

March 19, 2013

Greg Orff, General Manager  
Cives Steel Company  
Southern Division  
102 Airport Road  
Thomasville, GA 31757

SUBJECT: NRC INSPECTION REPORT NO. 99901419/2012-201, NOTICE OF VIOLATION,  
AND NOTICE OF NONCONFORMANCE

Dear Mr. Orff:

The U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Cives Steel Company (hereafter referred to as Cives), Southern Division facility in Thomasville, GA, from December 10–14, 2012. The enclosed inspection report documents the inspection results, which were discussed with you and other members of your staff on December 14, 2012. On January 24, 2013, a final exit meeting was held by teleconference where the inspectors presented the final results to you and other staff members.

This limited-scope inspection assessed Cives's compliance with the 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 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 evaluated the implementation of Cives's quality assurance (QA) program; with a focus on fabrication of concrete embedments for AP1000 reactor plants at Vogtle Electric Generating Plant, Units 3 and 4, and Virgil C. Summer Nuclear Station, Units 2 and 3. The enclosed report presents the results of this inspection which resulted in the issuance of one Notice of Violation (Notice) and seven Notice(s) of Nonconformance (NON). This NRC inspection report does not constitute the NRC's endorsement of your overall QA or 10 CFR Part 21 programs.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The NRC evaluated the violation in accordance with its enforcement policy, which is available on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>.

The enclosed Notice cites the violation, and the subject inspection report details the circumstances surrounding it. The violation is cited because Cives failed to establish an adequate process to evaluate deviations and failures to comply associated with substantial safety hazards.

You are required to respond to this letter and to follow the instructions specified in the enclosed Notice when preparing your response. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC's review of your response to the Notice also will determine if further enforcement action is necessary to

ensure compliance with regulatory requirements. In addition, the NRC inspection team found that the implementation of your QA program failed to meet certain NRC requirements imposed on you by your customers or NRC licensees. The enclosed NON cites these nonconformances, and the enclosed report describes the circumstances surrounding them.

The NRC is concerned with the number of findings based on this limited scope inspection. Although Cives had a QA program meeting the requirements of Appendix B to 10 CFR 50, NRC inspectors identified examples of Cives's inadequate implementation of a quality assurance program in several areas. These examples indicate that Cives did not (1) adequately implement appropriate corrective actions, (2) provide the QA Manager position with independence from cost and schedule, (3) implement adequate procedures, and (4) provide formal indoctrination and training to personnel performing activities affecting quality.

Please provide a written explanation or statement within 30 days of this letter in accordance with the instructions specified in the enclosed NON. The NRC is requesting that in the response to the NONs, Cives documents the extent of condition on the implementation of your quality assurance program and ensure all issues are identified and adequately addressed in your corrective actions programs. The NRC will consider extending the response time if you show good cause to do so.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice and Procedure," 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 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 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/

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

ensure compliance with regulatory requirements. In addition, the NRC inspection team found that the implementation of your QA program failed to meet certain NRC requirements imposed on you by your customers or NRC licensees. The enclosed NON cites these nonconformances, and the enclosed report describes the circumstances surrounding them.

The NRC is concerned with the number of findings based on this limited scope inspection. Although Cives had a QA program meeting the requirements of Appendix B to 10 CFR 50, NRC inspectors identified examples of Cives's inadequate implementation of a quality assurance program in several areas. These examples indicate that Cives did not (1) adequately implement appropriate corrective actions, (2) provide the QA Manager position with independence from cost and schedule, (3) implement adequate procedures, and (4) provide formal indoctrination and training to personnel performing activities affecting quality.

Please provide a written explanation or statement within 30 days of this letter in accordance with the instructions specified in the enclosed NON. The NRC is requesting that in the response to the NONs, Cives documents the extent of condition on the implementation of your quality assurance program and ensure all issues are identified and adequately addressed in your corrective actions programs. The NRC will consider extending the response time if you show good cause to do so.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice and Procedure," 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 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 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/*

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

Docket No. 99901419

**DISTRIBUTION:**

ASakadales RidsNroDcipCEVB  
RidsNroDcip gorff@cives.com

RidsNroDcipCMVB

RidsNroDcipCQAB

**ADAMS Accession No.:** ML13042A397

\*concurring via email

NRC-001

<b>OFFICE</b>	NRO/DCIP/CMVB	NRO/DCIP/CMVB	NRO/DCIP/CMVB	NRO/DE/SEB1
<b>NAME</b>	JOrtega	BClarke	SCrane	MValentin
<b>DATE</b>	02/25/2013	02/26/2013	02/18/2013	02/25/2013
<b>OFFICE</b>	RII/DCI/CIB3	RII/EICS	NRO/DCIP/CAEB:BC	NRO/DCIP/CMVB:BC
<b>NAME</b>	DHarmon via email	AAllen	TFrye	ERoach
<b>DATE</b>	02/11/2013	02/26/2013	02/28/2013	03/19/2013

**OFFICIAL RECORD COPY**

## NOTICE OF VIOLATION

Cives Steel Company  
Southern Division  
102 Airport Road  
Thomasville, GA 31757

Docket No. 99901419  
Report No. 2012-201

During a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at Cives Steel Company (hereafter referred to as Cives), Southern Division, in Thomasville, GA, from December 10–14, 2012, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below as follows:

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 21.21, “Notification of failure to comply or existence of a defect and its evaluation,” of paragraph 21.21(a)(2), states, in part, that “...if an evaluation of an identified deviation or failure to comply potentially associated with a substantial safety hazard cannot be completed within 60 days from discovery of the deviation or failure to comply, an interim report is prepared and submitted to the Commission through a director or responsible officer or designated person as discussed in § 21.21(d)(5). The interim report should describe the deviation or failure to comply that is being evaluated and should also state when the evaluation will be completed. This interim report must be submitted in writing within 60 days of discovery of the deviation or failure to comply.”

Paragraph 21.21(b), states that “If the deviation or failure to comply is discovered by a supplier of basic components, or services associated with basic components, and the supplier determines that it does not have the capability to perform the evaluation to determine if a defect exists, then the supplier must inform the purchasers or affected licensees within five working days of this determination so that the purchasers or affected licensees may evaluate the deviation or failure to comply, pursuant to § 21.21(a).”

10 CFR Section 21.51, “Maintenance and inspection of records” states, in part, that “Each individual, corporation, partnership, dedicating entity, or other entity subject to 10 CFR Part 21 shall prepare and maintain records necessary to accomplish the purpose of 10 CFR Part 21, specifically (1) retain evaluations of all deviations and failures to comply for a minimum of five years after the date of the evaluation; (2) retain any notifications sent to purchasers and affected licensees for a minimum of five years after the date of the notification; and (3) retain a record of the purchasers of basic components for 10 years after delivery of the basic component or service associated with a basic component.

Contrary to the above, as of December 14, 2012, Cives failed to adopt appropriate procedures to evaluate deviations and failures to comply associated with substantial safety hazards. Specifically, Cives’s Quality Procedure 15-02, “Reporting of Defects and Noncompliance,” Revision 2, dated September 19, 2012, (1) does not have controls in place to require the submittal of interim reports, (2) has incorrect reporting timelines, (3) does not require notification to all purchasers within 5 working days that a deviation exists when Cives does not have the capability to perform the evaluation to determine if a defect exists, and (4) has incorrect record retention requirements.

This issue has been identified as Violation 99901419-2012-201-01.

This is a Severity Level IV violation (Section 6.9.d of the NRC Enforcement Policy).

Pursuant to provisions of 10 CFR 2.201, "Notice of Violation," Cives is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Chief, Construction Mechanical Vendor Branch, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this Notice of Violation. This reply should be clearly marked as a "Reply to a Notice of Violation" and should include (1) the reason for the violation or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence if the correspondence adequately addresses the required response. Where good cause is shown, the NRC will consider extending the response time.

If you contest this enforcement action, provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room and from the NRC's Agencywide Documents Access and Management System, which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, it should not include any personal privacy, proprietary, or Safeguards Information, to the extent possible, 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 will 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."

In accordance with 10 CFR 19.11, "Posting of Notices to Workers," you may be required to post this notice within two working days of receipt.

Dated this 19th of March 2013.

## NOTICE OF NONCONFORMANCE

Cives Steel Company  
Southern Division  
102 Airport Road  
Thomasville, GA 31757

Docket No. 99901419  
Report No. 2012-201

Based on the results of an unannounced U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Cives Steel Company (hereafter referred to as Cives), Southern Division, in Thomasville, GA, from December 10–14, 2012, it appears that certain activities were not conducted in accordance with NRC requirements that were contractually imposed on Cives by its customers or NRC licensees:

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

Section 5.16, “Corrective Action,” of the “Cives Steel Company Quality Assurance Manual for the Fabrication of Structural Steel for Nuclear Facilities Meeting the Intent of NQA-1 and 10 CFR 50 Appendix B,” Revision 3, dated September 17, 2012, (hereafter referred to as the QAM) states, in part, that, “Conditions adverse to quality shall be identified promptly and corrected as soon as practicable. In the case of a significant condition adverse to quality, the cause of the condition shall be determined and corrective action taken to preclude recurrence. The identification, cause, and corrective action for significant conditions adverse to quality shall be documented and reported to appropriate levels of management. Completion of corrective actions shall be verified.”

Paragraphs 3.4 and 3.5 of Section 3, “Requesting and Processing CARs (applies also to preventive actions),” of Cives’s Quality Procedure (QP) 16-01, “Corrective and Preventive Action,” Revision 1, dated February 1, 2010, states in, part, that, “Upon receiving a request for corrective action, the responsible manager investigates the cause of the problem that initiated the request, proposes a corrective action to be taken, and indicates the date by which the corrective action will be fully implemented. The party authorizing the request (Quality Assurance or President/General Manager) reviews and approves the proposed corrective action...on, or immediately after, the due date for implementation of a corrective action, Quality Assurance or the President/General Manager follows up with an inquiry or an audit to determine if the corrective action has been implemented and if it is effective. When there is objective evidence that the corrective action is effective, the CAR can be closed out. If more work is needed to fully implement the action, a new follow-up date is agreed upon.”

Contrary to the above, as of December 14, 2012, Cives failed to develop and maintain a corrective action program to ensure that conditions adverse to quality, such as failures,

malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances were promptly identified and corrected to preclude repetition. Specifically, the NRC inspection team identified that Cives's corrective actions program failed to preclude repetition of findings that had been previously processed, corrected, and closed as addressed by Cives response to the findings in Shaw Nuclear Service Inc.'s Audits V2011-28 and V2012-22. The NRC inspection team identified repetitive findings related to the following:

- lack of control of calibration of welding machines as discussed in Nonconformance 99901419/2012-201-04
- procedures on the implementation of QAM requirements do not contain adequate details or acceptance criteria to ensure consistency in implementation by Cives's staff as discussed in Nonconformance 99901419/2012-201-06
- lack of document control as discussed in Nonconformance 99901419/2012-201-08

These issues have been identified as Nonconformance 99901419/2012-201-02.

- B. Criterion X, "Inspection," of Appendix B to 10 CFR Part 50, states, in part, that, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity...Examinations, measurements, or tests of material or products processed shall be performed for each work operation where necessary to assure quality."

Section 5.10, "Inspection," of the QAM states in part that, "Inspections that are required to verify conformance of an item or activities to specified requirements or continued acceptability of items in service shall be planned and executed."

Cives's Standard Operating Procedure (SOP) QA 10-02-1, "In-process Inspection," Revision 1, dated April 28, 2010, and SOP QA 10-03-2, "Visual Examination," Revision 1, dated April 28, 2010, require quality control (QC) inspectors to document all inspections, including in-process inspections before welding that verify material preparation to determine whether the material identification system is being maintained; whether the material meets the proper size and shape requirements of the cutting sheets and drawings; and whether the material meets variation tolerances of the American Welding Society, American Institute of Steel Construction, American Society for Testing and Materials, and job specifications.

Cives's QP 14-01, "Inspection, Test, and Operating Status," Revision 0, dated July 22, 2009, states, in part, that, "the authority to release finished items is [the] responsibility of the QC inspector who performs the final inspection. The sticker or tag indicating that the items have passed the final inspection provides the identification [that] the items are released for customer approval."

Contrary to the above, as of December 14, 2012, Cives failed to establish and implement a program for inspection of activities affecting quality to verify conformance with the documented instructions, procedures, and drawings. Specifically:

- (1) Cives failed to adequately implement its inspection program to inspect stud welds on embedment APP-12S02-CE-PW908 for Vogtle Electric Generating Plant (Vogtle), Unit 3, which connects to stairs in Auxiliary Building Area 1, Wall P,

west face, at an elevation of 66 feet 6 inches. Cives failed to identify a stud that did not show a full 360-degree flash, as required by American Welding Society Code D1.1-2000, "Structural Welding Code-Steel," and Cives's SOP QA 05-01-5, "Stud Welding," Revision 2, dated December 10, 2011.

