress in addressing fabrication and inspection weaknesses previously noted in NCRs, CARs and Part 21 and 50.55(e) reports.

The inspectors interviewed several QC inspectors and reviewed shop weld travelers to determine whether QC inspectors performing sign-offs during production activities are cognizant of welding techniques and acceptance criteria, and understand proper completion and accuracy of assigned tasks and the significance of hold point inspection signatures in accordance with the requirements of the CB&I LC QA Program.

The inspectors interviewed QC inspectors on the use of inspection hold points for the transfer of heat numbers before cutting new sections from plates, and inspected carbon and stainless steel plate cutting areas inside the shop and inventory/laydown areas outside the shop to determine whether manual markings, bar coding, and/or original manufacturer's heat number designations for various thickness were properly maintained and not lost or altered in accordance with the requirements of the CB&I LC Quality Procedure QP-WH-208, Identification and Control of Items, Revision 0, November 8, 2012, and CB&I LC's QA Program.

The inspectors reviewed CB&I LC Type "B" Inspection Reports No. 12-527363-SMS-1122 and 1038 on multi-directional hydraulic forces applied on panel plates of the CA01-02 sub-assembly that resulted in achieving acceptable width

dimensions within tolerances while causing camber on the torqued tie-bars and inducing unknown stresses to acceptable welds to determine whether corrective action responses were in accordance with CB&I LC's QA Program.

The inspectors reviewed the drawings, assembly shop travelers, and welder sign off sheets, weld logs and weld inspection reports for six V.C. Summer sub-modules (CA01-32-300, 240, 150, & 140, CA05-07-100 and CA05-08) to verify that documents were appropriately signed, that the drawings included weld symbols that appropriately documented the welds to be performed, and that changes to the travelers and welder sign-off sheets were made in accordance with CB&I LC procedures. The inspectors verified that NCRs were documented and dispositioned appropriately, based on the inspection documentation.

The attachment to this inspections report lists the documents reviewed by the inspectors.

b. Observations and Findings

The inspectors verified that CB&I LC's procedures for inspection provided measures for the generation of inspection control documents, such as travelers, process sheets, instructions, checklists, or other appropriate means, and that the procedures meet the regulatory requirements. For a sample of drawings, shop travelers, and welder sign-off sheets, the inspectors verified that inspection control documents include the following information, the item inspected, inspection date, type of observation, results of examination and tests, and the initials of the QC inspector or welder for the activities witnessed. The inspectors verified that mandatory hold points were indicated in the controlling documents and that work does not proceed without appropriate approval.

The inspectors observed the performance of ongoing inspections, and peer checks (process where another individual, not QC or Inspector, checks a marking, recording in the procedure or other work activity before work proceeds). The inspectors observed QC inspections on the shop floor that included traceability checks, witnessed mock-up NDE for PT and UT examination of weld coupons, witnessed welder/welding operator qualification and welding procedure qualification and reviewed fit and tack weld and inspections on stop work orders to verify that CB&I LC is performing inspections in accordance with its policies and procedures and applicable codes and standards. The inspectors verified that inspections are performed by qualified persons other than those who performed or directly supervised the work being inspected. The inspectors verified that inspection results are documented by the inspector and reviewed by authorized personnel qualified to evaluate the technical adequacy of the inspection results. The inspectors observed peer checks and inspection activities associated with marking and cutting of materials to be used in module or sub-module fabrication. The inspectors observed that a CAR was submitted when a condition adverse to quality was discovered during a peer check.

No findings of significance were identified.

c. Conclusions

The inspectors concluded that the implementation of the CB&I LC program for inspection is consistent with the regulatory requirements of Criterion X of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and with limited observation of work activities due to the stop work order at the CB&I LC facility, the inspectors also determined that CB&I LC is effectively implementing its QAM and the associated procedures for inspection. No findings of significance were identified.

8. Identification and Control of Materials, Parts, and Components

a. Inspection Scope

The inspectors reviewed CB&I LC's processes and procedures to verify compliance with the requirements of Criterion VIII, "Identification and Control of Material, Parts, and Components," of Appendix B to 10 CFR Part 50. The inspectors reviewed the associated Procedure QP-WH-01, "Material Control," Revision 9, to ensure that material traceability was maintained per CB&I LC requirements.

The inspectors observed the weld material storage and issue station to verify CB&I LC had adequate control of its weld material by selecting a sample of ten weld filler material control slips. The inspectors reviewed documentation and verified traceability associated with ½-inch carbon steel plate material used in two sub-modules that were released in preparation for shipping. The inspectors conducted an inspection of a sample of material in some sub-modules to ensure no uncontrolled material was present. The inspectors witnessed identification and control of materials being performed during cutting of material for sub-module work and on some of the material being stored.

The inspectors reviewed the CB&I LC implementation of recommendations of the CB&I LC Nuclear Safety Advisory Board (NSAB), for implementation of an electric data collection system and barcode system.

The inspectors interviewed QC inspectors, personnel performing material marking and peer checks, and the weld material storage clerks to assess their understanding of the applicable codes and standards, and CB&I LC processes and procedures.

The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

The inspectors reviewed the product identification certification (PIC) tickets and parts lists associated with Module No. KB37 for Vogtle and CA20-25 for V.C. Summer to ensure material traceability was maintained and could be identified in the sub-modules.

The inspectors witnessed identification and control of materials being performed during cutting of material to be used in sub-module fabrication.

The inspectors observed that a CAR 2014-138 was submitted when a condition adverse to quality was discovered during a peer check due to mismarking of material.

The inspectors observed the weld material storage and issue station to verify CB&I LC had adequate control of its weld material by selecting a sample of ten weld filler material control slips and interviewed the weld material storage clerk. The inspectors noted that the weld materials in the issue station were properly marked with manufacturer's identification, size, AWS or American Society of Mechanical Engineers (ASME) specification, heat/batch number traceable to the approved supplier and had accepted green inspection tags attached. The inspectors selected a sample of five material control slips to verify materials were issued to qualified welders and issued and returned by authorized weld foremen/supervisors. The inspectors noted that the weld filler material control slip documented the welder name, his/her stencil, WPS, work order, and machine number; whether the filler material was released for production or non-production order; described whether AWS/ASME type; diameter size; heat/lot number; authorized weld foreman/supervisor name and signature; issuance and return date, time, and quantity; issuer and returner's name and welder's signature; and date acknowledging he/she understood the WPS. The inspectors verified that the weld material was controlled at all times until its consumption.

No findings of significance were identified.

c. Conclusions

The inspectors determined that the implementation of CB&I LC's program for identification and control of material, parts and components was consistent with the regulatory requirements in Criterion VIII of Appendix B to 10 CFR Part 50. Based on the limited sample of PIC tickets and parts lists reviewed and the observation of activities on the shop floor related to traceability, the inspectors determined that CB&I LC is effectively implementing its QAM and the associated nonconformance procedures. No findings of significance were identified.

9. Personnel Training and Qualification

a. Inspection Scope

The inspectors reviewed CB&I LC's policies and procedures to verify that CB&I LC was implementing training activities in a manner consistent with regulatory requirements and industry standards. The inspectors reviewed the training and qualification process for QC personnel (which includes NDE), welding personnel, and general CB&I and contract personnel to verify conformance with the requirements in Criterion II, "Quality Assurance Program," of Appendix B to 10 CFR Part 50.

The inspectors reviewed a sample of the training and qualification records of QC inspectors and foremen, qualified welders, CB&I LC and contract nonsupervisory and supervisory personnel to verify CB&I LC policies and procedures were being implemented and documented.

The inspectors verified the implementation of recommendations of the CB&I LC NSAB on the performance-based Continued Supervisor and Forman Training program (Systematic Approach to Training) being performed as part of the stop work order activities.

The inspectors discussed the personnel training and qualification process with CB&I LC management and staff; attended portions of new employee training, a safety meeting, a weekly management meeting, a weekly corrective action review board meeting, and a weekly corrective action screening meeting; interviewed CB&I LC and contract personnel, and observed them during the performance of their work to assess the effectiveness of their training.

The inspectors interviewed subject matter experts and observed performance qualification testing of a welder in the 2G (horizontal), 3G (vertical), and 4G (overhead) positions to determine whether testing activities were performed in accordance with the requirements of the AWS D1.1 – 2000, Structural Welding Code – Steel, Section 4, Part C, Performance Qualification, and CB&I Quality Procedure QP-WE-302, Welder/Operator Qualification – AWS, Revision 2, February 26, 2013.