- (2) Cives placed two embedments in the "complete status ready for shipment." However, the tags did not contain required identification of the QC inspector who approved the completion of the final inspection as required by procedure QP 14-01.
- (3) Cives failed to perform and document in-process inspections before welding in accordance with the inspection fabrication plan for the Vogtle and Virgil C. Summer Nuclear Station (V.C. Summer) projects, as required by SOP QA 10-02-1 and SOP QA 10-03-2.
- (4) Cives failed to test at least 1 out of every 100 studs welded by each operator as required by Westinghouse Specification APP-SS01-Z0-003, Revision 3, dated March 3, 2011, and the inspection plan entitled, "Inspection Fabrication Plan No. 5200-01 for Embeds, Items, and Anchor Bolts," Revision 1, dated December 14, 2011.

These issues have been identified as Nonconformance 99901419/2012-201-03.

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

Section 5.9.2.1, "Special Processes," of the QAM states, in part, that, "Special processes shall be controlled by instructions, procedures, drawings, checklist, or other appropriate means. Special process instructions shall include or reference procedure, personnel, and equipment qualification requirements. Conditions necessary for accomplishment of the process shall be included. These conditions shall include proper equipment, controlled parameters of the process, specified environment, and calibration requirements."

Paragraph 4.1 of Cives's SOP QA 05-01-2, "Standard Welding," Revision 3, dated January 4, 2012, states, in part, that, "All welding machines shall be calibrated in accordance with SOP QA 12-01-6, 'Certification of Welding Machines.'"

Paragraph 5.2.3 of Cives's SOP QA 12-01-6, "Certification of Welding Machines," Revision 1, dated April 28, 2010, states, in part, that, "A self-adhering sticker shall be placed on each piece of equipment and shall indicate the date of certification."

Contrary to the above, as of December 14, 2012, Cives failed to properly control welding equipment. Specifically:

- (1) Cives failed to calibrate machines used for tack welding.



- (2) Cives failed to establish guidance under SOP QA 12-01-6 to document the process used for the calibration of stud welding machines.
- (3) Cives failed to indicate the calibration status of welding machines used for stud welding with a self-adhering sticker.

These issues have been identified as Nonconformance 99901419/2012-201-04.

- D. Criterion I, "Organization," of Appendix B to 10 CFR Part 50 states, in part, that, "The authority and duties of persons and organizations performing activities affecting the safety-related functions of structures, systems, and components shall be clearly established and delineated in writing...The persons and organizations performing quality assurance functions shall have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions; and to verify implementation of solutions."

Section 5.1.2, "Structure and Responsibility," of the QAM states, in part, that, "The organizational structure and responsibility assignments shall be such that:...b) quality is achieved and maintained by those assigned responsibility for performing work; c) quality achievement [are] verified by those not directly responsible for performing the work. Those responsible for verifying quality shall have: a) sufficient authority, direct access to management, organizational freedom, and access to work to perform their function; b) authority to identify quality problems; to initiate, recommend or provide solutions; c) and to verify implementation of solutions." Further, the QAM states that, "Such persons and organizations performing quality assurance functions shall report to a management level such that this required authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety consideration, are provided."

Section IV, "Responsibilities," of Cives's QP 01-01, "Quality Planning," Revision 1, dated March 15, 2010, states, in part, that, "[the] Quality Assurance Manager reports directly to the Divisional President/General Manager, thereby insuring direct access to management and organizational freedom. He maintains and controls the documentation associated with the Quality Assurance Manual (Tier 1), the associated Quality Procedures (Tier 2), the Standard Operation Procedures (Tier 3), and the associated Forms (Tier 4) at the Divisional Level. He has the authority to identify quality problems; to initiate, recommend or provide solutions; and to verify implementation of solutions." Also, Section IV of the procedure further states that, "Quality Control inspectors report directly to the Quality Assurance Manager, maintaining a separation of Quality Assurance personnel and production personnel. They insure the desired quality through checking, inspecting and testing." Further, the procedure states that, "[the] Project Manager reports to the Divisional President/General Manager. He is responsible for all commercial aspects, including the required quality, of the project."

Contrary to the above, as of December 14, 2012, Cives failed to adequately implement its process to ensure that the persons performing quality assurance functions have the authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety considerations. Specifically, Cives management assigned the QA Manager to act as the QC Lead Inspector and approver of the inspection documents while also having ultimate responsibility for the QA functions associated with those inspection activities. Additionally, Cives used the Project Manager

responsible for the nuclear projects to work as a temporary QA Manager to approve work performed by the QA Manager while this individual was still responsible for the cost and schedule of nuclear projects.

This issue has been identified as Nonconformance 99901419/2012-201-05.

- E. Criterion V, "Instructions, Procedures, and Drawings," of Appendix B to 10 CFR Part 50 states, in part, that, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

Section 5.5, "Instructions, Procedures, and Drawings," of the QAM states, in part, that, "Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures, or drawings."

Cives QP 05-01, "Work Instructions," Revision 0, dated July 22, 2009, states, in part, that, "Work instructions are required for special processes, i.e. those processes the results of which cannot be fully verified by subsequent nondestructive inspections (such as welding, blasting, painting, bolting, cleaning, etc.)...for processes that are critical to the safety, fit, and function of the service...[and for] processes where various process parameters must be setup and/or maintained at specific levels; where operators are required to program process equipment; where tool changes are involved; or where, for any other reason, operation of the process is fairly complex and requires specific process setup instructions and/or operating data."

Contrary to the above, as of December 14, 2012, Cives failed to prescribe and perform activities affecting quality in accordance with documented instructions, procedures, or drawings. Specifically:

- (1) Cives failed to establish procedures for performing plasma cutting that require various process parameters to be set up and maintained.
- (2) Cives failed to establish procedures for creating 'cut sheets' to maintain material traceability between the material and the specific purchase orders that were used in its requisition, its heat, and the parts in which it was used.
- (3) Cives failed to establish procedures for the electronic production software used to document the completion of key processes and inspections.
- (4) Cives failed to establish procedures to comply with Westinghouse Specification APP-G1-SX-001, "AP1000 Painting of Shop Fabricated Steel," Revision 4, dated April 8, 2011. Examples include the preparation and handling of blasted surfaces, the preparation and handling of any surfaces that have "turned" (oxidized) or that have become wet or stained after an initial blasting, and the verification of blast media and compressed air for contaminants.

These issues have been identified as Nonconformance 99901419/2012-201-06.

- F. Criterion II, "Quality Assurance Program," of Appendix B to 10 CFR Part 50 states, in part, that, "The program shall provide for indoctrination and training of personnel

performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained.”

Section 5.2.2, “Indoctrination and Training,” of the QAM states, in part, that, “The need for a formal training program for personnel performing or managing activities affecting quality shall be determined. Training shall be provided, if needed, to achieve initial proficiency, maintain proficiency, and adapt to changes in technology, methods, or job responsibilities.”

Paragraph 1.3, of Cives’s QP 02-02, “Indoctrination and Training,” Revision 1, dated February 1, 2012, states, in part, that, “Departmental Managers are responsible for identifying training needs in their departments and for establishing departmental training programs.” Paragraph 1.4, further states that, “The Quality Assurance department is responsible for identifying company-wide training needs concerning the quality system. These needs will be coordinated with the departmental managers to efficiently train personnel to the quality system.”

Contrary to the above, as of December 14, 2012, Cives failed to develop and implement a formal indoctrination and training program for personnel performing activities affecting quality. Specifically, Cives’s departmental managers did not develop and implement a program to identify training needs to meet the requirements of the QA program. Also, Cives QA Manager failed to coordinate with the departmental managers to identify additional training specific to their department to ensure that personnel performing activities affecting quality achieved and maintained suitable proficiency.

This issue has been identified as Nonconformance 99901419/2012-201-07.

- G. Criterion VI, “Document Control,” of Appendix B to 10 CFR Part 50, states, in part, that, “Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. These measures shall assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed.”

Section 5.6, “Document Control,” of the QAM states, in part, that, “Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. These measures shall assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and are distributed and used at the location where the prescribed activity is performed.”

Contrary to the above, as of December 14, 2012, Cives failed to control the issuance of documents that prescribe activities affecting quality and failed to ensure that those documents were distributed to and used at the location at which the prescribed activity is performed. Specifically, Cives revised its QAM and six quality procedures in September 2012, but failed to incorporate them into the controlled copies and distribute them to the locations where the prescribed activities were performed.

This issue has been identified as Nonconformance 99901419/2012-201-08.

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 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 taken and the results achieved; (3) the corrective steps that will be taken to avoid noncompliance; and (4) the date when your corrective action will be completed. Where good cause is shown, the NRC will consider extending the response time.

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

Dated this 19th of March 2013.

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

Docket No.: 99901419

Report No.: 99901419/2012-201

Vendor: Cives Steel Company  
Southern Division  
102 Airport Road  
Thomasville, GA 31757

Vendor Contact: Mr. Greg Orff, General Manager  
Telephone: 292-228-9780  
E-mail: gorff@cives.com

Nuclear Industry Activity: Cives Steel Company, Southern Division, is under contract to fabricate concrete embedment plates for the AP1000 units that will be constructed at Vogtle Electric Generating Plant, Units 3 and 4, and Virgil C. Summer Nuclear Station, Units 2 and 3.

Inspection Dates: December 10–14, 2012

Inspectors: Jonathan Ortega NRO/DCIP/CMVB Team Leader  
Samantha Crane NRO/DCIP/CMVB  
Brent Clarke NRO/DCIP/CMVB  
Milton Valentin NRO/DE/SEB1  
David Harmon RII/DCI/CIB3  
Alma Allen RII/EICS

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

## **EXECUTIVE SUMMARY**

Cives Steel Company, Southern Division  
99901419/2012-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted an unannounced inspection at the Cives Steel Company (hereafter referred to as Cives), Southern Division, in Thomasville, GA, from December 10–14, 2012. The purpose of this inspection was to verify that Cives is adequately implementing a quality assurance (QA) program in accordance with 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,” and 10 CFR Part 21, “Reporting of Defects and Noncompliance.”

This technically focused inspection evaluated the implementation of Cives’s QA program activities associated with the fabrication of concrete embedments for AP1000 reactor plants at Vogtle Electric Generating Plant (Vogtle), Units 3 and 4, and Virgil C. Summer Nuclear Station (V.C. Summer), Units 2 and 3. Specifically, the NRC inspection team observed materials storage, selection, handling, and cutting; blasting, stud welding, inspection, painting, and measuring and test equipment controls; weld filler metal controls; and traceability controls.

The following regulations served as the bases for the NRC inspection:

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

During the conduct of this unannounced inspection, the NRC inspection team implemented Inspection Procedure (IP) 43003, “Reactive Inspections of Nuclear Vendors,” and IP 36100, “Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance.”

The NRC has not previously performed a vendor inspection at Cives in Thomasville, GA.

The NRC inspection team determined that, in general, that the manufacturing activities performed by Cives in support of safety-related embedments for V.C. Summer, Units 2 and 3, and Vogtle Units, 3 and 4, occurred in accordance with the Commission’s rules and regulations and the technical and quality requirements passed to Cives from NRC licensees or its contractors. However, the NRC is concerned with the number of findings based on this limited scope inspection. NRC inspectors identified examples of Cives’s inadequate implementation of a quality assurance program in several areas. These examples indicate that Cives did not 1) adequately implement appropriate corrective actions, 2) provide the quality assurance manager position with independence from cost and schedule, 3) implement adequate procedures, and 4) provide formal indoctrination and training to personnel performing activities affecting quality. Collectively, the NONs appear to be indicative of broader concerns. Therefore, the NRC is requesting that in the response to the NONs, Cives documents the extent of condition on the implementation of your quality assurance program and ensure all issues are identified and adequately addressed in your corrective actions program.

## 10 CFR Part 21 Program

The NRC inspection team issued Notice of Violation 99901419/2012-201-01 for Cives's failure to adopt appropriate procedures to evaluate deviations and failures to comply associated with substantial safety hazards. Specifically, Cives's Part 21 procedure does not include requirements for the submittal of interim reports; contains incorrect timelines; does not require notification to all purchasers within 5 working days that a deviation exists when Cives does not have the capability to perform the evaluation to determine whether a defect exists; and has incorrect record retention requirements. Additionally, the NRC inspection team noted during interviews with senior management that Cives had a general misunderstanding of the reporting requirements of 10 CFR Part 21. Specifically, senior management believed that Cives was not subject to those 10 CFR Part 21 reporting requirements despite manufacturing basic components for AP1000 reactor plants.

## Organization

The NRC inspection team issued Nonconformance 99901419/2012-201-05 for Cives's failure to implement the regulatory requirements of Criterion I, "Organization," of Appendix B to 10 CFR Part 50. Nonconformance 99901419/2012-201-05 cites Cives for failing to ensure that personnel performing quality assurance functions had authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety considerations.

## Personnel Training and Qualification

The NRC inspection team issued Nonconformance 99901419/2012-201-07 for Cives's failure to implement the regulatory requirements of Criterion II, "Quality Assurance Program," of Appendix B to 10 CFR Part 50. Nonconformance 99901419/2012-201-07 cites Cives for failure to develop and implement a formal indoctrination and training program for personnel performing activities affecting quality. Also, departmental managers did not develop and implement a program to identify training needs to meet the requirements of the quality assurance program. Further, the QA Manager failed to coordinate with the departmental managers to identify additional training specific to their department to ensure that personnel performing activities affecting quality achieved and maintained suitable proficiency.

## Control of Manufacturing Processes

The NRC inspection team inspected Cives's processes and procedures for reviewing, approving and distributing design drawings in fabricating the AP1000 structural embedments plates. The NRC inspection team also inspected how engineering and design coordination reports (E&DCRs) were incorporated into work orders during various stages of fabrication to ensure that changes were appropriately captured and completed as part of the work order. No findings of significance were identified.

## Control of Special Processes

The NRC inspection team issued Nonconformance 99901419/2012-201-06 for Cives's failure to implement the regulatory requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50. Nonconformance 99901419/2012-201-06 cites Cives for failing to establish adequate procedural controls or implement special processes. Specifically, Cives failed to establish procedures for: (1) plasma cutting that required specific process parameters

to be set up and maintained and (2) the preparation and handling of blasted surfaces for painting.

### Inspection

The NRC inspection team issued Nonconformance 99901419/2012-201-03 for Cives's failure to implement the regulatory requirements of Criterion X, "Inspection," of Appendix B to 10 CFR Part 50. Nonconformance 99901419/2012-201-03 cites Cives for failing to; include the production testing and inspection of 1 out of every 100 studs in the inspection plan, perform and document in-process inspections, adequately inspect a stud that did not show the required 360-degree flash, and identify the inspection status of two embedments that had passed final inspection. In addition, the NRC inspection team issued Nonconformance 99901419/2012-201-06, for Cives's failure to establish procedure for how to use the production software to document production and inspection activities.

The NRC inspection team also issued Nonconformance 99901419/2012-201-08 for Cives's failure to implement the regulatory requirements of Criterion VI, "Document Control," of Appendix B to 10 CFR Part 50. Nonconformance 99901419/2012-201-08 cites Cives for failing to control the issuance of documents that prescribe activities affecting quality to ensure that those documents were distributed to and used at the location at which the prescribed activities were performed.

### Traceability

The NRC inspection team reviewed Cives's processes and procedures for ensuring that material traceability was maintained in accordance with customer requirements. The NRC inspection team selected two completed embedments and verified that they were traceable to procurement and inspection records, and certified material test reports for all materials used. The NRC inspection team also verified that no uncontrolled materials were present in the shop. No findings of significance were identified.

### Control of Measuring and Test Equipment

The NRC inspection team issued Nonconformance 99901419/2012-201-04 for Cives's failure to implement the regulatory requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50. Nonconformance 99901419/2012-201-04 cites Cives for failing to calibrate welding machines used for tack welding, to establish guidance under SOP QA 12-01-6 to document the process used by Cives for the calibration of stud welding machines, and to attach the required sticker(s) to indicate the status of calibration for a stud welding machine used for safety-related activities.

### Nonconforming Materials, Parts, or Components

The NRC inspection team concluded that Cives was 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. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Cives was implementing its policies and procedures associated with the control of nonconforming materials, parts, or components. No findings of significance were identified.



## Corrective Action

The NRC inspection team issued Nonconformance 99901419/2012-201-02 for Cives's failure to implement the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. Nonconformance 99901419/2012-201-02 cites Cives for failing to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances were promptly identified with adequate corrective actions to preclude recurrence. The NRC inspection team identified that Cives's corrective actions program failed to preclude repetition of findings that had been previously processed, corrected, and closed as addressed by Cives's response to the findings in Shaw Nuclear Service Inc.'s Audits V2011-28 and V2012-22. Specifically the NRC inspection team identified repetitive findings related to the following:

- lack of control of calibration of welding machines as described in Nonconformance 99901419/2012-201-04
- lack of adequate details and acceptance criteria in procedures for the implementation of the QAM requirements to ensure consistency by Cives staff as described in Nonconformance 99901419/2012-201-06
- lack of document control as described in Nonconformance 99901419/2012-201-08

## REPORT DETAILS

The U.S. Nuclear Regulatory Commission (NRC) inspection team evaluated the Cives Steel Company (hereafter referred to as Cives) quality assurance (QA) program with an emphasis on observing activities associated with the fabrication of concrete embedments for AP1000 reactor plants at Vogtle Electric Generating Plant (Vogtle), Units 3 and 4, and Virgil C. Summer Nuclear Station (V.C. Summer), Units 2 and 3. The NRC inspection team observed Cives's staff performing receipt inspections, plasma cutting, marking, media blasting, welding, final weld inspections, painting, and segregating nonconforming items.

Additionally, the inspection team conducted interviews with responsible Cives personnel and reviewed documents to determine whether Cives performed activities in accordance with the applicable design, quality, and technical requirements in Westinghouse Specification APP-SS01-Z0-03, "Equipment: Embedded and Miscellaneous Steel, Westinghouse Safety Class C," dated March 3, 2011; American Institute of Steel Construction (AISC) standard N690-1994, "Specification for the Design, Fabrication and Erection of Steel Safety-Related Structures for Nuclear Facilities" (N690); American Welding Society (AWS) Code D1.1-2000, "Structural Welding Code—Steel" (AWS D1.1); and applicable American Society for Testing and Materials (ASTM) standards imposed by the Shaw Nuclear Service Inc. Nuclear Service, Inc., purchase orders (POs) for structural embedments for the Vogtle, Units 3 and 4, and V.C. Summer, Units 2 and 3 projects.

### 1. 10 CFR Part 21 Program

#### a. Inspection Scope

The NRC inspection team reviewed policies and implementing procedures that govern the Cives program under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," to verify compliance. Additionally, the NRC inspection team inspected and evaluated postings for compliance with 10 CFR 21.6, "Posting Requirements." To verify an adequate link to the 10 CFR Part 21 process, the NRC inspection team also reviewed Cives's procedures that govern corrective action and nonconforming conditions to verify adequate implementation of the regulatory requirements identifying items that cause conditions adverse to quality. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

#### b. Observations and Findings

##### b.1 10 CFR Part 21 Procedures

Cives's Quality Procedure (QP) QP 15-02, "Reporting of Defects and Noncompliance," Revision 2, dated September 19, 2012, describes the authorities and responsibilities for reporting defects and noncompliance. The NRC inspection team verified that the Cives programs for nonconforming items and corrective actions provided a connection to the 10 CFR Part 21 program during the initial screening process.

During interviews with Cives's senior management and staff the NRC inspection team noted a lack of understanding of the 10 CFR Part 21 requirements. For example, Cives's management and staff incorrectly believed that the reporting requirements of 10 CFR Part 21 did not apply, citing that Cives did not have design authority.

As stated above, QP 15-02 implements the requirements for compliance with 10 CFR Part 21. This procedure defines the process for reporting defects; the posting requirements; and the responsibilities, timelines, and actions for identifying and evaluating deviations and failures to comply. The NRC inspection team noted that QP 15-02 was not in compliance with several 10 CFR Part 21 requirements. Specifically, 10 CFR 21.21(a)(2) requires (1) the preparation of an interim report that describes deviations that cannot be evaluated within 60 days from discovery of the deviation or failure to comply, and (2) the submittal to the interim report to the Commission. Cives failed to include this requirement in QP 15-02 and provide training to the personnel responsible for implementing this procedure. The NRC inspection team identified this failure as an example of Violation 99901419/2012-201-01.

The NRC inspection team noted that Section IV, "Evaluation and Reporting," of QP 15-02 does not have controls in place to provide guidance for the situation in which Cives does not have the capability to perform the evaluation to determine if a defect exists. Specifically, 10 CFR 21.21(a) requires that if a determination is made by the vendor that they do not have the capability to perform an evaluation to determine if a defect exists, then it must inform the purchasers or affected licensees within 5 working days of this determination so that the purchasers or affected licensees may evaluate the deviation or failure to comply. Cives failed to include this requirement in QP 15-02 and to provide training to the personnel responsible for implementing this procedure. The NRC inspection team identified this failure as an example of Violation 99901419/2012-201-01.

The NRC inspection team verified that the Cives's programs for nonconforming items and corrective actions provide a connection to the 10 CFR Part 21 program during the initial screening process. However, the procedure does not provide guidance when a corrective action report identified that a deviation warrants an evaluation under 10 CFR Part 21 because (as stated above) there was a belief that the reporting requirements of 10 CFR Part 21 did not apply to Cives.

Paragraph 21.51, of 10 CFR Part 21, "Maintenance and inspection of records," establishes requirements for the maintenance of records related to evaluations and notifications under 10 CFR Part 21. The NRC inspection team noted that QP 15-02 neither explained which records should be retained nor described the duration requirements in order to be in compliance with the regulation. 10 CFR 21.51 requires retention of records related to evaluations of all deviations and failures to comply, notifications sent to purchasers and affected licensees, and for records related to the procurement of basic components. Cives failed to include this requirement in QP 15-02 and to provide training to the personnel responsible for implementing this procedure. The NRC inspection team identified this failure as an example of Violation 99901419/2012-201-01.

#### b.2 10 CFR Part 21 Postings

As required by 10 CFR Part 21.6, "Posting Requirements," the NRC inspection team verified that Cives had posted notices that included (1) a copy of Section 206 of the Energy Reorganization Act of 1974, (2) a copy of 10 CFR Part 21, and (3) a description of the Cives's procedure that implements the regulation. The inspection team noted that Cives did not have the most recent version of 10 CFR Part 21 posted. Cives took

prompt corrective action and opened CAR No. 063 and corrected this issue during the inspection. The NRC inspection team verified the new postings.

c. Conclusions

The NRC inspection team issued Violation 99901419/2012-201-01 in association with Cives's failure to implement the regulatory requirements of 10 CFR Part 21. Specifically, Cives's QP 15-02 did not have adequate controls in place that required the submittal of interim reports, had incorrect reporting timelines, and did not require notification to all purchasers within 5 working days that a deviation exists when Cives does not have the capability to perform the evaluation.

2. Organization

a. Inspection Scope

The NRC inspection team reviewed Cives's policies and procedures to verify that Cives described and implemented its organization consistent with the regulatory requirements in Criterion I, "Organization," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." In addition, the NRC inspection team discussed the organization with Cives management and staff. The attachment to this inspection report lists the documents reviewed by the inspectors.

b. Observations and Findings

"Cives Steel Company Quality Assurance Manual for the Fabrication of Structural Steel for Nuclear Facilities Meeting the Intent of NQA-1 and 10 CFR 50 Appendix B," Revision 3, dated September 17, 2012, (hereafter referred to as QAM), provides the general requirements for the QA organization and defines the responsibilities and authority for establishing, executing, and verifying the implementation of the performance of safety and quality related activities at Cives. The NRC inspection team observed that the QAM did not describe or outline in detail the organizational structure implemented at Cives. In addition, the QAM did not have controls in place to develop the job description or to identify who in the organization was responsible for executing, and verifying the implementation of safety and quality related activities. During review of the QAM, the NRC inspection team observed that Cives identified the organizational chart as a method to identify the current organizational structure. The current organizational structure at Cives is not in alignment with the organizational chart under Section 5.1.1, "Basic," of the QAM. Section 5.1.2, "Structure and Responsibilities," of the QAM provides the organizational structure and functional responsibilities that should be implemented. However, it does not define what individual or organization is responsible for implementing such requirements.

Cives's QP 01-01, "Quality Planning," Revision 1 dated March 15, 2010, provides the controls and instructions to assign responsibilities for the planning and production phase of all work. The procedure also describes the specific individuals responsible for defining the overall effectiveness of the QA program. The NRC inspection team identified that the organizational structure defined in this procedure was not in alignment with the organizational chart under Section 5.1.1 of the QAM.

The NRC inspection team discussed its observations with Cives's General Manager and Project Manager responsible for Vogtle, Units 3 and 4, and V. C. Summer, Units 2 and 3. The NRC inspection team noted that the Project Manager was assuming the QA Manager responsibilities for the programmatic implementation and overview of the QAM. The NRC inspection team was given an explanation that under the current organizational structure the QA Manager also gets assigned the roles and responsibilities of the quality control (QC) lead inspector for nuclear work. Cives management has allowed the QA Manager to perform and authorize work as the QC lead inspector and authorize documents while also having ultimate responsibility for the QA functions associated with those inspection activities. Further, the NRC inspection team noted that Cives used the Project Manager responsible for the AP1000 projects as a temporary QA Manager to approve the QC work being performed by the QA Manager. Cives failed to adequately implement its processes to ensure that the person performing quality assurance functions had the authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety consideration. The NRC inspection team identified this failure to adequately implement its QA program to ensure that the person performing QA functions had the authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety consideration as Nonconformance 99901419/2012-201-05.

c. Conclusion

The NRC inspection team issued Nonconformance 99901419/2012-201-05 for Cives's failure to adequately implement its procedures to ensure that the persons performing QA functions have the authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety consideration. The NRC inspection team concluded that the implementation of the Cives organization program was not consistent with the regulatory requirements of Criterion I, "Organization," of Appendix B to 10 CFR Part 50.