The inspectors noted the diverse backgrounds of workers and interviewed them to ensure that CB&I LC training, guidance and procedures were understood by all. During discussions with the inspectors, two welders stated that while reading procedures or any type of quality documents, there are instances when they do not know the translation of a technical requirement. The inspectors asked the welders what actions they take once they realize that they do not understand a technical requirement in the procedure or quality documents. Both welders stated that they stop their work and do not continue working until they find somebody that can interpret the technical requirement. Once they are able to interpret and understand the technical requirement, they continue working.

The welders also stated that once they finish with their work, they are responsible for completing and signing any quality records associated with their work.

The inspectors reviewed CB&I LC Quality Procedure QP-WE-302, Welder/Operator Qualification – AWS, Revision 2, February 26, 2013, QP-WE-302-F-2, Welder or Welding Operator Qualification Test Record – D1.3, and

WPS 1-1-516, Revision 0, January 30, 2014 to determine whether welder and procedure qualifications for use on non-safety related mechanical sub-modules were in accordance with the requirements of the AWS D1.3, Structural Welding Code – Sheet Steel [carbon steel less than 1/8” thickness described in AWS D1.1 – 2000, paragraph 1.1.1(2)].

The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

The inspectors verified that CB&I LC has programs and procedures in place for the qualification and training of QC personnel performing activities that affect quality, and these programs and procedures are consistent with regulatory requirements and with the ASNT, Recommended Practice No. SNT-TC-1A 2006, “Personnel Qualification and Certification in Nondestructive Testing.” The programs and procedures also take into account the need for special skills to attain the required quality and the need for verification of quality by inspection and testing. In addition, the programs and procedures provide for the indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained.

The inspectors also verified that the applicable procedure for welder qualification meets the requirements of AWS D1.1 and AWS D1.6. The inspectors also reviewed a sample of qualifications records for those welders, and inspectors associated with manufacturing equipment used during fabrication of the AP1000 structural sub-modules.

To verify effectiveness, the inspectors reviewed a representative sample of training and certification records for QC staff members (10 of 48), including five QC inspectors, three QC foremen, and the current QC ASNT Level III. The sampled QC staff member training and certification records also included the following certifications: VT, PT, magnetic particle test (MT), UT, radiographic testing (RT), certified welding inspector, and receipt inspector. The inspectors verified that qualification, training records, and certifications exist for the QC foremen and QC inspectors and that these records are maintained in accordance with CB&I LC’s program requirements and consistent with industry standards. The inspectors verified that a previous employee who had signed on behalf of a QC supervisor during the material receipt inspection validation for the V.C. Summer sub-module that was being prepared for shipment had the correct training and documentation to perform that function in the historical training records.

The inspectors reviewed the welder qualification list and associated welder qualification records and confirmed that the welders had completed the required training and had maintained their qualifications in accordance with CB&I LC procedures.

The inspectors interviewed a large sample of other CB&I LC and contract supervisory and nonsupervisory personnel (i.e., storeroom personnel, machine operators, material handlers, process engineers, etc.). The inspectors also observed personnel during the performance of their work, including those jobs such as for a material release, cut-off and transfer material traceability inspection for mechanical sub-module R219 for Vogtle and personnel performing document verification as part of the stop work order. The interviewed individuals and the observed individuals were knowledgeable of their job requirements. The QC inspections and peer checks were performed by qualified personnel other than those who performed or directly supervised the work being inspected.

The inspectors observed portions of CB&I LC's training of new personnel who could be performing quality activities associated with the fabrication of structural sub-modules being supplied to U.S. commercial nuclear power reactors as part of Westinghouse's AP1000 design. Training was professional conducted on the specified subjects, with personnel being attentive and asking questions.

No findings of significance were identified.

c. Conclusions

The inspectors concluded that CB&I LC's program requirements for training and qualification of personnel are consistent with the requirements of Criterion II of Appendix B to 10 CFR Part 50. The inspectors also concluded that CB&I LC's QAM and associated training and qualification procedures were adequate and effectively implemented. No findings of significance were identified.

10. Instructions, Procedures, and Drawings

a. Inspection Scope

The inspectors reviewed CB&I LC's policies and procedures that govern instructions, procedures and drawings to verify compliance with the requirements of Criterion V, "Instructions, Procedures, and Drawings," of Appendix B to 10 CFR Part 50, along with the requirements of the AWS D1.1, "Structural Welding Code-Steel," 2000 Edition, and AWS D1.4, "Structural Welding Code – Reinforcing Steel." The inspectors also reviewed the procedures for compliance with the design requirements (i.e., identifying and receiving concurrence for any changes).

The inspectors reviewed a sample of drawings and shop travelers including associated documentation packages, to verify that CB&I LC's policies and procedures were being implemented in accordance with the requirements. The inspectors observed the limited, due to the stop work order, work activities to evaluate if work was being performed and documented in accordance with the regulatory requirements. The inspectors interviewed personnel and observed training activities for how instructions, procedures and drawings adherence was addressed.

The inspectors reviewed the adequacy and implementation of CB&I LC's Assessment Team Interim Report entitled "NRC Chilled Environment Letter EA-13-066, Assessment Team Interim Report (procedure review)," dated August 22, 2013 which provides the assessment results from procedure reviews. The inspectors also reviewed the implementation of the CB&I LC NSAB recommendation to consolidate Production and QC procedures and to streamline the number of WPS's in use on the shop floor.

The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

The inspectors verified that CB&I LC established and implemented processes and procedures to ensure that design, specification, and procedural requirements were adequately translated into documents used to support the fabrication of the AP1000 structural sub-modules. Documents reviewed included shop travelers, project instruction sheets, supplemental instructions, weld logs, traceability logs, and associated drawings used for fabrication.

The inspectors observed the use of procedures, drawings and travelers by CB&I LC personnel on the shop floor including those engaged with the documentation review as part of the stop work order. The personnel performing stop work order activities associated with verification of documentation in the shop travelers were identifying issues with the documentation, and resolving them per the directions given. The inspectors observed that the procedures being used are the correct revision, are being appropriately followed, and are of adequate detail to perform the task. The inspectors observed procedure adherence and documentation of work being performed during cutting of material for sub-module work, which had been released from the stop work order.

The inspectors noted that the stop work order was in part requiring implementation of CB&I LC NSAB recommendation to consolidate Production and QC procedures and to streamline the number of WPS's. For the limited new work being performed, the shop travelers were clear and easy to understand as to what had been done and the directions were clear as to what was the next work activity.

The inspectors reviewed work orders for a sample of four structural sub-modules currently in fabrication that were on hold due to the stop work order, conducted interviews with responsible CB&I LC personnel, and reviewed fabrication documents to determine if CB&I LC performed fabrication activities in accordance with the applicable design, quality, and technical requirements imposed through design drawings, specifications, procedural requirements. The inspectors reviewed in a sampling manner the documentation associated with sub-modules that had been released to prepare for shipping. The documentation that was reviewed was found to be complete.

The inspectors noted that adherence to instructions, procedures and drawings was addressed in training.

No findings of significance were identified.

c. Conclusions

The inspectors concluded that CB&I LC's program requirements for instructions, procedures and drawings are consistent with the requirements of Criterion V of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and observation of ongoing activities at the CB&I LC facility, the inspectors determined that CB&I LC is implementing its QAM and the associated procedures for to instructions, procedures and drawings. No findings of significance were identified.

11. Oversight of Contracted Activities, Independent Assessments, Internal Audits and Surveillances

a. Inspection Scope

The inspectors reviewed CB&I LCs' policies and implementing procedures that govern the implementation of its external and internal audits and surveillances program to verify compliance with the requirements of Criterion VII, "Control of Purchased Material, Equipment, and Services," and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The inspectors reviewed a sample of external (third party) and internal audits and surveillances since the issuance of the Chilling Effect Letter (CEL) to determine the adequacy of CB&I LCs' performance to self-identify and correct problems. The inspectors reviewed the disposition of audit and surveillance findings for adequacy and timeliness and a sample of auditor's training and qualification records. In addition, the inspectors discussed these programs with CB&I LC's management and technical staff.