3. Training and Qualification of Personnel

a. Inspection Scope

The NRC inspection team reviewed Cives's policies, implementing procedures, and records that govern training and qualification to verify that Cives is implementing training activities in a manner consistent with regulatory requirements and industry standards. The NRC inspection team reviewed: (1) the personnel training and qualification process for five QC inspectors and nondestructive examination (NDE) personnel and (2) training and qualification records of two welding technicians, three auditors, and selected five random files of Cives's staff members who are not associated with technical work to verify conformance with the requirements in Criterion II, "Quality Assurance Program," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the personnel training and qualification process with Cives's management and staff. The attachment to this inspection report lists the documents that the NRC inspection team reviewed.

b. Observations and Findings

b.1 Personnel Indoctrination and Training

The NRC inspection team verified that Cives had established and implemented a training and qualification program for all personnel involved in safety-related activities. Cives's QP 02-02, "Indoctrination and Training," Revision 1, dated February 1, 2010, describes the responsibilities and authority for establishing training and qualification requirements for Cives's personnel, including the maintenance of training records. Subsection 5.2.2, "Indoctrination and Training," of the Cives QAM specifies that the extent of indoctrination and training should be commensurate with the scope, complexity, and importance of the activity and the education, experience, and proficiency of the person. Further, it requires the indoctrination and training of personnel before they assume full, unsupervised responsibility for their job functions.

During the review of QP 02-02, the NRC inspection team noted that Paragraph 1.3, of Section III, "Procedures," states, in part, that, "Departmental managers are responsible for identifying training needs in their departments and for establishing departmental training programs." In addition, Paragraph 1.4 states that, "The Quality Assurance Department is responsible for identifying company-wide training needs concerning the quality system. These needs will be coordinated with the Departmental Managers to efficiently train personnel to the quality system." The NRC inspection team interviewed several departmental managers to verify implementation of Cives's policies and procedures to evaluate the program created at the department level and to verify whether additional training needs to achieve initial proficiency, maintain proficiency, and adapt to changes in technology, methods, or job responsibilities were identified. After several interviews, the NRC inspection team noted that Cives had not developed a program to implement the requirements established in QP 02-02 for personnel performing activities affecting quality. The NRC inspection team identified this failure to develop and implement a formal indoctrination and training program for personnel performing activities affecting quality as an example of Nonconformance 99901419/2012-201-07. Cives initiated CAR No. 071 to address this issue.

b.2 Qualification and Training of QC Inspectors

The NRC inspection team reviewed Cives's QAM and associated procedures to verify that Cives had established and implemented a program for the training, qualification, and certification of inspection and test personnel. The QAM requires that personnel selected to perform inspection and test activities have the experience and training commensurate with the scope, complexity, or special nature of the activities that will be performed. The indoctrination and training consisted of on-the-job training with an emphasis on experience gained through actual performance of inspections and tests. The QA Manager or the General Manager was responsible for certifying the qualification of inspection and test personnel. The QA Manager or the General Manager evaluated the inspector's performance by an examination and successfully meeting the acceptance criteria stated in Standard Operating Procedure (SOP) 02-02-2, "QC Inspector Training and Qualification," Revision 2, dated December 12, 2011.

The NRC inspection team noted that Cives's QC inspectors were responsible for performing NDE activities. The NRC inspection team verified that Cives had programs and procedures in place for the qualification and training of QC personnel performing

NDE activities that affect quality. These programs were described in SOP 02-02-2 and SOP QA 02-02-01, "Qualification & Certification of NDE Personnel," Revision 2, dated December 12, 2011. The procedures were consistent with regulatory requirements and with the American Society for Nondestructive Testing, Inc., Recommended Practice No. SNT-TC-1A-2006, "Personnel Qualification and Certification in Nondestructive Testing." The Cives QAM as supplemented by SOP QA 02-02-01, described the administration, education, training, examination, and certification requirements for Cives's nondestructive testing personnel associated with the specifications of SNT-TC-1A-2006.

The NRC inspection team reviewed the training and qualification records for five QC/NDE personnel. The qualification records included on-the-job minimum hours, written examination results, and annual eye examination records. The records reviewed were accurate, complete, current, and met the requirements in SNT-TC-1A-2006. The eye examination records were current and conformed with the requirements of Cives's implementing procedures. Successful completion of the certification process was documented on the personal qualification status record.

#### b.3 Qualification and Training of Welders

The NRC inspection team reviewed Cives's QAM and associated procedures to verify that Cives had established and implemented a program for the training, qualification, and certification of welders. Cives's SOP QA 02-02-3, "Welder Training," Revision 1, dated April 28, 2010, and SOP QA 02-02-4, "Qualification of Welding Personnel," Revision 1, dated June 3, 2010, described the responsibilities and authority for establishing training and qualification of welding personnel, including maintenance of training records.

The NRC inspection team reviewed the training and qualification records for two welding personnel. The qualification records as a minimum included on-the-job experience and qualification and written examination results in compliance with the American Welding Society (AWS) "Structural Welding Code-Steel," D1.1-2000 (AWS D1.1). The records reviewed were accurate, complete, current, and met the requirements in AWS D1.1. Successful completion of the certification process was documented in the personal qualification status record.

#### b.4 Qualification and Training of Auditor and Lead Auditors

The NRC inspection team reviewed Cives's QAM and associated procedures to verify that Cives had established and implemented a program for the training, qualification, and certification of auditors and lead auditors. Cives's QP 18-01, "Quality Audits," Revision 1, dated December 11, 2009, described the responsibilities and authority for establishing training and qualification of Cives's auditors and lead auditor personnel, including maintenance of training records.

The NRC inspection team reviewed the training and qualification records for three lead auditors. The qualification records included education, experience, training, audits performed, and written examination results. The records reviewed were accurate, complete, current, and met the requirements of the Cives QAM and QP 18-01. Successful completion of the certification process was documented on the personal qualification status record.

c. Conclusions

The NRC inspection team issued Nonconformance 99901419/2012-201-07 for the failure of Cives's QA department to identify training needs concerning the QA program or to coordinate with Departmental Managers to identify additional training specific to their departments to ensure that personnel performing non-technical activities affecting quality achieve initial proficiency, maintain proficiency, and adapt to changes in technology, methods, or job responsibilities. The NRC inspection team concluded that Cives was not fully implementing its training and qualification program in accordance with Criterion II of Appendix B to 10 CFR Part 50.

4. Control of Design Related to the Manufacturing Processes

a. Scope

The NRC inspection team reviewed Cives's policies and procedures that govern the control of manufacturing processes to verify compliance with the requirements in Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed design control documents on the safety-related embedment for the AP1000 auxiliary building. The NRC inspection team reviewed the design specification and samples of embedment drawings to verify compliance with the AP1000 governing structural codes. The NRC inspection team referred to the design information in the AP1000 design control document, drawings, and design specifications from Shaw Nuclear Service Inc. to compare the information to the shop and erection drawings that Cives produced. The NRC inspection team compared these documents to verify that design information was properly translated into manufacturing and construction documents. The NRC inspection team also reviewed procedures related to embedment fabrication to verify compliance with governing structural codes. The attachment to this inspection report lists the documents that the NRC inspection team reviewed.

b. Observations and Findings

b.1 Design Specification and Drawings

Embedments are miscellaneous steel items of various shapes that are to be set in concrete. They can be described as steel plates with studs or deformed steel bars attached by welding. Embedments vary in dimension, number and size of stud, or deformed steel bars. Deformed steel bars may be bent 90 degrees or kept straight. In addition, embedments can be steel plates for studs to be welded on site.

The NRC inspection team verified that Cives 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 embedments. SOPs were generated to guide welding, drawing control, repair, inspection, and handling of materials, among other requirements in the design specifications. The NRC inspection team verified that the SOPs referred to appropriate structural codes and standards and that they reflected acceptable practices, as required by AISC N690-1994 (AISC N690), AWS D1.1-2000 (AWS D1.1), and the appropriate design specification.



The NRC inspection team verified that the design specification for embedments, APP-SS01-Z0-003, "Embedded and Miscellaneous Steel, Westinghouse Safety Class C," Revision 3, dated March 2, 2011, included appropriate references to governing design codes and material specifications detailed in Revision 19 of the approved AP1000 design. The specification indicated embedments seismic classification and safety classes and offered requirements for shop drawings, material shipping, handling, storage, and delivery and for surface preparation, welding, protective coating application, and testing and inspection of embedments.

The NRC inspection team interviewed Cives's personnel and verified that a process was in place for translating requirements from the design specification and design drawings into shop and erection drawings. For a sample of shop and erection drawings, the NRC inspection team verified that the details and requirements were appropriately translated from the referenced design drawings and specifications, that they made reference to the respective design drawings, and that they included proper welding symbols and dimensional details. Erection drawings pointed out the location of embedments in reference to the wall or section of the auxiliary building. Both shop and erection drawings included traceable information back to design drawings. Embedment plate marks were also included to identify piece types for each shipment. Cives fulfilled design specification requirements for the drawings, including welding electrodes for each piece, material specifications, embedment identification markings, welding and dimensional tolerances, and coating information.

The NRC inspection team also verified that technical requirements identified in the customer's POs were passed down to subsuppliers. The NRC inspection team verified that PO B1676-5203, dated March 16, 2012, for Nelson studs included the appropriate requirements from the design specification, and was supported by a certified test report (Certified Test Report NSW 004-12-02-07606-1). The NRC inspection team also verified that Cives had completed a receipt inspection for the materials and verified that material conformed to the PO requirements.

The NRC inspection team verified that Cives implemented the special storage and shipping requirements identified in the design specification for the embedments. Specifically, the design specifications for embedments required Cives to provide special storage requirements and a shipping list with each set of shop and erection drawings. The NRC inspection team verified the implementation of these requirements in the special storage requirement documents and shipping ticket for PO 132177-D220.00, Revision 2, dated November 2, 2012. The documents provided reasonable information for the site to handle the shipment. In addition, the documents provided traceable information such as piece marks, job numbers, section number, heat numbers, and physical description for the embedments. No findings of significance were identified.

#### b.2 Design and Configuration Controls

The NRC inspection team interviewed Cives's personnel and verified that processes and procedures were in place to guide the implementation of the changes to drawings. The NRC inspection team verified that Cives's procedures identified personnel to address changes and methods to handle interactions and information exchange between the designer and the drafter. The procedures also allowed for further evaluation of the embed design and physical configuration.

The NRC inspection team noted that for changes requested by Cives, a request for information (RFI) was generated to describe the issue and was sent to the customer for evaluation. Once the evaluation was completed, a response was provided to Cives along with engineering and design coordination report (E&DCR) and revised drawings, if necessary. If the customer proposed a change, an E&DCR was sent to Cives with revised drawings and technical rationale for the change. The NRC inspection team noted that all RFI and E&DCR records were filled in hardcopy and electronically by a Cives's Project Manager and that the records were available to personnel other than the Project Manager.

The NRC inspection team selected RFI No. 132177-22 to evaluate the effectiveness of this process. The RFI described the issue and request for options toward resolution. The response included E&DCR APP-CE50-GEF-875004, Revision 0, and a revised drawing. The NRC inspection team verified that the revised shop and erection drawings incorporated the changes in the revised design drawing and referenced the E&DCR.

c. Conclusions

The NRC inspection team concluded that Cives was implementing its design control program consistent with the regulatory requirements of Criterion III of Appendix B to 10 CFR Part 50. No findings of significance were identified.

5. Control of Special Processes

a. Inspection Scope

The NRC inspection team reviewed Cives's policies, procedures and implementation of its program for the control of special processes, including the welding and painting of concrete embedments for Vogtle and V. C. Summer to verify compliance with customer POs, AWS D1.1, the appropriate design specifications, and requirements in Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50.

For welding, the NRC inspection team reviewed welding procedures, welder qualification tests, and the issue and control of weld electrodes, and observed welding activities.

For painting, the NRC inspection team observed media blasting and paint preparation, reviewed a sample of prepainting ambient temperature and humidity inspections, and interviewed Cives's personnel. The attachment to this inspection report lists the documents that the NRC inspection team reviewed.

b. Observations and Findings

The NRC inspection team verified that Cives had established procedures for welding (including stud welding) and painting. The NRC inspection team verified that the procedures included personnel and equipment qualification requirements, conditions necessary for accomplishing the process, acceptance criteria, and results of the completion of specific operations. The NRC inspection team verified that the welding and painting were performed by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

The NRC inspection team observed Cives's personnel perform media blasting and stud welding on embedments APP-12101-CE-PF066, APP-12101-CE-PF061, APP-12101-CE-PF068, and APP-12101-CE-PF063, which support the battery racks in Battery Rack Room 12101 of Auxiliary Building Area 2 at an elevation of 66 feet 6 inches for Vogtle Unit 4.

The NRC inspection team verified that Cives performed welding on clean material, with the correct studs and in accordance with its stud welding procedure, a current revision of which was available at the work station. Additionally, the NRC inspection team found that Cives's welding procedures listed in the attachment, adequately implemented the requirements of the applicable design specification, APP-SS01-Z0-003, "Embedded and Miscellaneous Steel, Westinghouse Safety Class C," Revision 3, dated March 2, 2011, and the specified code AWS D1.1-2000 edition. During work observations, the NRC inspection team also determined that welding filler metal was kept locked in a temperature controlled oven in accordance with procedures and specifications.