The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

b.1 External and Internal Audits and Surveillances

The inspectors reviewed a sample of external and internal audits and surveillances to verify the implementation of CB&I LCs' audit and surveillance program. The inspectors verified that CB&I LC had prepared and approved plans that identify the audit and surveillance scope, focus, and applicable checklist criteria before the initiation of the audit activity. The inspectors verified that the checklists contained an adequate level of objective evidence to support the classification of checklist criteria as satisfactory or unsatisfactory. For audits and surveillances that resulted in findings, the inspectors verified that the supplier had established a plan for corrective action and that CB&I LC had reviewed and approved the corrective action and verified its satisfactory completion and proper documentation. CB&I LCs' audit program also includes the performance of annual evaluations of suppliers to ensure that they are effectively implementing their approved QA programs. For a sample of annual

evaluations, the inspectors verified that these evaluations were performed in accordance with CB&I LCs' procedures and contained all the required information. The inspectors also verified that auditors are not auditing their own work. The inspectors also reviewed a sample of the training and qualification records of CB&I LCs' lead auditors and auditors and confirmed that auditing personnel had completed all required training and had maintained qualification and certification in accordance with CB&I LCs' policies and procedures.

b.2 Internal Independent Assessment

CB&I LC performed an independent focused assessment to determine if effective programmatic controls are in place in the following areas: control of special processes; inspections; personnel training and qualification; instructions, procedures, and drawings; and corrective action. The assessment team also included representatives from Vogtle, V.C. Summer and CB&I Power to evaluate the results of the independent focused assessment and take corrective actions as appropriate. The inspectors confirmed that CB&I LC had performed an independent focused assessment of the areas listed above. The assessment identified several corrective actions associated with inspections, personnel training and qualification, and corrective actions. The inspectors verified that CB&I LC took corrective actions in response to the recommendations from the assessment.

No findings of significance were identified

c. Conclusions

The inspectors concluded that CB&I LC is implementing its external and internal audits and surveillances program in accordance with the regulatory requirements of Criterion VII and XVIII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the inspectors determined that CB&I LCs' audit and surveillance procedures were being effectively implemented. No findings of significance were identified.

12. Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)

a. Inspection Scope

The inspectors reviewed CB&I LC's procedures, specifications, shop drawings, shop travelers, correspondence, corrective action documents, and QA practices associated with fabrication of structural sub-modules for the AP1000 Containment Internal Structures (CISs). This review was to support future closure of ITAAC 3.3.00.02a.i.a for Vogtle Electric Generating Plant (VEGP) Unit 3 and V.C. Summer Nuclear Station (VCSNS) Unit 2. Additionally, the inspectors inspected CIS sub-modules to support future closure of ITAAC 3.3.00.02a.ii.a for the same units listed above.

b. Observations and Findings

The inspectors noted that CB&I LC summarized key technical requirements associated with fabrication of the CIS structural sub-modules into a Program Instruction Sheet (PIS). These requirements are consolidated from relevant engineering drawings; specifications; Requests for Information (RFI); Engineering & Design Coordination Reports (E&DCR); AWS, American Institute of Steel Construction (AISC), and American Concrete Institute (ACI) code requirements; and other technical documents. The inspectors reviewed PIS-AP1000 Revision 8 to verify that the technical requirements used by CB&I LC for fabrication of the AP1000 CIS structural sub-modules are consistent with the Updated Final Safety Analysis Reports (UFSAR) for Vogtle Unit 3 and V.C. Summer Unit 2.

The inspectors verified that the shop drawing prepared by CB&I LC for fabrication of the structural sub-modules were consistent with the engineering drawings provided by the design authority and any relevant E&DCRs. The inspectors also confirmed that any inconsistencies or errors on the engineering drawings that were identified by the structural detailers during development of the shop drawings were addressed through the RFI process and that any required design changes or clarifications were reconciled by the design authority using the E&DCR process.

The inspectors verified that the CIS sub-modules were fabricated in accordance with the technical requirements and engineering drawings and that design deviations identified during fabrication were documented in NCRs and reconciled by the design authority using the E&DCR process.

The inspectors observed CIS sub-modules CA01-01 and CA05-05, for Vogtle Unit 3 and V.C. Summer Unit 2, respectively to verify that the sub-modules were fabricated in accordance with the engineering drawings and technical requirements to include those documented in the respective UFSARs for these units. The inspectors also reviewed the final QA walk-down package for Vogtle Unit 3 CIS sub-module CA05-05 to verify that any design deviations identified during final acceptance review were documented in NCRs. The inspectors also verified that the as-built thicknesses of the CIS sub-modules were consistent with the requirements of the UFSARs for Vogtle Unit 3 and V.C. Summer Unit 2.

No findings of significance were identified

c. Conclusions

Based on the limited sample of documents reviewed and sub-modules observed, the inspectors concluded that CB&I LC had established and was implementing adequate processes to ensure that design deviations identified during fabrication were appropriately documented and reconciled by the design authority in accordance with the acceptance criteria of the relevant ITAAC.

13. Safety Conscious Work Environment

a. Inspection Scope

The inspectors evaluated CB&I LC's progress to date in responding to the April 18, 2013 CEL. Specifically, the inspectors reviewed CB&I LC's actions related to: 1) addressing existing SCWE issues, 2) improving the environment for raising concerns, 3) ensuring that individuals are permitted to pursue resolution of issues without fear of retaliation; and 4) improvements in the process for raising safety and quality concerns. The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

b.1 Current Overall Status of Safety Conscious Work Environment

During the inspection, the inspectors interviewed approximately 25 welders/welding operators, two tool room employees, five fitters, seven QC inspectors/NDE technicians, two Welding Engineers and three process engineers and several foremen about their willingness and ability to raise concerns. Most personnel expressed their experience with a change in safety culture since CB&I bought the facility from Shaw, most indicated that they were not afraid of raising safety concerns to their Department Manager above their Foreman/Supervisors and most were not afraid of any retaliatory action. There were, however, still some examples of employees being hesitant to raise concerns. Everyone interviewed understood their safety mission and expressed that their management communicated the importance of safety through daily briefings on safety issues.

Based on the outcome of interviews, the inspectors concluded that most CB&I LC personnel were not afraid of raising safety issues to their management and understood CB&I LC's safety mission.

The site is planning an independent safety culture assessment sometime in the spring of 2014. If conducted effectively, that assessment should provide additional information regarding SCWE at CB&I LC.

The inspectors reviewed CB&I LC's actions regarding SCWE to address existing issues. Specifically, the inspectors reviewed the training that was provided to all employees in the areas of the corrective action program, SCWE and maintaining a positive SCWE, and the employee concerns program (ECP). These training sessions were determined to be adequate in providing information to the employees and promoting raising concerns to both the ECP and the NRC. The training courses were also determined to have been developed and initially implemented by an independent consultant. Additionally, the inspectors reviewed the slides for the all-hands meetings that are held monthly and determined that the meetings provided an opportunity to provide information to employees.

The inspectors reviewed CB&I LC's notification to employees of the chilled work environment to verify that the information was posted publicly for employees. CB&I LC posted the information on the Confirmatory Order and the CEL in a memo from the CB&I President. While the training material was not posted, it was routinely covered in weekly safety meetings and monthly All-Hands Meetings. Additionally, the inspectors located postings of information about the CB&I LC Safety Culture Policy, the CB&I LC SCWE, 10 CFR Part 21, 10 CFR Part 50.55(e), and the CB&I LC procedure for filing an issue under 10 CFR Part 21 and 10 CFR Part 50.55(e).

b.2 Employee Concerns Program

Based on the Confirmatory Order, CB&I has developed corporate procedure CMS-805-01-PR-00001, "Employee Concerns Program," which changes the CB&I LC reporting chain to corporate ECP managers. The CB&I LC ECP manager, responsibilities and processes will remain the same under this new procedure. CB&I LC has also created new office space on the fabrication floor for two ECP investigators. Interviews with the ECP staff confirmed that this additional office space has made the ECP more accessible and visible to the craft organization.

The inspectors reviewed CB&I corporate ECP procedure CMS-805-01-PR-00001, to ensure that it provided adequate information to create an effective ECP for CB&I LC. The inspectors also reviewed the cancelled CB&I ECP procedure NQ-ECP-01-1 to ensure the changes support creating an effective ECP. During the review, the inspectors found that the new corporate procedure was significantly shorter than the cancelled procedure and lacked some of the previous information. The new procedure focused heavily on roles and responsibilities of the leadership and employees and less on the process of reporting an issue to the ECP. The cancelled procedure had a limited list of procedural steps for the process; but much of the information was contained in the "Field Manual," which each site will have in order to develop site specific programs. While the inspectors would have preferred to have instructions for the ECP in the corporate ECP Procedure, the combination of the "Field Manual" and the corporate procedure will be adequate to develop and maintain an effective ECP.

The new corporate CB&I ECP procedure was benchmarked against other nuclear ECP programs. The benchmarking consisted of ECP's review of other nuclear organizations' procedures.

Most of the CB&I LC staff interviewed stated that they would have no issues using the ECP as an avenue for raising concerns. Individuals stated that they received training on using the ECP, and stated that they knew where the ECP offices were located and who the ECP personnel were. The inspectors observed new hire orientation and training on ECP and determined that the training was thorough.

One of the CEL action items was for the site to conduct an independent review of the ECP program. CB&I LC employed the use of two corporate CB&I LC individuals to perform the assessment. The two individuals selected were, at the time, not in a reporting chain with the CB&I LC ECP manager; however, the assessment was conducted after the confirmatory order was issued which required a common corporate ECP for all CB&I employees. The two individuals who conducted the assessment knew of this requirement and had knowledge that with this new structure, they would be the corporate managers to whom the CB&I LC ECP would report.

b.3 Executive Review Board

The inspection team reviewed the Executive Review Board (ERB) corporate procedure and some recent ERB files, and it appeared that the ERB was effective for screening disciplinary actions for potential chilling effects.

b.4 Safety Conscious Work Environment Corrective Actions

The inspectors interviewed personnel from Vogtle and V.C. Summer to obtain their perspective of the progress of CB&I LC's corrective actions. During the discussions, it was found that both companies' perspectives on the corrective actions are similar to those found by the NRC. The environment of the site is improving, but slowly and still contains pockets of craft that have issues with their immediate management. Both companies were awaiting the results of the Spring 2014 Safety Culture Assessment being performed by a third-party company as metrics and proof that the corrective actions from the CEL and Confirmatory Order have improved conditions at CB&I LC.

The inspectors reviewed CAR 2013-438 to determine the adequacy and effectiveness of the action steps identified to solve the condition. CAR 2013-438 was initiated in response to the CEL issued by the NRC to CB&I LC. The inspectors identified some of the areas that were covered through the actions as:

- Improving the ECP program:
 - Add an ECP office to the shop floor to facilitate reporting by employees
 - Ensure that confidentiality is part of the ECP program
 - Conduct pulse surveys of the employees to determine the progress of these corrective actions
 - Modify the reporting structure of the ECP program to ensure corporate ownership rather than ownership within the facility

- Create metrics to track the progress of the improvements created by the corrective actions.
- Developing and implementing training on SCWE, Nuclear Safety Culture, ECP, etc.
- Create and implement the SCWE ICARE card. The ICARE card program provides a method for employees to have input into the industrial safety program by identifying issues. CB&I LC plans to implement a SCWE ICARE care to help track SCWE programs and improvements
- Interaction with customers for assistance and information on perceived improvements:
 - CB&I Power
 - Vogtle
 - V.C. Summer

The inspectors found the corrective actions identified in CAR 2013-438 to be adequate to correct the issues identified in the CEL and will be effective if implemented as described in the CAR. CB&I LC had effectively and adequately communicated the strategy for improving nuclear safety culture and had addressed the concerns expressed by the NRC in the CEL.

The inspectors also reviewed the Root Cause Analysis (RCA) 2013-438 to determine its adequacy and effectiveness in identifying the root causes that lead to the issuance of the CEL. The RCA identified three root causes. These three root causes were: SCWE, oversight, and training. The RCA also identified five contributing causes: motivation, decision making, implementation, corrective action program, and policies and procedures. Management Oversight and Risk Tree (MORT), Barrier Analysis, and Event and Causal Factor Chart were the three techniques used to develop and determine these root causes. The inspectors determined that these techniques were performed adequately and the conclusions were acceptable.

The inspectors also reviewed the actions associated with CAR 2013-594 to determine if the corrective actions were adequate and sufficient to correct the issues identified in the CEL. CAR 2013-594 was written to track the actions identified in the CB&I LC response to the CEL. Some of the actions identified were to track training, describe the CEL contents to employees, coaching and mentoring, briefings, all-hands meetings, and the use of consultants to aid in development of training. The CAR response actions also included an evaluation of SCWE at all CB&I sites, performance of a second SCWE assessment review, and monitoring of the SCWE at CB&I-LC. The inspectors determined that the actions identified in CAR 2013-594 were adequate and sufficient to track and correct issues identified in the CEL.

c. Conclusions

The inspectors concluded that CB&I LC's SCWE program was consistent with the NRC's June 2011 Safety Culture Policy Statement. Based on CB&I LC's progress to date in responding to the April 18, 2013 CEL, actions to address existing SCWE issues, improve the environment for raising concerns, ensuring that individuals are permitted to pursue resolution of issues without fear of retaliation, and improvements in the process for raising safety and quality concerns, the inspectors determined that CB&I LC is adequately implementing its SCWE program. No findings of significance were identified.

14. Entrance and Exit Meetings

On February 3, 2014, the NRC inspection team discussed the scope of the inspection with Mr. Kevin Walsh, Executive Vice President, and other CB&I LC management and technical staff. On February 7, 2014, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Walsh and other CB&I LC management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings.

ATTACHMENT

1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit
Kevin Walsh	Executive Vice President	Chicago Bridge and Iron (CB&I)	X	X
Phil Bagwell	General Manager	CB&I	X	X
Ronald Stevens	Nuclear Safety Officer	CB&I	X	X
Sachin Sing	Supply Chain Manager & Engineering Lead Manager	CB&I	X	X
Robyn Breaux	Human Resources Manager	CB&I	X	X
Brian Gibson	Site Quality Manager	CB&I		X
Barry Ditzler	Production Manager	CB&I		X
Jack Gallagher	Employee Concerns Manager	CB&I	X	X
Ryan Whitford	Director QA/QC	CB&I	X	X
Chris Fordham	Product Manager	CB&I		X
Jeff Lyash*	President, CB&I Power	CB&I		X
Luke Scorsone	President – Fabrication & Manager	CB&I		X
Remi Bonnacazes	President – Fabrication & Manufacturing	CB&I	X	X
Pierre de Jager	Director of Health, Safety, Security, Environment & Quality	CB&I	X	X
Dennis Dreyfus*	Vice President Power Quality	CB&I		X
Dave Jantosik*	Senior Director Nuclear Quality	CB&I		X
Elvin Dumas*	Source Inspector Manager	CB&I		X
Zachary Ashcraft		SCANA		X
Paul Prescott	Team Leader	NRC	X	X
Kerri Kavanagh	Branch Chief	NRC		X
Tony Ponko	Inspector	NRC	X	X
Yamir Diaz-Castillo	Inspector	NRC	X	X
Alain Artayet	Inspector	NRC	X	X
Molly Keefe	Inspector	NRC	X	X
Dori Willis	Inspector	NRC	X	X
Raju Patel	Inspector	NRC	X	X
Richard Laura	Inspector	NRC	X	X
Thomas Kendzia	Inspector	NRC	X	X
Jason Christensen	Inspector	NRC	X	X
Mary Anderson	Trainee	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 40100, "Independent Safety Culture Assessment Followup," dated April 5, 2011.

IP 43002, "Routine Inspections of Nuclear Vendors," dated July 15, 2013.

IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated April 25, 2011.

IP 65001B, "Inspection of the ITACC-Related Welding Program," dated September 25, 2013

IP 95003.02, "Guidance for Conducting an Independent Safety Culture Assessments," dated January 15, 2009

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Type	Description
99901425/2014-201-01	Opened	NON	Criterion XVI
99901425/2014-201-02	Opened	NON	Criterion IV and VII
99901401/2011-202-01	Closed	NON	Criterion II
99901401/2011-202-02	Closed	NON	Criterion II
99901401/2011-202-03	Closed	NON	Criterion III
99901401/2011-202-04	Closed	NON	Criterion IV
99901401/2011-202-05	Closed	NON	Criterion IX
99901401/2011-202-06	Closed	NON	Criterion XII
99901401/2011-202-07	Closed	NON	Criterion XV
99901401/2011-202-09	Closed	NON	Criterion XVI
99901401/2012-201-01	Closed	NON	Criterion XVI

4. INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA

The U.S. Nuclear Regulatory Commission (NRC) inspection team identified the inspections, tests, analyses, and acceptance criteria (ITAAC) listed below related to components being fabricated and tested at CB&I LC. At the time of the inspection, fabrication of AP1000 sub-modules for the Containment Internal Structures (CIS) of Vogtle Electric Generating Station

(VEGP) Unit 3 and V.C. Summer Nuclear Station (VCSNS) Unit 2 was in process. The NRC team reviewed CB&I LC shop drawings, technical documents, and procedures to verify that no conditions potentially impacting ITAAC closure were present. The NRC inspection team also observed CIS sub-modules that had been completed (with the exception of minor nonconforming conditions that had yet to be repaired) to verify that the sub-modules met technical requirements and that any design deviations had been appropriately identified and reconciled through the design authority. The ITAAC cited below are for future use by the NRC staff during the ITAAC closure process; the listing of these ITAAC does not signify that they have been met and/or closed. The NRC inspection team did not identify any findings associated with the ITAAC listed below.