The NRC inspection team observed media blasting and painting and interviewed Cives's personnel to verify that Cives was performing these tasks in accordance with applicable codes, standards, and specifications. The NRC inspection team verified that adequate controls were in place to ensure that Cives performed painting only at acceptable temperature and humidity limits.

The NRC inspection team identified several instances in which Cives had not appropriately incorporated the requirements of its customer's painting specification, APP-G1-SX-001, "AP1000 Painting of Shop Fabricated Steel," Revision 4, dated April 8, 2011, and embedment specification APP-SS01-Z0-003 into the corresponding procedures or had not ensured that the requirements of the specifications were met.

Specifically, APP-G1-SX-001 requires Cives to complete cutting and welding before general surface preparation not to contact blasted surfaces with bare hands or dirty gloves and to reblast any surfaces that have "turned" (oxidized) or that have become wet or stained after an initial blasting and profiling operation. However, the NRC inspection team noted that the Cives procedure for painting and surface preparation, SOP QA 05-01-3, "General Painting," Revision 1, dated April 28, 2010, did not implement these requirements. Additionally, through observation and interviews with Cives personnel, the NRC inspection team noted that Cives performs abrasive blasting to prepare the parts for cleaning and then sends them back to the welding area for stud welding and inspection before they are painted. Additionally, the NRC inspection team found that after blasting and before painting, the embedments routinely were handled with bare hands or dirty gloves and oils, rust, and other stains built up on the surfaces to be painted. Immediately before painting, Cives would then clean the surfaces with sanding and solvents. Design specification APP-SS01-Z0-003 required Cives to test both nozzle-blast abrasive and shop-recycled metallic abrasives for water soluble contaminants (salts) and oil in accordance with Table 10.1-1 in CAAM-3 and to verify that compressed air used in conjunction with the application process (e.g., when using conventional spray) is free of oil and water by performing the methods in Table 10.1-1 in CAAM-1. Table 10.1-1 CAAM-1 and CAAM-3 gave detailed methods for testing the cleanliness of the abrasive and compressed air, which included references to ASTM specifications, frequencies, acceptance criteria, and corrective actions. The NRC inspection team noted that SOP QA 05-01-3 contained the high-level direction to perform these assessments; however, SOP QA 05-01-3 did not include defined acceptance criteria for verifying that APP-SS01-Z0-003 requirements are met. The NRC

inspection team identified these failures as an example of Nonconformance 99901419/2012-201-06. Cives initiated CAR No. 067 and 074 to address these issues.

c. Conclusions

The NRC inspection team issued Nonconformance 99901419/2012-201-06 for Cives's failure to adequately establish a procedure to provide guidance on how to implement the requirements of the customer specification regarding surface preparation and painting. The NRC inspection team concluded that the policies and procedures developed by Cives for the implementation of the control of special processes program was not consistent with the regulatory requirements of Criterion V, "Instructions, Procedures, and Drawings," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team determined that Cives was not implementing its policies and procedures associated with the control of manufacturing processes in accordance with the requirements of their design control program.

6. Inspection

a. Scope

The NRC inspection team reviewed Cives's policies and procedures that govern inspection to verify compliance with the requirements of Criterion X, "Inspection," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed drawings, cutting sheets, inspection and fabrication plans, and inspection records to verify that they appropriately identified inspection points and documented the results of those inspections. In addition, the NRC inspection team observed QC inspections on the shop floor, including final welding inspections and painting inspections to verify that such inspections are performed in accordance with Cives's policies and procedures, and with applicable codes and standards. The attachment to this inspection report lists the documents that the NRC inspection team reviewed.

b. Observations and Findings

b.1 Review of Process Control Documents

The NRC inspection team verified that Cives had inspection procedures that provided ways to measure embedments and to record the results in accordance with procedures. In addition, the NRC inspection team verified that Cives had procedures for receipt inspection, in-process inspection, and final inspection. During the review of the policies and procedures, the NRC inspection team noted that Cives failed to control the issuance of documents that prescribe activities affecting quality and failed to ensure that those documents were distributed to and used at the location at which the prescribed activity were performed. Specifically, Cives revised its QAM and six quality procedures in September 2012, but failed to incorporate them into the controlled copies and distribute them to the locations where the prescribed activities were performed. The NRC inspection team identified this as of Nonconformance 99901419/2012-201-08. Cives initiated CAR No. 060 to address this issue.

Section 5, "Quality Assurance Criteria," of the Cives's QAM, QP 01-01, "Quality Planning," Revision 1, dated March 15, 2010; QP 10-01, "Receiving Inspection," Revision 1, dated March 26, 2010; and QP 10-02, "In-Process Inspection," Revision 0, dated July 22, 2009; and QP 10-03, "Final Inspection," Revision 0, dated July 22, 2009, document Cives's policies and procedures that govern inspection.

These policies and procedures require identification of characteristics, the identification of methods of inspection and acceptance criteria, the indication of mandatory inspection hold points in appropriate documents, and the recording of the consent to waive hold points to be recorded before work continues. The Production and Inspection Plan documents the specific requirements and a control plan is developed by Cives for new or substantial process changes in the services or materials. The control plan shall specify all inspections, tests, and process control measures required to ensure that the final products comply with specified requirements. The control plan may be a separate document or may be in the inspection plan, which list the required inspections and tests are called out between production operations.

The NRC inspection team verified that Cives created an inspection and fabrication plan for the Vogtle and V.C. Summer projects. Inspection/Fabrication Plan No. 5200-01, Revision 1, dated December 14, 2011, is a generic inspection plan that encompasses the requirements for all items, including the embedments and anchor bolts, from the four POs that correspond to Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3. The inspection plan describes certain inspection activities relative to major activities such as receipt inspection, inspection of fabricated items, inspection of welding activities, NDE, inspection of coatings, and pre-shipping inspection. The inspection plan identifies the activities to be observed or performed and establishes hold points. It also referenced Cives's procedures and customer specifications for acceptance criteria.

However, the inspection plan did not include all of the project-specific inspection requirements. Specifically, design specification APP-SS01-Z0-003 required the testing of random studs during production by striking with a hammer to an angle of 15 degrees from the installed position after the weld has cooled. Further, it requires that testing be performed on not less than 1 out of every 100 studs that each operator welds. The inspection plan did not include this requirement. Additionally, the NRC inspection team was unable to verify that the test had been completed throughout the project at the required frequency. The NRC inspection team identified this as an example of Nonconformance 99901419/2012-201-03. Cives initiated CAR No. 069 to address the failure to create a program that would test 1 out of every 100 studs per operator.

## b.2 Observation of Inspection Activities

The NRC inspection team observed and assessed actual techniques being used and their acceptability relative to contract and procedural requirements. Specifically, the NRC inspection team observed QC inspections, including receipt inspections, final weld inspections, and coating inspections for embedments with shear studs and embedments with bent bar attachments. The NRC inspection team verified that qualified QC inspectors other than those who performed or directly supervised the work under inspection performed the inspections. The NRC inspection team verified that the inspection results were documented.

### Receipt Inspections

Cives's QP 10-01 provides a system and instructions for performing and recording receiving inspections of materials and supplies and assigns responsibilities for these activities. When the material arrives on site, the receipt inspector gets a copy of the receiving checklist for that material, an advance manifest, and a copy of the PO. The receipt inspector then uses Form 10-01-1, "Receiving Checklist," Revision 1, dated March 26, 2010, to check the packing list to verify that it included the correct quantity, dimensions, grade, and markings (i.e., heat, PO, and ASTM designation); to ensure that all received items were on the shipping documents; to ensure that identifications on items corresponded to those on the shipping documents; and to identify any discrepancies, visible damage, and suspect or counterfeit items. The QA Manager verified the material identification markings and the production manager verified that the material conformed to the PO, that the documentation was complete, and that the material met the specified requirements. The NRC inspection team observed the receipt inspection for plate steel meeting ASTM A36 requirements and did not identify any issues.

### In-process Inspections

The NRC inspection team observed Cives's staff select material for use with a specific cut sheet, use the barcode system to check that the material was acceptable for the work, and perform plasma cutting and engraving.

Cives's procedure QP 05-01, "Work Instructions," Revision 0, dated July 22, 2009, states, in part, that, "work instructions are required for...processes that are critical to the safety, fit, and function of the service [and for] processes where various process parameters must be setup and/or maintained at specific levels; where operators are required to program process equipment; where tool changes are involved; or where, for any other reason, operation of the process is fairly complex and requires specific process setup instructions and/or operating data."

Cives relies on machinist training and "skill of the craft" to perform plasma cutting. The process involved using the barcode system and production software to verify that the material was appropriate for the cut sheet, to identify the material to the cut sheet, and to choose the appropriate cutting program for the plasma cutter table based on the cut sheet, and the number of pieces to be cut. The operator must then set up the plasma cutting table. This process included the selection of the appropriate cutting program based on the drawing and cut sheet, verifying that the program was appropriate for the dimensions to be cut, and setting the appropriate process variables. While observing the machinist set up the plasma cutting table, the NRC inspection team noted that the machinist missed a verification step and only caught it when prompted by his supervisor, who typically would not be observing this process. The NRC inspection team identified Cives's failure to establish procedural control for activities affecting quality as an example of Nonconformance 99901419/2012-201-06. Cives initiated CAR No. 072 to address this issue.

The NRC inspection team interviewed Cives's production and QC personnel to verify that they were performing in-process inspections and documenting them. Inspection/Fabrication Plan No. 5200-01 for the embedments for Vogtle Units 3 and 4, and V.C. Summer Units 2 and 3, requires the performance of in-process on a random

basis on fabricated items and before welding in accordance with SOP QA 10-02-1, "In-process Inspection," Revision 1, dated April 28, 2010; SOP QA 10-03-1, "Final Inspection"; SOP QA 10-03-2; and SOP QA 10-01-5. These in-process inspections included tasks, such as verifying dimensions, straightness, and weld fitup; checking equipment; reviewing welding procedure specifications and welder qualifications; and verifying cleanliness before welding.

Section 5.10, "Inspection," of the Cives QAM states, in part, that, "Inspections that are required to verify conformance of an item or activities to specified requirements or continued acceptability of items in service shall be planned and executed."

Section 5.8 of Westinghouse Specification APP-SS01-Z0-03 states, in part, that "As a minimum, the Fabrication Plan shall outline the basic production sequence and specific preplanned Supplier/Subcontractor inspections that are required to be performed."

Cives's QP 10-02 requires the inspector to sign off the drawing (hardcopy or electronic) or the test and inspection plan on the line on which the inspection is identified when the results of the inspection are satisfactory. The signoff constitutes the record of the inspection, identifies the inspector, and identifies the inspection status of the particular production step or process. In addition, QP 10-02 requires that products be prevented from passing on to the next processing stage before the satisfactory completion of all specified in-process verification actions. Products released for further processing or use, are identified with a positive inspection status. The identification may be in the form of a sticker, tag, mark, color code marking, or signed off paperwork (hardcopy or electronic) stating that the item has been accepted.

SOP QA 10-02-1, "In-process Inspection," and SOP QA 10-03-2, "Visual Examination," requires QC inspectors to document all inspections, including in-process inspections before welding, to verify material preparation to determine whether the material identification system is being maintained; whether the material meets the proper size and shape requirements of the cut sheets or drawings; whether the material meets the variation tolerances of AWS, AISC, ASTM, and job specifications; and whether the material meets preparation (bevel) and is correct as shown on the drawing in accordance with AWS D1.1.

The NRC inspection team interviewed Cives's personnel to identify how the QC inspectors documented the completion of in-process inspections and verified that they were completed before passing on to the next processing stage. Cives used its production software and initials on the barcode tags to document inspection status. However, the software and the tags only document fit-up and final inspections. They do not provide a location for documenting in-process inspections. In addition, Cives does not provide guidance on the frequency of performing these random in-process inspections or how they shall be documented.

The NRC inspection team interviewed Cives's QC inspectors to identify how the inspectors verified that in-process inspections were completed before passing onto the next processing stage. SOP QA 10-02-1 and SOP QA 10-03-2 required the QC inspector to review the records of all preceding inspections and tests before performing the final inspection. When asked how the inspectors perform this task, the QC inspector informed the NRC inspection team that the process was inherent in the production software because it would not let them perform the final inspection if the preceding

inspections were not performed. Therefore, the inspector does not need to review the records of all preceding inspections and tests before performing the final inspection.

The NRC inspection team interviewed the production manager to verify that the production software provided an interlock that would not allow the final inspection to be performed if the previous inspections had not yet been completed. The production software allowed Cives staff to document certain production activities including blasting, drilling, sawing, fitting, and welding. The production software also allowed Cives's staff to document certain QC activities including final inspection, fitup inspection, and painting inspection. The production manager informed the NRC inspection team that these steps could be performed in any order and, with the exception of the final inspection, could be bypassed. The production software also allowed Cives staff to document when an item was shipped. The system had two interlocks in place: (1) the production software did not allow material to be used if it did not match the cut sheet, and (2) the production software did not allow items to be shipped if the final inspection was not completed. The NRC inspection team identified the failure to perform and document in-process inspections as Nonconformance 9901419/2012-201-03. In addition, Cives's instructions, procedures, and drawings did not prescribe the production software or its use in documenting the completion of key production and inspection activities (an activity affecting quality). Cives failure to prescribe the production software and its use through instructions, procedures, and drawings is an example of Nonconformance 9901419/2012-201-06. Cives opened CARs No. 066 and 072 to address these issues.

#### Final Inspections

For the final inspection of piece parts APP-12256-CE-PW912, APP-12251-CE-PW906, APP-12251-CE-PW904, and APP-12253-CE-PW911, which support precast panel seats in Auxiliary Building Area 4 of Vogtle Unit 3, the NRC inspection team verified that the QC inspector performed the inspection in accordance with the requirements on the associated drawing and documented the inspection date, type of observation, results of the examination, and the initials of the QC inspector on the electronic inspection record. In addition, the NRC inspection team verified through direct observation that the QC inspectors were using the correct drawings and documentation and that the documents and drawings in the work package matched the job and that the QC inspector's signoff attested to this. The inspections were performed by qualified persons other than those who performed or directly supervised the work being inspected.

During a walkthrough of the Cives's shop floor, the NRC inspection team visually examined a number of embedments. The NRC inspection team noted a stud weld on embedment APP-12S02-CE-PW608 (Job 5251) for Vogtle Unit 3 that neither exhibited the full 360 degree flash, nor had it been bend tested to verify the weld's adequacy, as required by the specified code (AWS D1.1-2000). The NRC inspection team found that Cives's inspectors had inspected the embedment previously and found it acceptable. The NRC inspection team identified this as an example of Nonconformance 99901419/2012-201-03.

Also, the NRC inspection team visually examined a number of embedments that were ready for shipment. The NRC inspection team noted that two embedments (APP-12156-CE-PW504 and APP-12151-CE-PW930 (both Job 5260)) for Vogtle Unit 4 did not have QC signatures on the tags; however, they were staged for shipping. The NRC inspection team reviewed inspection records for the two embedments and verified



that they had received and passed final inspection. The NRC inspection team also noted that Cives's QP 14-01, "Inspection, Test, and Operating Status," Revision 0, dated July 22, 2009, required a QC signature on the embedment tag to indicate that it had passed final inspection. The NRC inspection team identified this as an example of Nonconformance 99901419/2012-201-03. Cives initiated CAR No. 076 to address the failure to sign tags after final inspection.

c. Conclusions

The NRC inspection team issued Nonconformance 99901419/2012-201-03 for Cives's failure to include the production testing and inspection of 1 out of every 100 studs in the inspection plan, to perform and document in-process inspections, to adequately inspect a stud that did not show the required 360 flash and to identify inspection status of two embedments that had passed final. In addition, the NRC inspection team issued Nonconformances 99901419/2012-201-06, for Cives's failure to establish procedures for the plasma cutting process, and how to use the production software to document production and inspection activities. Also, the NRC inspection team issued Nonconformance 99901419/2012-201-08 for Cives's failure to control the issuance of documents that prescribe activities affecting quality to ensure that those documents were distributed to and used at the location at which the prescribed activity were performed. The NRC inspection team concluded that the implementation of the Cives program for inspection was not consistent with the regulatory requirements of Criterion X, "Inspection," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and on observation of ongoing inspection activities at the Cives facility, the NRC inspection team also determined that Cives was not implementing its QAM and associated inspection procedures.

7. Traceability

a. Scope

The NRC inspection team reviewed Cives's policies and procedures that govern traceability to verify compliance with Criterion VII, "Identification and Control of Material, Parts, and Components," of Appendix B to 10 CFR Part 50. The NRC inspection team inspected the storage areas and observed the manufacture of embedments to verify that all materials were marked with unique identifiers traceable to procurement records. Additionally, the NRC inspection team selected two completed embedments to verify the associated material test reports, procurement documentation, and inspection records. The attachment to this inspection report lists the documents that the NRC inspection team reviewed.

b. Observations and Findings

The NRC inspection team verified that Cives had established and implemented procedures for identifying and controlling items and that it had applied identification markings using materials and methods that provided a clear and legible identification and that did not adversely affect the function or service life of the item. Cives used vibro-etching to mark embedments permanently with piecemarks traceable to design, shop, and erecting drawings. Cives also used a barcode system to trace the piecemarks to associated drawings, heats, material specifications, and POs.

Cives used electronic purchasing and production software developed in-house to document major fabrication and inspection steps. The purchasing software was used for material traceability and to create cut sheets. The purchasing manager used a copy of the supporting documents, including certificates of conformance, material test reports, dedication plans, and an inventory to enter information on each piece into the purchasing software with its heat number, and then the material was assigned a barcode number. When the receipt inspection was completed, the QA Manager and production manager approved the material and attached an "Accept" label to the material. At this point, the material was released to be used in safety-related applications.

Upon receipt of the shop and erection drawings, the production manager enters the material information from the drawings into the production software. This information includes the drawing number, revision, line number, material, grade, piecemark, quantity, and shape. If the drawing included fittings, such as studs or deformed bar attachments, these fittings were linked to the piecemark to which they were attached.

The production software was then used to create cut sheets, which included the material type and grade, and the piecemarks to be cut. There was one barcode for the cut sheet and one for each piece mark to be cut. The cutting instructions were tied to the cut sheet through the barcoding system. When the machinist selected the material to be used for that cut sheet, he scanned the barcode on the material to verify that it was acceptable for use for that cut sheet. The material was then tied to the piecemarks.

Cives's QP 13-01, "Handling, Storage, and Shipping," Revision 0, dated July 22, 2009; QP 08-01, "Identification and Control of Materials, Parts, and Components, Revision 0, dated July 22, 2009; and SOP QA 08-01-1, Material Traceability," Revision 1, dated April 28, 2010, states that the production manager will use an inventory management system that was used for issuing cut sheets and that the process will be done electronically using the Cives data collection system, and will allow for the use of barcodes. However, Cives does not have a procedure that documents how information is entered into the purchasing and production software, how cut sheets are generated with the barcodes, and how the information is tied together to maintain traceability. The NRC inspection team identified this failure to establish procedural controls for activities affecting quality as an example of Nonconformance 99901419/2012-201-06. Cives generated CAR No. 078 to address this issue.

The NRC inspection team observed no uncontrolled, unmarked, or improperly stored materials during the inspection. Additionally, the NRC inspection team verified that embedment APP-12251-CE-PW703 which supports a precast panel seat in embedment wall J-1 at an elevation of 82 feet 6 inches in auxiliary building area 4 of V.C. Summer Unit 2, and embedment APP-12156-CE-PW504 that supports module KB16 in wall I of Auxiliary Building Area 3 for Vogtle Unit 4 were traceable to all applicable records and that those records were adequate.

c. Conclusions

The NRC inspection team issued Nonconformance 99901419/2012-201-06 for Cives's failure to establish procedures to describe how information was entered into the purchasing and production software, how cut sheets were generated with the barcodes, and how the information was tied together to maintain traceability. Based on the limited sample of embedments reviewed and observation of activities on the shop floor at Cives

related to traceability, the NRC inspection team determined that Cives was not effectively implementing its QAM.

## 8. Control of Measuring and Test Equipment

### a. Inspection Scope

The NRC inspection team reviewed Cives's policies and implementing procedures that govern the implementation of the measuring and test equipment (M&TE) process to verify compliance with the regulatory requirements in Criterion IX, "Control of Special Processes," and Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team observed manufacturing activities and QC inspections to verify that appropriate M&TE was used, and inspected devices used in activities affecting quality to ensure that they were properly controlled, calibrated, and adjusted at specific periods. The team also observed storage of uncalibrated M&TE to verify it was adequately controlled and reviewed the M&TE log and multiple inspection records to verify they listed the M&TE used as required by Cives's programs. The attachment to this inspection report lists the documents that the NRC inspection team reviewed.

### b. Observations and Findings

The NRC inspection team verified that procedures had been established and implemented to ensure adequate control, calibration, and adjustment of MT&E. For the sample of M&TE selected, the NRC inspection team verified calibration history, results, and due dates, and verified that M&TE was calibrated, adjusted, and maintained at prescribed intervals before use. In addition, the NRC inspection team verified that M&TE was labeled, tagged, handled and stored, or otherwise controlled to indicate the calibration status of the instrument and to ensure its traceability to calibration test data. The NRC inspection team verified that when M&TE was found to be out of calibration, an evaluation was required to verify whether previous inspection results were affected. The NRC inspection team verified that Cives maintained records to indicate calibration status and that these records contained as found or as left information. In addition, the NRC inspection team verified that out of calibration devices were tagged or segregated. Lastly, the NRC inspection team verified that the machines used for welding were properly controlled and calibrated.

The NRC inspection team identified two instances in which Cives failed to implement its program for control of M&TE. Specifically, Section 2.3 of Cives's QP 12-01, "Control of Measuring and Test Equipment," Revision 1, dated March 26, 2010, indicated that calibrated equipment is labeled with a sticker indicating the due date for next calibration. Section 4.5 and 4.13 of SOP QA 12-01-01, "Control of Measurement & Test Equipment," Revision 2 dated November 10, 2011, stated that, "Welding machines shall be calibrated in accordance with SOP QA 12-01-6...All certified equipment is labeled with a sticker or tag. This identification will prevent inadvertent use of non-certified equipment where certified equipment is required." In addition, Paragraph 5.2.3 of Cives's SOP QA 12-01-6, "Certification of Welding Machine," states, in part, that, "A self-adhering sticker shall be placed on each piece of equipment and shall indicate the date of certification." During observation of stud welding, the NRC inspection team identified that one welding machine did not have a sticker that indicated its calibration or certification status to certified that it can be used in safety-related activities. The NRC

inspection team then verified the status of the machine by reviewing the calibration records and verifying that the calibrating entity was on the Cives approved vendor list and had been appropriately audited for calibration activities, and that the calibration has not expired. The NRC inspection team identified this issue as an example of Nonconformance 99901419/2012-201-04. In addition, the NRC inspection team noted that the process implemented by Cives to calibrate stud welding machines is not documented under SOP QA 12-01-6. The NRC inspection team identified this issue as an example of Nonconformance 99901419/2012-201-04. Cives initiated CAR No. 070 to address the failure to use only welding machines with a current calibration sticker. In addition, the NRC inspection team noted that Cives's SOP QA 05-01-2, "Standard Welding," Revision 3, dated January 4, 2012, required the calibration of all welding machines to be performed in accordance with SOP QA 12-01-6. As part of the observation of tack welding, the NRC inspection team verified the status of the tack welding machine and noted that the machine did not contain any calibration sticker or supporting documentation that indicated that it was calibrated in accordance with SOP QA 05-01-2. The NRC inspection team identified this failure as an example of Nonconformance 99901419/2012-201-04. Cives initiated CAR No. 073 to address the failure to calibrate welding machines used for tack welding.

c. Conclusions

The NRC inspection team issued Nonconformance 99901419/2012-201-04 for Cives's failure to control and calibrate welding equipment. Specifically, Cives failed to calibrate welding machines for tack welding, to establish procedures for calibration of the stud welding machines in accordance with the requirements of its QA program, and to place a calibration sticker or tag to indicate calibration status of stud welding machines before they were used by Cives's welders in safety related applications. The NRC inspection team concluded that Cives was not implementing control of its M&TE program consistent with the regulatory requirements of Criterion IX, "Control of Special Processes," and Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and observation of ongoing inspection activities at the Cives facility, the NRC inspection team determined that Cives was not implementing its QAM.

9. Nonconforming Materials, Parts, or Components

a. Inspection Scope

The NRC inspection team reviewed policies, implementing procedures, and records that governed the control of nonconforming materials, parts, and components to verify compliance with Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B to 10 CFR Part 50. To verify that Cives's implementation and control over these processes were adequate, the NRC inspection team reviewed the following items:

- Cives's procedures that govern corrective action and control and correction of nonconforming items
- the corrective action log, the nonconformance log, nonconformance reports (NCRs), and CARs
- NCR training logs
- quarterly NCR trend reports

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

b. Observations and Findings

The NRC inspection team verified that Cives had programs in place to address nonconforming material, parts, or components. The NRC inspection team reviewed two quarterly reports and verified that Cives performed trend analysis of nonconformances. The NRC inspection team also verified that Cives conducted training with all shifts on applicable NCRs.

The NRC inspection team also observed that a Cives procedure connects the nonconforming material, parts, or components program and the 10 CFR Part 21 program.