Appendix C to the Combined License for Vogtle Electric Generating Plant Unit 3	No. 760	ITAAC 3.3.00.02a.i.a
Appendix C to the Combined License for Vogtle Electric Generating Plant Unit 3	No. 764	ITAAC 3.3.00.02a.ii.a
Appendix C to the Combined License for Virgil C. Summer Nuclear Station Unit 2	No. 760	ITAAC 3.3.00.02a.i.a
Appendix C to the Combined License for Virgil C. Summer Nuclear Station Unit 2	No. 764	ITAAC 3.3.00.02a.ii.a

5. DOCUMENTS REVIEWED

Policies and Procedures

1. QP-SMS-QAM-01, "CB&I LC's Quality Assurance Manual", Revision 8, dated September 13, 2013
2. Quality Procedure (QP) QA-01, "Qualification of Auditors," Revision 6, dated May 9, 2012
3. QP-QA-218, "Quality Assurance Audits," Revision 0, dated January 30, 2013
4. QP-QA-218a, "Quality Assurance Surveillances," Revision 0, dated January 7, 2013
5. QP-QA-302, "Supplier Qualification and Evaluation," Revision 3, dated July 22, 2013
6. QP-G-07, "Control of Purchased Items," Revision 2, dated June 27, 2012
7. 1-10-79, Revision 3, 5/23/12, using GMAW-P
8. 1-10-212, Revision 1, 11/27/12, using SAW
9. 1-10-321, Revision 2, 1/28/14, using GTAW
10. 10-10-76, Revision 4, 11/28/14, using GMAW-P
11. QP-PC-205a, "Managing Detail Drawings,, Revision 1
12. QP-PC-301, "Implementation of Shop Traveler," Revision 8, dated February 9, 2012
13. QP-PM-206a, "Request for Information (RFI)," Revision 0
14. QP-CA-215, "Control of Nonconforming Items," Revision 0
15. QP-WE-301-301 "Weld Procedure Specification Development and Qualification - AWS," Revision 1
16. QP-PE-303 "Fabrication Change Notice," Revision 0, dated May 24, 2013
17. Draft QP-PE-303 "Fabrication Change Notice," Revision 1, issued for training November 20, 2013 to February 24, 2014
18. QP-EG-303 "Distortion Correction Stress Improvement Technique," Revision 0, dated November 20, 2012
19. QP-DC-206 "Document Control," Revision 2, dated August 19, 2013
20. QP-DC-217 "Quality Assurance Records," Revision 0, dated April 24, 2013
21. QP-G-07 "Control of Purchased Items," Revision 2, dated June 28, 2012

22. QP-QA-01 "Qualification of Auditors," Revision 6, dated May 10, 2012
23. QP-TR-302 "Training Processes," Revision 1, dated January 7, 2013
24. QP-PC-203 "Shop Travelers," Revision 0, dated January 9, 2013
25. QP-PC-205a "Managing Detail Drawing," Revision 1, dated June 10, 2013
26. QP-PC-301 "Implementation of Shop Traveler," Revision 3, dated November 6, 2013
27. QP-DC-303 "Shop Traveler Control," Revision 1, dated September 12, 2013
28. QP-NDE-WP-301 "Certification of NDE Personnel," Revision 0, dated April 22, 2013
29. QP-NDE-PT-01 "Liquid Penetrant Testing Procedure," Revision 9, dated June 29, 2012
30. QP-WE-301 "Weld Procedure Specification Development and Qualification – AWS," Revision 1, dated March 1, 2013
31. QP-DC-301, "Document Review," Revision 0, dated on August 1, 2012
32. QP-CA-215, "Control of Nonconforming Items," Revision 0, dated October 31, 2012
33. QP-CA-216, "Corrective Action Program," Revision 2, dated February 18, 2013
34. QP-PC-06, "Implementation of Shop Travelers," Revision 8, dated February 9, 2012
35. QP-TR 202, "Training," Revision 0, issued November 20, 2012
36. QP-PC-09, "Rework/Repair of Welds and Effective Weld Area," Revision 5, dated June 28, 2013
37. QP-PC-13, "Weld Procedure Specification Joint Configurations for AWS D1.1 and AWS D1.6," Revision 0, dated April 18, 2011
38. QP-NDE-WP-301, "Certification of NDE Personnel," Revision 0, issued April 22, 2013
39. QP-NDE-WP-301-F1, "Nondestructive Examination of Personnel Qualification Record," Revision 0, issued April 22, 2013
40. QP-NDE-WP-301-F2, "Eye Exam Record," Revision 0, issued Revision 0, issued April 22, 2013
41. QP-NDE-WP-301-F3, "NDE Experience Log," Revision 0, issued April 22, 2013
42. QP-NDE-WP-301-F4, "Annual Technical Evaluation," Revision 0, , issued April 22, 2013
43. QP-NDE-WP-301-F5, "NDT Practical Worksheet," Revision 0, issued April 22, 2013
44. QP-NDE-MT-01, "Magnetic Particle Testing," Revision 9, issued on June 28, 2012
45. QP-NDE-PT-01, "Liquid Penetrant Testing Inspection," Revision 9, issued on June 28, 2012
46. QP-NDE-UT-01, "Ultrasonic Inspection of AWS D1.1 Groove Welds," Revision 4, issued on June 28, 2012
47. QP-NDE-RT-01, "Computed Radiographic Procedure, AWS," Revision 4, issued on June 28, 2012
48. QP-NDE-UT-03, "Ultrasonic Thickness (Straight Beam) Measurement," Revision 3, issued on June 28, 2012
49. QP-NDE-UT-302, "Ultrasonic Inspection of AWS D1.6 Weld Grooves," Revision 0, issued on November 18, 2013
50. QP-WE-209a, "Welding Manual AWS," Revision 0, dated March 14, 2013
51. QP-QC-210, "Inspection," Revision 3, dated April 5, 2013
52. QP-QC-306, "Qualification and Certification of Inspection and Test Personnel," Revision 00, dated August 3, 2012
53. QP-QC-310, "Visual Weld Inspection Procedure," Revision 7, dated October 9, 2013
54. QP-NDE-VT-301, "Visual Examination Procedure," Revision 01, issued on June 21, 2013
55. QP-WE-302, "Welder/Operator Qualification –AWS," Revision 2, dated February 26, 2013
56. QP-WE-305, "Welder/Operator Qualification –ASME Section IX," Revision 0, dated August 16, 2012
57. QP-WE-308, "Weld Filler Material Control," Revision 0, dated June 21, 2013

58. QP-WE-309, "Welding Fabrication Procedure –AWS," Revision 1, dated October 30, 2012
59. QP-PE-10, "Development of Shop Travelers," Revision 1, dated June 14, 2012
60. QP-PC-302, "Shop Traveler Development," Revision 3, dated August 19, 2013
61. QP-MT-308, "Lincoln Power Wave S500 Calibration Procedure," Revision 1, dated August 7, 2013
62. QP-WH-303, "Material Handling and Storage," Revision 0, dated January 14, 2012
63. QP-DC-304, "Quality Assurance Records Turnover Packages," Revision 0, dated June 12, 2013
64. Welding Procedure Specification (WPS) 1-1-141, AWS D1.1 Stud Welding A108 to A572-60, using the GMAW-Pulse process," Revision 3, dated October 2, 2013
65. Procedure Qualification Record (PQR) No. 1-1-129, "3/4" Stud Welding by GMAW-Pulse process," Revision 2, dated November 15, 2012
66. WPS 1-1-164, "WPS for GTAW of AWS Group I, I to II, and II to II Materials," Revision 7, dated January 28, 2014
67. PQR 1-1-396, "Manual GTAW of A992 to A992 for PJP Joints," Revision 0, dated March 27, 2013
68. PQR 1-1-397, "Manual GTAW of A992 to A992 for PJP Joints," Revision 0, dated March 27, 2013
69. PQR 1-1-134, "Semi-automatic GMAW-Pulse of Stud Welding ASTM A108 to A572," process in sidehand direction, Revision 02, dated November 15, 2012
70. WPS No. 1-1-39, "AWS D1.1 3/4" Stud Welding A108 to A572-60, semi-automatic process in downward, sidehand and overhead positions," Revision 6, dated March 5, 2013
71. Stud PQR No. 1-1-38, "Semi-automatic 3/4" Stud Welding process," Revision 1, dated January 6, 2011
72. Stud PQR No. 1-1-37, "Semi-automatic 3/4" Stud welding process," Revision 1, dated March 15, 2011
73. Stud PQR No. 1-1-118, "Semi-automatic 3/4" Stud welding process in downward direction," Revision 2, dated May 23, 2012
74. Stud PQR No. 1-1-119, "Semi-automatic 3/4" Stud welding process in sidehand direction," Revision 2, dated May 23, 2012
75. Stud PQR No. 1-1-120, "Semi-automatic 3/4" Stud welding process in overhead direction," Revision 1, dated August 29, 2011
76. Stud PQR No. 1-1-165, "Semi-automatic 3/4" Stud welding process in sidehand direction," Revision 1, dated November 15, 2012
77. Stud PQR No. 1-1-166, "Semi-automatic 3/4" Stud welding process in overhead direction," Revision 1, dated November 15, 2012
78. WPS -1-10-379, "Manual GTAW of Carbon Steel with Duplex Steel," Revision 3, dated August 9, 2013

Procurement Documents

1. Purchase Order (PO) No. 11119-000 to Industrial Testing Laboratory, dated June 6, 2013
2. PO No. 833099-000 to Exelon Power Labs, dated January 22, 2013
3. JM Test Systems, Inc. PO No. 884860 OI, Revision 0, dated January 10, 2014
4. JM Test Systems, Inc. PO No. 879556-000, Revision 0, dated November 20, 2013
5. JM Test Systems, Inc. PO No. 11101 OB, Revision 1, dated April 17, 2013
6. JM Test systems, Inc. PO No. 883102 OI, Revision 0, dated December 20, 2013

7. JM Test Systems, Inc. PO No. 882541 OI, Revision 0, dated December 16, 2013
8. JM Test Systems, Inc. PO No. 886788 OI, Revision 0, dated January 27, 2014
9. Fox Valley Metrology Ltd. PO No. 877096 OI, Revision 0, dated October 29, 2013
10. Fox Valley Metrology Ltd. PO No. 11102 OB, Revision 1, dated September 24, 2013
11. Fox Valley Metrology Ltd. Purchase Order No. 882612 OI, Revision 0, dated December 17, 2013
12. Exelon Powerlabs LLC, Purchase Order No 8333099-000 OP, Revision 2, dated May 1, 2013

Correspondence

1. Letter dated April 18, 2013 from G. M. Tracy, USNRC to P. K. Asherman, President and CEO, CB&I, "Chilled Work Environment for Raising and Addressing Safety Concerns at Chicago Bridge & Iron Fabrication Lake Charles Facility (Formerly Known as Shaw Modular Solutions)," (ADAMS Accession No. ML13092A077)
2. Letter dated May 17, 2013 from P. K. Asherman, President and CEO, CB&I, to G. M. Tracy, USNRC, "Response to April 18, 2013, NRC Letter Regarding Chilled Work Environment at Chicago Bridge & Iron Fabrication Lake Charles Facility," (ADAMS Accession No. ML13149A351)
3. Letter dated December 20, 2013 from L. W. Scorsone, Executive VP, Fabrication Services, CB&I, to M. C. Cheok, USNRC, "Update to CB&I Response Letter Dated May 17, 2013, to April 18, 2013, NRC Letter Regarding Chilled Work Environment at Chicago Bridge & Iron Fabrication Lake Charles Facility," (ADAMS Accession No. ML13357A509)
4. Letter dated April 18, 2013 from R.P. Zimmerman, USNRC to D. Barry, President, CB&I, "Notice of Violation and Imposition of Civil Penalties - \$36,400 (Office of Investigations Report No. 2-2011-047) (ADAMS Accession No. ML13050A597)
5. Letter dated October 19, 2012 from R.P. Zimmerman, USNRC to E. Smith, President, Shaw Power Group, "Apparent Violation of Employee Protection Requirements (Office of Investigations Report No. 2-2011-047) (ADAMS Accession No. ML12270A171)
6. Confirmatory Order for Chicago Bridge and Iron (CB&I) – EA-12-189 (ADAMS Accession No. ML13233A432)
7. CB&I letter, "Potential Part 21 Issue with WPS found nonconformance," Revision 1, dated January 3, 2014 to CB&I Power Group

Previous Inspection Reports

1. NRC Inspection Report No. 99901401/2011-202 and Notice of Nonconformance, dated January 6, 2012 (ADAMS Accession No. ML11354A389)
2. NRC Inspection Report No. 99901401/2012-201 and Notice of Nonconformance, dated October 24, 2012 (ADAMS Accession No. ML12279A119)

Drawings and Specifications

1. APP-GW-S9-100, "AP1000 Structural Modules General Notes – I," REV. 4
2. APP-GW-S9-101, "AP1000 Structural Modules General Notes – VII," REV. 0
3. APP-GW-S9-102, "AP1000 Structural Modules General Notes – II," REV. 3
4. APP-GW-S9-103, "AP1000 Structural Modules General Notes – III," REV.3
5. APP-GW-S9-104, "AP1000 Structural Modules General Notes – IV," REV. 3

6. APP-GW-S9-105, "AP1000 Structural Modules General Notes – V," REV. 3
7. APP-GW-S9-106, "AP1000 Structural Modules General Notes – VI," REV. 1
8. Drawing No. CA01-01-19-310-1902, "Containment Bldg. Area 1 Module CA01," Version 1.0, dated July 15, 2013
9. Drawing No. CA01-01-19-310-1902, "Containment Bldg. Area 1 Module CA01," Version 1.1, dated August 26, 2013
10. Drawing No. CA01-01-19-310-1902, "Containment Bldg. Area 1 Module CA01," Version 1.2, dated December 7, 2013
11. Drawing No. CA01-01-19-310-1902, "Containment Bldg. Area 1 Module CA01," Version 1.3, dated December 9, 2013
12. Drawing No. CA01-01-19-310-1902, "Containment Bldg. Area 1 Module CA01," Version 1.4, dated December 11, 2013
13. Drawing APP-CA01-11-32-300-P5190, Revision 0, dated October 7, 2013
14. Drawing APP-CA01-32-220-3205, "Containment Building Area 2," Revision 0 dated August 12, 2013
15. Weld Map and Alignment Drawing APP-CA01-11-32-220, Revision 0, dated August 12, 2013
16. Weld Map and Alignment Drawing APP-CA01-11-32-120-3214, Revision 0, dated August 5, 2013
17. Weld Map and Alignment Drawing APP-CA01-11-32-110-3206, Revision 0, dated August 12, 2013
18. Drawing APP-R106-13-106-000-10603, Revision 0, dated July 27, 2012

Work Orders and Associated Technical Documents

1. Program Instruction Sheet, PIS-AP1000 Rev 8
2. Walk Down Package, VS2-CA05-05
3. Walk Down Package, SV3-CA01-01
4. QA Reassessment of VS-CA05-05, 430011-QCIR-13-018482 Rev 1
5. Shop Traveler Package for Work Order 2320477
6. Weld Log Data Sheet for Work Order 1908305, dated October 19, 2013
7. Traveler with transfer material traceability for Module No R219 for Vogtle, Job No. 430003, Work Order No. 2827293
8. Traveler and welder log sign-off sheet for Sub-module No. CA01-32-300 for V.C. Summer, Job No. 430001, Work Order No. 1933470-300
9. Traveler and welder log sign-off sheet for Sub-module No. CA01-32-240 for V.C. Summer, Job No. 430001, Work Order No. 1933470-240
10. Traveler and welder log sign-off sheet for Sub-module No. CA01-32-150 for V.C. Summer, Job No. 430011, Work Order No. 1933470-150
11. Traveler and welder log sign-off sheet for Sub-module No. CA01-32-140 for V.C. Summer, Job No. 430011, Work Order No. 1933470-140
12. Traveler and welder sign-off sheet for Module No. KB37, Job No. 430013, Work Order No. 2169867
13. Weld Filler Material Control Slip No. 94628, dated January 13, 2014 issuing 2.08 lbs. of 3/32" ER805-Mil weld wire to welder stencil S1, for welder qualification test to WPS 1-1-164, Revision 7
14. Weld Filler Material Control Slip No. 94633, dated January 13, 2014 issuing 3.61 lbs. of 1/8" ER2209 weld wire to welder stencil VP for welder qualification test to WPS 1-10-379, Revision 3