The NRC inspection team reviewed numerous NCRs associated with the manufacture of embedments for Vogtle, Units 3 and 4, and V. C. Summer, Units 2 and 3. The NRC inspection team verified that Cives's procedures address the requirement that nonconforming material, parts, or components shall be segregated, and verified the implementation of this requirement. However, the NRC inspection team noted that the Cives's procedures do not specifically explain how segregation would be performed by Cives's staff on the shop floor and also noted that items segregated outdoors were not protected from environmental degradation. The NRC inspection team discussed this with Cives to understand how the staff segregated items in the shop. The NRC inspection team was given an explanation that Cives provided ropes with signs that were used to create a segregation area on the shop floor and that nonconforming items were placed inside these areas. Cives opened CAR No. 064 to address this issue.

c. Conclusions

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

10. Corrective Actions

a. Inspection Scope

The NRC inspection team reviewed policies, implementing procedures, and records that govern corrective actions to verify compliance with Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. To verify that implementation and control over these processes was adequate, the NRC inspection team reviewed the following items:

- Cives's procedures that govern corrective action and nonconforming items
- the corrective action log, the NMR log, several NMRs, and several CARs
- CAR training logs
- external audit reports

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

b. Observations and Findings

b.1 Policies and Procedures

Section 5.16, "Corrective Action," of Cives QAM establishes requirements for procedures to identify conditions adverse to quality, to notify responsible management, to resolve, disposition, and to document these conditions.

Cives's QP 16-01, "Corrective and Preventive Action," Revision 1, dated February 1, 2010, describes how the requirements of the QAM are to be implemented. This procedure also provides a system and instructions that assign responsibilities for initiating, requesting, implementing, and checking the effectiveness of the corrective and preventive actions. This procedure applies to the correction and prevention of nonconformances related to materials, components, subassemblies, finished products, production process and the QA program.

b.2 Implementation of the Corrective Action Program

QP 16-01 defines the process used by Cives to control identified corrective actions. The NRC inspection team noted that this procedure contained minimal guidance on how to identify conditions adverse to quality. All corrective and preventive actions in this procedure pertained to customers as well as personnel conducting in-process activities within Cives. The QP 16-01 guidance further stated that any individual in the organization can propose the initiation of a CAR but that the QA Manager or the General Manager must authorize all CARs. The request must be made in writing and must contain a description of the unsatisfactory condition that must be corrected or an explanation on how quality was affected. The procedure further stated that the following were examples of issues that should generate requests for corrective action:

- identification of an item's nonconformance, including returns from customers
- problem with a process or work operation
- a nonconformance identified during a third party audit or an internal audit
- filed performance problems identified by project managers
- customer complaints
- a nonconformance delivered by subcontractors
- identification of any items or conditions that deviate from specifications or from documented QA requirements

The NRC inspection team concluded that guidance for the corrective action program in QP 16-01 was focused on Cives's QA personnel and that they were mainly responsible for the identification of any need to initiate corrective actions. As with Cives's process for determining a need for a CAR, QP 16-01 makes the CAR process rely on the QA Manager's final decision for any initiation of formal corrective actions.

During the inspection, the NRC inspection team verified that Cives had programs in place to address corrective actions and verified there was a procedural connection between the corrective action and the 10 CFR Part 21 programs.

The NRC inspection team verified a sample of 26 out of 59 CARs that had been generated as of December 10, 2012, that were associated with the manufacture of embedments for Vogtle Units 3 and 4 and V. C. Summer Units 2 and 3. The NRC inspection team reviewed those CARs to verify that they identified root causes, and established corrective actions and to verify the conduct of training.

The NRC inspection team identified recurring issues that were initially identified by Shaw Nuclear Service Inc. external audits (V2011-28 and V2012-22). These issues were processed, corrected and closed under Cives's corrective action program. These recurring issues are indicative of failure to effectively implement the corrective action program. Specific examples include the following:

- On December 4, 2011, a Shaw Nuclear Service Inc. audit of Cives identified Observation V2011-28-06 which stated that, "Three of ten welding machines checked during the audit were missing calibration stickers or the welding machine number." Subsequently, Cives generated CAR No. 028 and reported in a letter dated November 18, 2011, that it had completed all corrective actions for Observation V2011-28-06 after closing CAR No. 028. During the inspection, the NRC inspection team identified an example similar to Observation V2011-28-06 in which Cives failed to indicate the calibration status of welding machines used for stud welding. Section 8, "Control of Measurement and Test Equipment," of this report addresses this finding.
- On December 4, 2011, a Shaw Nuclear Service Inc. audit of Cives identified Observation V2011-28-07 which addressed nonconforming material and stated that, "There was no designated quarantine area implemented in the material storage area or the shop." Subsequently, Cives generated CAR No. 029 and reported in a letter dated November 18, 2011, that all corrective actions were completed for Observation V2011-28-06 after closing CAR No. 029. During the inspection, the NRC inspection team identified that as of December 14, 2012, Cives's procedures do not adequately address how Cives's staff will perform segregation on the shop floor and also noted that outside segregation does not protect components from environmental degradation. Section 9, "Nonconforming Materials, Parts, or Components," of this report address this issue.
- On December 4, 2011, a Shaw Nuclear Service Inc. audit of Cives identified Observation V2011-28-09 which stated that, "There is no procedure (SOP or QP) in place at the facility to implement the Cives QAM requirements for computer testing," and identified Observation V2011-28-10 which stated that, "Cives QP 04-01, 'Procurement Document Control,' does not provide guidance to implement all requirements from [the] QAM." In a letter dated November 18, 2011, Cives reported that it had completed corrective actions for Observations V2011-28-09 and V2011-28-10. On July 21, 2012, another Shaw Nuclear Service Inc. audit of Cives identified Observation V2012-22-01 which stated that, "Procedures for the implementation of QA Program requirements do not all contain an appropriate level of detail to ensure consistent, compliant implementation." In a letter dated October 8, 2012, Cives reported that it had completed corrective actions for Observation V2012-22-01. During the inspection, the NRC inspection team identified several examples in which Cives failed to establish procedures or implement

the QA program requirements for activities affecting quality. Section 5, "Control of Special Processes," Section 6, "Inspection," Section 7, "Traceability," and Section 8, "Control of Measuring and Test Equipment," of this report address examples of this issue.

- On July 21, 2012, a Shaw Nuclear Service Inc. audit of Cives identified Observation V2012-22-04 which stated that, "Drawing 7 for Job 5260 (S0320000780) Revision C approved and dated March 26, 2012, was being used in the field (production). The drawing lists that Revision B was issued for re-approval on April 5, 2012. Initial review indicates there is a possible error in the recording of the Revision B date." In a letter dated October 8, 2012, Cives reported that it had completed corrective actions for Observation V2012-22-04. During the inspection, the NRC inspection team identified several examples in which Cives failed to ensure that the correct revisions of procedures were available at locations in which the prescribed activities were performed. Section 6, "Inspection," of this report address this issue.

c. Conclusions

The NRC inspection team issued Nonconformance 99901419/2012-201-02 for Cives's failure to implement the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. Nonconformance 99901419/2012-201-02 cites Cives for failing to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances were promptly identified with adequate corrective actions to preclude recurrence. The NRC inspection team identified deficiencies similar to those identified in two Shaw Nuclear Service Inc. audits conducted on December 4, 2011 and on July 21, 2012.

11. Entrance and Exit Meetings

On December 10, 2012, the NRC inspection team discussed the scope of the inspection with Mr. Greg Orff, General Manager of Cives Steel Company, Southern Division, and with Cives management and staff. On December 14, 2012, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Orff, Cives staff, and representatives from Shaw Nuclear Service Inc. On January 24, 2013, a telephonic re-exit meeting has held with Mr. Greg Orff where the inspector lead presented the final results of the inspection. The attachment to this report lists the entrance and exit meeting attendees, as well as those individual interviewed by the NRC inspection team.



## ATTACHMENT

### 1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit	Interviewed
Jonathan Ortega	Inspection Team Lead	NRC	X	X	
Samantha Crane	Inspector	NRC	X	X	
Brent Clarke	Inspector	NRC	X	X	
Milton Valentin	Inspector	NRC	X	X	
David Harmon	Inspector	NRC	X	X	
Alma Allen	Inspector	NRC	X	X	
Greg Orff	General Manager	Cives	X	X	X
Lyn Busby	Senior Project Manager	Cives	X	X	X
Kyle Delaney	QA Manager	Cives	X	X	X
Karl Hanson	Production Manager	Cives	X	X	X
Jamie Sherrod	Project Manager	Cives	X		X
Robert Sellers	Chief Draftsman	Cives			X
Jack Prevatt	Nuclear Shop Supervisor	Cives			X
Harlon (Buddy) Rogers	QC Inspector	Cives			X
Kaldrick Harrison	Machinist	Cives			X
Don Turner	Machinist	Cives			X
Walter Maloy	Paint and Shipping Supervisor	Cives			X
Jerry Knifer	Supervisor	Cives			X
Danny Wilkerson	Welder	Cives			X
Robby Graham	Welder	Cives			X
Joshua Morris	Fitter	Cives			X
Brandon Poston	Draftsman	Cives			X
James Stobaugh	Inspection Supervisor	Shaw Nuclear Service Inc.			X
Anthony Chivisi	Source Inspector	PSC			X
Tom Collins	Source Inspector	PSC			X
Buck Blum (via telephone)	Director of Inspection	Shaw Nuclear Service Inc.		X	

### 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 43003, "Reactive Inspections of Nuclear Vendors," dated April 25, 2011

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

The following items were found during this inspection:

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
99901419/2012-201-01	Open	NOV	10 CFR 21.21 & 10 CFR 21.51
99901419/2012-201-02	Open	NON	Criterion XVI
99901419/2012-201-03	Open	NON	Criterion X
99901419/2012-201-04	Open	NON	Criterion IX
99901419/2012-201-05	Open	NON	Criterion I
99901419/2012-201-06	Open	NON	Criterion V
99901419/2012-201-07	Open	NON	Criterion II
99901419/2012-201-08	Open	NON	Criterion VI

### **4. DOCUMENTS REVIEWED**

#### Specifications

- APP-G1-SX-001, "AP1000 Painting of Shop Fabricated Steel," Revision 4, dated April 8, 2011
- APP-SS01-Z0-03, "Equipment: Embedded and Miscellaneous Steel, Westinghouse Safety Class C," Revision 3, dated March 3, 2011
- Supplement to VS2-SS01-Z0-003, "Design Specification for Embedded and Miscellaneous Steel, Westinghouse Safety Class C," Addendum 1, dated July 7, 2011

#### Cives Steel Company Procedures

- "Cives Steel Company Quality Assurance Manual for the Fabrication of Structural Steel for Nuclear Facilities Meeting the Intent of NQA-1 and 10CFR50 Appendix B," Revision 2, dated May 16, 2011
- "Cives Steel Company Quality Assurance Manual for the Fabrication of Structural Steel for Nuclear Facilities Meeting the Intent of NQA-1 and 10 CFR 50 Appendix B," Revision 3, dated September 17, 2012
- QP 01-01, "Quality Planning," Revision 1, dated March 15, 2010
- QP 02-02, "Indoctrination and Training," Revision 1, dated February 1, 2010
- QP 10-01, "Receiving Inspection," Revision 1, dated March 26, 2010
- Form 10-01-1, "Receiving Checklist," Revision 1, dated March 26, 2010
- QP 10-02, "In-Process Inspection," Revision 0, dated July 22, 2009
- QP 10-03, "Final Inspection," Revision 0, dated July 22, 2009
- QP 12-01, "Control of Measuring and Test Equipment," Revision 1, dated March 26, 2010
- QP 14-01, "Inspection, Test, and Operating Status," Revision 0, dated July 22, 2009
- QP 15-01, "Control of Nonconforming Item," Revision 0, dated July 22, 2009
- QP 15-02, "Reporting of Defects and Noncompliance," Revision 2, dated September 19, 2012
- QP 16-01, "Corrective and Preventive Action," Revision 2, dated September 19, 2012
- QP 18-01, "Quality Audits," Revision 1, dated December 11, 2009

- SOP QA 02-02-1, "Qualification & Certification of NDE Personnel," Revision 2, dated December 12, 2011
- SOP QA 02-02-2, "QC Inspector Training & Qualification," Revision 2, dated December 12, 2011
- SOP QA 02-02-3, "Welder Training," Revision 1, dated April 28, 2010
- SOP QA 02-02-4, "Qualification of Welding Personnel," Revision 1, dated June 3, 2010
- SOP QA 02-02-5, "Surface Preparation and Painting Training," Revision 1, dated April 28, 2010
- SOP QA 05-01-2, "Standard Welding," Revision 3, dated January 4, 2012
- SOP QA 05-01-3, "General Painting," Revision 1, dated April 28, 2010
- SOP QA 05-01-5, "Stud Welding," Revision 2, dated December 20, 2011
- S.O.P QA 06-01-2, "Control of Project Drawings," Revision 2, dated August 23, 2010
- S.O.P QA 06-01-3, "Detailing, Checking and Backchecking," Revision 1, dated June 2, 2010
- SOP QA 08-01-1, "Material Traceability," Revision 1, dated April 28, 2010
- SOP QA 08-01-2, "Bolt, Paint, & Welding Consumables Traceability," Revision 1, dated April 28, 2010
- SOP QA 08-01-3, "Storage and Control of Welding Consumables," Revision 1, dated April 28, 2010
- SOP QA 10-01-1, "Material Identification and Verification," Revision 2, dated November 10, 2011
- SOP QA 10-02-1, "In-Process Inspection," Revision 1, dated April 28, 2010
- SOP QA 10-03-1, "Final Inspection," Revision 1, dated April 28, 2010
- SOP QA 10-03-2, "Visual Examination," Revision 1, dated April 28, 2010
- SOP QA 12-01-1, "Control of Measuring and Test Equipment," Revision 2, dated November 10, 2011
- SOP QA 12-01-2, "Certification of Tapes, Squares, and Weld Gauges," Revision 1, dated April 28, 2010
- SOP QA 12-01-5, "Certification of Temperature Indicating Instruments," Revision 1, dated April 28, 2010
- SOP QA 12-01-6, "Certification of Welding Machines," Revision 1, dated April 28, 2010
- SOP QA 12-01-7, "Certification of Paint Gauges," Revision 1, dated April 28, 2010
- SOP QA 15-01-1, "Revision Level 2—Nonconformance," dated September 19, 2012
- SOP QA 15-01-1, "Nonconformance," Revision 2, dated September 19, 2012