15. Weld Inspection Report (WIR) No. 430011-WIR-14-016101, Revision 0, dated January 6, 2014 for acceptance of Fit/Tack fillet Weld Id Nos. 120-20-0104, 120-20-0110, and 120-20-0111 on Traveler 1933470 Sequence 40, for Job No. 430011, Module No. CA01-32-120
16. WIR No. 430011-WIR-14-016287, Revision 0, dated January 9, 2014 for acceptance of baffle plate to spacer plate fillet Weld Id Nos. 120-20-0104, 120-20-0110, and 120-20-0111 on Traveler 1933470 Sequence 60, for Job No. 430011, Module No. CA01-32-150
17. WIR No. 430011-WIR-14-016374, Revision 0, dated January 9, 2014 for acceptance of fit tacks on baffle plate to baffle plate fillet Weld Id Nos. 220-20-0018, 220-20-0026, on Traveler 1933470 Sequence 80, for Job No. 430011, Module No. CA01-32-240
18. WIR No. 430011-WIR-14-016266, Revision 0, dated January 8, 2014 for acceptance of final weld out on baffles fillet Weld Id Nos. 220-20-0019, 220-20-0021 and 220-20-0027, on Traveler 1933470 Sequence 60, for Job No. 430011, Module No. CA01-32-240
19. WIR No. 430011-WIR-14-016367, Revision 0, dated January 9, 2014 for acceptance of baffles plate to baffle plate fit tack for fillet Weld Id Nos. 120-20-0107, and 120-20-0116, on Traveler 1933470 Sequence 80, for Job No. 430011, Module No. CA01-32-150
20. WIR No. 430011-WIR-14-016140, Revision 0, dated January 6, 2014 for acceptance of fit/tack connector plates fillet Weld Id Nos. 220-20-0019, 220-20-0021 and 220-20-0027, on Traveler 1933470 Sequence 40, for Job No. 430011, Module No. CA01-32-220

Internal and External Audit Reports

1. Internal Audit Schedule for 2013 and 2014
2. Internal Audit Reports I-13-001, I-13-002, I-13-003, I-13-005, I-13-007, I-13-009, and I-13-010
3. External Audit Schedule for 2013 and 2014
4. External Audit Reports S-11-002, S-12-015, S-12-017, S-13-004, S-13-006, S-13-010, and S-14-002

Surveillance Reports

1. SURV 13-001, SURV 13-014, SURV 13-015, SURV I-13-016, SURV 13-017, SURV 13-018, SURV 13-019, SURV 13-020, SURV 13-021, SURV 13-023

Annual Evaluations

1. JM Test Systems, Inc., dated January 25, 2014
2. Fox Valley Methodology, LTD., dated August 16, 2013

Training Records and Associated Documents

1. Qualification and training records for 3 lead auditors and 5 auditors
2. Record of Assigned Reading for Corrective Action Manager for QP-CA-215-00, "Control of Nonconforming Items" dated October 24, 2012
3. Record of Assigned Reading for Senior Vice President (SVP) Kevin Walsh for QP-QA-215a Revision 0, "10 CFR 21 and 10 CFR 50.55(e) Compliance", dated January 26, 2014

4. TAR-ENG-13-000009 Part 21 Training for Daniel Grannan, dated March 19, 2013
5. TAR-QA-13-000019 Part 21 Training for Penny Flemming, dated March 20, 2013
6. TAR-QA-13-000020 Part 21 Training for 8 employees, dated March 19, 2013
7. TAR-QA-13-000021 Part 21 Training for Group and SVP (Kevin Walsh), dated April 1, 2013
8. CB&I LC Quality Training Matrix, dated February 4, 2014
9. CB&I LC Quality Training Matrix, dated February 5, 2014
10. Welder/Welding Operator Qualification Roster, Revision 181, dated January 10, 2014
11. Welder or Welding Operator Qualification Continuity Log for Viradeth Suriyadeth, last tested December 20, 2013
12. Welder or Welding Operator Qualification Continuity Log for Richard Thomas, last tested August 18, 2010
13. Welder or Welding Operator Qualification Continuity Log for JD Dickinson, last tested April 10, 2012
14. Welder or Welding Operator Qualification Continuity Log for Wilfred Watson, last tested December 16, 2013
15. Welder or Welding Operator Qualification Continuity Log for Kevin Watson, last tested January 9, 2014
16. Welder or Welding Operator Qualification Continuity Log for Randall Gilchrist, last tested December 4, 2013
17. Welder or Welding Operator Qualification Continuity Log for Robert Guerra, last tested December 20, 2013
18. Welder or Welding Operator Qualification Continuity Log for Barrett Henry, last tested December 27, 2013
19. Welder or Welding Operator Qualification Continuity Log for Heath Martin date tested September 16, 2013
20. Welder or Welding Operator Qualification Test Record (D1.6) for Derrick South for WPS 1-10-79 for 2G welding, dated June 11, 2012
21. Welder or Welding Operator Qualification D1.6 for Heath Martin for WPS 1-10-379 rev 3, for 3G welding, dated January 17, 2014
22. Welder or Welding Operator Qualification D1.6 for Heath Martin for WPS 1-10-379 rev 3, for 4G welding, dated January 17, 2014
23. Welder or Welding Operator Qualification Test Record (D1.6) for Derrick South for WPS 1-10-79 for 3G welding, dated June 11, 2012
24. Welder or Welding Operator Qualification Test Record (D1.4) for John J. Smithson dated April 6, 2012
25. Procedure Qualification Record (PQR) 1-10-250, Revision 0, dated May 7, 2012
26. PQR 1-10-78, Revision 2, dated May 7, 2012
27. PQR 1-10-81, Revision 2, dated May 7, 2012
28. PQR 1-10-250, Revision 0, dated May 7, 2012
29. PQR 1-1-107, Revision 1B, dated August 29, 2011
30. PQR 1-1-341-1, Revision 0, dated September 6, 2012
31. PQR 1-1-134-2, Revision 0, dated September 6, 2012
32. PQR 1-1-343, Revision 0, dated August 21, 2012
33. PQR 1-1-343-2, Revision 0, dated August 21, 2012
34. PQR 1-1-359-1, Revision 0, dated October 29, 2012
35. PQR 1-1-360-1, Revision 0, dated October 29, 2012
36. PQR 1-1-361-1, Revision 0, dated October 29, 2012
37. PQR 1-1-66, Revision 1, dated November 22, 2011
38. PQR 1-1-89, Revision 2, dated October 23, 2012

39. Welder or Welding Operator Qualification Continuity Log (WQCL) for welder Id No. VR, last tested to GMAW-Pulse and FCAW process updated on November 11, 2013 and October 26, 2013 respectively
40. WQCL for welder Id No. TX , qualified in GMAW-Pulse and FCAW process last tested on December 21, 2013
41. WQCL for welder Id No. QT , qualified in FCAW process, last tested on November 2, 2013
42. WQCL for welder Id No. YT, qualified in GMAW-Pulse, FCAW and GTAW process, last tested on September 28, 2013, and October 31, 2013 respectively
43. WQCL for welder Id No. NE, qualified in Stud and FCAW process last tested on August 26, 2013 and November 1, 2013 respectively
44. Welder or Welding Operator Qualification (WQ) form QP-WE-302-F-1 for welder Id No. VR qualified in GMAW-Pulse process to WPS 1-1-107, Revision 07 per AWS D1.1 on June 3, 2013
45. WQ form QP-WE-302-F-1 for welder Id No. LN qualified in manual GTAW process to WPS 1-1-164, Revision 02, to AWS D1.1 on August 16, 2012
46. WQ form QP-WE-302-F-1 for welder Id No. TX, qualified in GMAW-Pulse process to WPS 1-1-107, Revision 05, to AWS D1.1 on May 14, 2013
47. WQ form QP-WE-302-F-1 for welder Id No. NE, qualified in FCAW process to WPS 1-1-500, Revision 0, to AWS D1.1 on November 9, 2013
48. WQ form QP-WE-302-F-4 for welder Id No. YT, qualified in GMAW-Pulse process to WPS 1-1-352, Revision 1, to AWS D1.6 on September 11, 2013
49. WQ form QP-WE-302-F-4 for welder Id No. QT, qualified in GMAW-Pulse process to WPS 1-1-352, Revision 1, to AWS D1.6 on April 25, 2013
50. Form QP-WE-301-F-7, "Procedure Qualification Test Traveler," for PQR No. 1-1-532 for manual GTAW process dated February 04, 2014
51. CB&I GTAW Testing Report dated February 05, 2014 for 12 welders qualified to manual GTAW process to WPS 1-10-379 Revision 03 and WPS 1-1-164, Revision 07

Calibration and Inspection Related Records

1. JM Test Systems, Inc A2LA Calibration Certification Number 1995.01, dated November 29, 2012
2. Fox Valley Metrology, LTD, Certificate of Accreditation Certification Number ACT-1272, dated May 22, 2013
3. Fox Valley Metrology, LTD Scope of Accreditation to ISO/IEC 17025:2005 & ANSI/NCSL Z540-1-1994, dated August 9, 2013
4. JM Test Systems, Inc Certificate of Calibration Serial Number 9241, dated March 30, 2010
5. Parker Research Corporation Certification Serial Number 9241, dated March 15, 2010
6. Report No. MT-13-002626, Magnetic Particle Examination Report Serial Number 9241, dated May 21, 2013
7. Receipt Inspection Report for PO 877096, dated November 21, 2013
8. Fox Valley Metrology, Certificate of Compliance for PO 11102 OB and 877096 OI, dated November 18, 2013
9. Fox Valley Metrology, Certificate of Calibration for Serial Number N39626 (ID MTE-012A), dated November 20, 2013
10. CGI Service Dedication Approval for PO 877096 and 11102 OB for MTE-012A, dated November 20, 2013
11. CGI Service Dedication Plan No CGDP 12-000001/R2, dated June 26, 2013

12. ACLASS Surveillance Assessment Report to Fox Valley Metrology, LTD, dated April 22, 2012
13. Full Section Testing of Rebar Anchorage Samples for PQR 1-1-89 Letter, dated August 5
14. Ultrasonic Test Report (UTR) No. 430001-UT-13-001909, Revision 0, dated May 31, 2013, acceptance of CJP with backing bar to AWS D1.1 for Module CA05-03, Job No. 430001 on Traveler 1926471 Sequence 80
15. UTR No. 430011-UT-12-001235, Revision 0, dated September 14, 2012, acceptance of 10% UT on CJP weld #100-30-0001 to AWS D1.6, for Module CA05-01-100, on Traveler 2550579 Sequence No.260
16. Penetrant Test Report 430001-PT-12-00-115, Revision 0, dated September 13, 2012, acceptance of weld removal base metal prep weld #'s: 100-20-0003A, 100-20-0003B, 100-20-0006A, 100-20-0006B, 100-20-0007A, and 100-20-0007B to AWS D1.6, for Module CA05-01-100, Traveler 2542326, Sequence 340
17. Form QP-MT-304-F-1, "Lincoln Power Wave S350 Calibration Form," for Welding Machine No. 23, calibrated on August 2, 2013, due February 2, 2014
18. Form QP-MT-304-F-1 for Welding Machine No. 24, calibrated on November 15, 2013, due May 15, 2014
19. Form QP-MT-304-F-1, for Welding Machine No. 36, calibrated on January 23, 2014, due July 23, 2014
20. Form QP-MT-304-F-1, for Welding Machine No. 36, calibrated on January 23, 2014, due July 23, 2014
21. Form QP-MT-304-F-1, for Welding Machine No. 44, calibrated on January 23, 2014, due July 23, 2014
22. Form QP-MT-304-F-1, for Welding Machine No. 47, calibrated on January 23, 2014, due July 23, 2014
23. Form QP-MT-304-F-1, for Welding Machine No. 59, calibrated on January 23, 2014, due July 23, 2014
24. Form QP-MT-304-F-1, for Welding Machine No. 95, calibrated on January 23, 2014, due July 23, 2014
25. Calibration Certificate for UT Reference IIW Type I Block, S/N 20222 calibration date April 19, 2012, due April 19, 2017
26. Excelon Power Labs Calibration Certificate for Light Meter – S/N 121201435 calibration date October 31, 2013 due October 31, 2014
27. GE Inspection Technologies Calibration Certificate for UT meter S/N USMGU12116126 calibration date October 24, 2013, due prior to use
28. Magnaflux Certificate of Material Report for Spotcheck Developer SKD-02, batch No. 13f18K, dated July 10, 2013
29. Magnaflux Certificate of Material Report for Spotcheck Penetrant SKL-SP2, batch No. 12L04K, dated November 13, 2012
30. Magnaflux Certificate of Material Report for Spotcheck Cleaner SK-S, batch No. 13K12K dated October 30, 2013
31. Flawtech Flaw Location and NDT Report for Specimen No. UT-4934 for UT personnel qualification testing dated July 22, 2009

Nonconformance Reports

NCR 13-001158, 001162, 001205, 001501, 001784, 001889, 001832, 001913, 001940, 001940, 001925, 001935, 002010, 002147, 002261

Corrective Action Reports

2011

CAR 2011-402, 439, 440, 446, 448, 450, 452, 455, 456, 460, 484, 485

2012

CAR 2012-0054, 0076, 0243, 0250, 0437, 0534, 0542, 0543, 0559, 0566, 0567, 0617, 0649, 0650, 0690, 0703, 0820, 0856, 0857, 0921, 0924, 0938, 0991, 0992, 0993, 0941, 0994, 1000, 1037, 1040, 1057, 1129, 1145, 1161, 1078, 1081, 1190, 1208, 1231, 1234, 1258, 1253, 1294, 1341, 1343, 1365, 1397, 1410, 1431, 1469

2013

CAR 2013-0013, 0021, 0036, 0051, 0058, 0064, 0065, 0099, 0111, 0128, 0152, 0223, 0235, 0254, 0266, 0315, 0319, 0330, 0351, 0353, 0356, 0366, 0393, 0412, 0420, 0438, 0446, 0463, 0469, 0487, 0488, 0489, 0490, 0491, 0492, 0493, 0494, 0495, 0496, 0498, 0499, 0500, 0501, 0502, 0503, 0504, 0507, 0512, 0513, 0530, 0531, 0533, 0534, 0535, 0536, 0544, 0558, 0575, 0579, 0587, 0594, 0635, 0644, 0657, 0697, 0739, 0759, 0758, 0776, 0851, 0897, 0914, 0916, 0926, 0964, 0993, 1027, 1060, 1074, 1090, 1127, 1035, 1148, 1161, 1249, 1296, 1299, 1319, 1338, 1340, 1341, 1343, 1344, 1345, 1351, 1352, 1353, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1438, 1461, 1507, 1547, 1578, 1607, 1608, 1615, 1625, 1631, 1641, 1645, 1657, 1669, 1692, 1696,

2014

CAR 2014-0004, 0011, 0013, 0022, 0037, 0040, 0069, 0092, 0097, 0125, 126, 127, 128, 129, 130, 0135, 0136, 0162

Corrective Action Reports Generated During the NRC Inspection

CAR 2014-0123, 0125, 0128, 0135, 0136, 0138, 0156

Safety Conscious Work Environment Related Documents

1. Slides: Inspiration for Kaizen Blitz
2. Employee Concerns Program- Lake Charles Metrics, 2014
3. CB&I Pulse Survey Results
4. Nuclear Safety Advisory Board (NSAB) Quarterly Meeting minutes: June 19; August 20 and October 8, 2013.
5. NQ-SCWE-01: "Executive Review Board," Revision 0, July, 22, 2013.
6. CMS-805-00-PR-10000: "Executive Review Board," DRAFT
7. CMS-805-00-FM-10001: "Executive Review Board Single Person Layoff Event Form," DRAFT
8. CMS-805-00-FM10002: "Executive Review Board Confidentiality Agreement Form," DRAFT

9. CMS-805-00-FM-10001: "Executive Review Board Proposed Adverse Action Review Form," DRAFT
10. CMS-805-00-FM-10004: "Executive Review Board Chilling Effect Mitigation Plan," DRAFT
11. CMS-805-00-FM-10005: "Executive Review Board Record of Action," DRAFT
12. CMS-805-01-PR-00001: "Employee Concerns Program," Revision 1, December 17, 2013.
13. CMS-805-01-WI-00002: "ECP Qualification Card," DRAFT
14. CMS-500-03-PR-00003: "Performance Management," Revision 1, March 20, 2013.
15. Nuclear Safety Advisory Board Charter- DRAFT
16. CB&I Lake Charles Nuclear Safety Advisory Board: DRAFT version 7.28.2013 rev. 02
17. Nuclear Safety Advisory Board presentation slides: August 20, 2013
18. DRAFT Gap Analysis for Prior CB&I Safety Culture/SCWE Training
19. January 15, 2014 All Hands Meeting slides

Miscellaneous

1. Compensatory Measure Plan for QP-PE-303, "Fabrication Change Notice" Revision 0, "Fabrication Change Notice", dated January 21, 2013
2. SMS Job Title Master Matrix, Revision 00c, dated January 26, 2013
3. Procedure Status for Stop Work, dated January 15, 2014