#### Drawings

- Drawing SV3-1211-CE-928 Revision 2
- Drawing SV3-1224-CE-933 Revision 0
- Drawing SV3-1224-CE-934 Revision 0
- Drawing SV3-1224-CE-963 Revision 1
- Drawing SV4-1212-CE-001 Revision 2
- Drawing SV4-1212-CE-001 Revision 2
- Drawing SV4-1212-CE-001 Revision 2
- Drawing SV4-1212-CE-001 Revision 2
- Drawing SV4-1212-CE-919 Revision 2
- Drawing SV4-1213-CE-937 Revision 3
- Drawing VS2-1221-CE-911 Revision 0
- Drawing VS2-1211-CE-927 Revision 2

- Job Number 5204, Drg. No. E1211, Revision 1, “Embed Locations Wall M (West Face),” dated February 1, 2012
- APP-1211-CEX-927, Revision 3–Construction Number VS2-1211-CEX-927-R2, dated March 28, 2012
- APP-CE01-CE-002, Revision 3–Construction Number VS2-CE01-CE-002-R2, dated January 7, 2012
- Job number 5204, Drg. No. 35, Revision E–DWA embed plate type DD2-H–Shop drawing A2-CS-X Type DD2-H, dated October 24, 2012
- APP-1215-CE-951, Revision 3–Construction Number VS2-1215-CE-951-R2, dated January 14, 2011
- Job number 5204, Drg. no. E1215-951, Revision 2, “Embed Locations Wall 2 (South Face),” dated March 29, 2012
- APP-1215-CEX-951, Revision 4–Construction Number VS2-1215-CEX-951-R3, dated July 13, 2011
- APP-CE01-CE-001, Revision 4–Construction Number VS2-CE01-CE-001-R3, dated January 13, 2012
- Shop drawing A2-CS-X Type A3 (Job number 5204, Drg. No. 1, Revision D)–Plate type A3, dated September 20, 2012
- APP-1212-CE-918, Revision 3–Construction Number SV4-1212-CE-918-R2, dated March 28, 2012
- “Embed Locations Wall J (West Face)” (Job number 5260, Drg. no. E1212-918, Revision 2), dated September 20, 2012
- APP-1212-CEX-918, Revision 3–Construction Number SV4-1212-CEX-918-R2, dated March 28, 2012
- APP-CE01-CE-002, Revision 3–Construction Number SV4-CE01-CE-002-R2, dated February 7, 2012
- Shop drawing A2-CS-X Type DNT (Job number 5260, Drg. No. 51, Revision C)–Plate type DTN, dated February 29, 2012
- APP-1212-CE-015, Revision 2–Construction Number VS2-1212-CE-015-R2, dated August 28, 2011
- Job number 5202, Drg. no. E1212-15, Revision 3 “Field Weld Stud Layout for Room 12111 Area 2,” dated March 22, 2012
- Shop drawing (A1-CS-X) Nelson Field Welded Studs (Job number 5202, Drg. No. 305, Revision 1)–(BLANK Drawing), dated March 22, 2012
- Job number 5203, Drg. no. AB22, Revision 2, “Partial Anchor Setting Plan T1a-CS-X,” dated October 30, 2012
- Shop drawing (T1A-CS-X) “Type DH1” (Job number 5203, Drg. No. 32, Revision E)–Type DH1, dated October 30, 2012

#### Engineering and Design Coordination Reports and Requests for Information

- E&DCR APP-CE50-GEF-875004, Revision 0, “DWA Embed Plate Type DJ1,” dated October 29, 2012
- RFI 132177-022, Revision 0, “#8 DWA unavailable,” dated April 4, 2012
- APP-CE01-GF-850111, “Cives RFI 132177-076 Method of Stud and DWA,” dated November, 14, 2012
- Request for Information (RFI) APP-CE01-GF-850053, Cives RFI 132177-025 Plate Tolerances, dated July 30, 2012

## Purchase Orders

- PO 132177-D220.00, "Shipping Ticket for Load #29," dated November 2, 2012
- PO 132177-D220.00, "Special Site Storage Requirements for Load #29," dated November 2, 2012
- PO B1676-5203, "Receiving Checklist," dated March 6, 2012
- PO B1677 3/4" A572 Heat number 1508157, "Receiving Checklist," dated April 10, 2012

## Material Test Reports

- Certified Test Report NSW 004-12-02-07606-1 for PO B1676-5203
- CSC018-12-03-11838-4 Heat# 1508157, "Certified Material Test Report," dated April 2, 2012
- Heat# 1508157, "Mill Test Report," dated November 28, 2011
- Heat# 20199220, "Certified Material Test Report," dated July 16, 2012
- Heat# 20199220, "Certified Material Test Report," dated June 12, 2012
- Heat# 20199220, "Mill Test Report," dated April 25, 2012
- NSW004-12-02-07606-1 Heat #1504849, "Certified Test Report," dated February 29, 2012
- CSC018-12-02-07290-1 Heat# 1504849, "Certified Test Report," dated February 27, 2012
- Heat# 1504849, "Mill Test Report," dated July 28, 2011
- CSC018-12-03-11838-4 Heat number 1508157, "Certified Material Test Report," dated April 2, 2012
- Heat number 1508157, "Mill Test Report," dated November 28, 2011
- PO B1676-5203 (8) (studs & ferrules) Heat number 20199220, "Receiving Checklist," dated July 30, 2012
- Heat number 20199220, "Certified Material Test Report," dated July 16, 2012
- Heat number 20199220, "Certified Material Test Report," dated June 12, 2012
- Heat number 20199220, "Mill Test Report," dated April 25, 2012
- NSW004-12-02-07606-1 Heat number 1504849, "Certified Test Report," dated February 29, 2012
- CSC018-12-02-07290-1 Heat number 1504849, "Certified Test Report," dated February 27, 2012
- Heat number 1504849, "Mill Test Report," dated July 28, 2011

## Cives Logs and Records

- Inspection Fabrication Plan No. 5200-01 for Embeds, Items, and Anchor Bolts for POs 132175-CE01.01, 132176-CE01.01, 132177-D220.00, and 132178-CE01.01, Revision 1, dated December 14, 2011
- Measuring and Test Equipment Control Log," dated July 13, 2012
- "Surface preparation and Coating Inspection Record," dated December 12, 2012
- "Nelson Stud Welding Machine Certificate of Calibration," dated July 12, 2012
- 5206 12251-PW703, "Recorded Piece Status," dated December 5-12, 2012
- 5206 12251-PW703, "Detailed Inspection Report: PAINT," dated December 9, 2012
- PO B1677 3/4" A572 Heat# 1508157, "Receiving Checklist," dated April 10, 2012
- PO B1676-5203 (8) (studs & ferrules) Heat# 20199220, "Receiving Checklist," dated July 30, 2012

- 5260 APP-12156-CE-PW504, "Detailed Inspection Report: PAINT," dated May 17, 2012
- 5260 APP-12156-CE-PW504, "Recorded Piece Status," dated April 12-December 11, 2012
- 5260 APP-12156-CE-PW504, "Detailed inspection Report: INSP," dated May 12, 2012
- PO B1676-5203 (2) (Studs and Ferrules) heat# 1504849, "Receiving Checklist," dated March 6, 2012
- PO 131677-2, "Receiving Checklist," dated March 8, 2012

#### 10 CFR Part 21 Evaluations and Reports

- Cives Steel Company, Southern Division letter to Shaw Power, Nuclear Services, "10 CFR 21 Reporting," dated August 14, 2012
- Cives Steel Company, Southern Division letter to Shaw Power, Nuclear Services, "10 CFR 21 Reporting," dated September 6, 2012
- Shaw letter to U.S. Nuclear Regulatory Commission (NRC), "Interim 10 CFR Part 21 Report Regarding Embeds for AP1000 Project Vogtle Units 3 and 4," dated September 7, 2012
- Shaw letter to NRC, "Status Update for Interim 10 CFR Part 21 Report Regarding Embeds for AP1000 Project Vogtle Units 3 and 4," dated November 5, 2012

#### Corrective Action Requests (CAR)

- CAR Log
- CAR No. 023, "Equip calibration status," dated November 16, 2011
- CAR No. 24, "AVL was not a controlled document," dated November 16, 2011
- CAR No. 25, "SOP QA 05-01-2 stated peening may be performed. WPS's said no peening," dated November 16, 2011
- CAR No. 026, "WPS book was missing from welding area and welders were unaware of procedures," dated November 16, 2011
- CAR No. 027, "Certification documentation was not available for all QC inspection personnel," dated November 16, 2011
- CAR No. 028, "Welding machine calibration sticker," November 16, 2011
- CAR No. 029, "Red reject tags and quarantine area," November 16, 2011
- CAR No. 030, "Suspect counterfeit item procedure," November 16, 2011
- CAR No. 031, "QP 04-01 procedure document control," November 16, 2011
- CAR No. 032, "Flow down requirements thru contract review," November 16, 2011
- CAR No. 033, "Incorporation of reporting NCR in Po's
- CAR No. 034, "Contract flow down to sub tier PO's," dated November 16, 2011
- CAR No. 035 SODIA001-13 CAR close out," November 16, 2011
- CAR No. 037, "16 plates shipped with letters/numbers in the die stamp mark deemed illegible," dated July 27, 2012
- CAR No. 038, "143 plates shipped with studs that lacked 360 degree flash, repaired by fillet welds, and not test bent per AWS D1.1 Section 7.8.1," dated July 27, 2012
- CAR No. 039, "22 plates shipped which lacked 360 degree flash and not test bent per AWS D1.1 Section 7.8.1," dated July 27, 2012
- CAR No. 040, "13 embed plates shipped on load #1 fabricated at +1/4 inch to +5/16 inch over the specified length," dated July 27, 2012
- CAR No. 041, "4 embed plates shipped on load #1 at 1/4 inch over the tolerance as measured stud to stud," dated July 27, 2012

- CAR No. 042, "The embed plates marked APP-12111-CE-PW463 and APP-12111-CE-PW809 as shown on the material list sent with the documentation package had incorrect sizes listed for the plates," dated July 27, 2012
- CAR No. 043, "6 plates were shipped to the Vogtle site with studs that lacked 360 degree flash and were repaired by fillet welds. The fillet welds applied by Cives were deemed insufficient by the customer's site inspection," dated July 27, 2012
- CAR No. 044, "1 plate was shipped to the Vogtle site with one stud having undercut of 1/16 inch deep created by a grinder which is a deviation from AWS D1.1 Table 6.1 (7.b) undercut tolerance of 1/32 inch," dated July 27, 2012
- CAR No. 045, "1 plate showed two studs bent 90 degrees on load #1 shipped to the Vogtle site and is unusable," dated July 27, 2012
- CAR No. 046, "Embed plates require a quantity of 8-3/4 inch by 8 inch shear studs. 4 plates were fabricated and shipped to the Vogtle site with only 6-3/4 inch by 8 inch studs," dated July 27, 2012
- CAR No. 047, "The Shaw Certificate of Compliance for load #1 to the Vogtle site references specification SV3-SS01-Z0-003 Revision 3. The revision level was written incorrectly and should have referenced Revision 2," dated July 27, 2012
- CAR No. 048, "Embed plates painted when humidity was above the maximum allowed," dated August 17, 2012
- CAR No. 049, "Embed with hard stamp incorrect," dated August 23, 2012
- CAR No. 050, "Paint overspray on studs," dated August 23, 2012
- CAR No. 051, "Embed under tolerance on length," dated August 23, 2012
- CAR No. 060, "Cives QAM was revised to Revision 3 on 9/17/12. Tier 2 QP04-01 Revision 3, QP 07-01 Revision 4, QP 15-01 Revision 1, QP15-02 Revision2 and QP 16-01 Rev 2 were revised on 9/19/12. Although the training of these procedure revisions occurred on October 2, 2012, the controlled copies were not issued to the appropriate until December 11, 2012," dated December 13, 2012
- CAR No. 061, "Several NCRs it was incorrectly determined that signatures by the purchasing manager and shop superintendent (thereby documenting agreement) were not obtained to confirm agreement when the NCR did not effect that manager. This is not consistent with the SOP," dated December 13, 2012
- CAR No. 062, "Different color ribbons were attached to embed plates that were being reinspected to signify the status in the process. However, Cives SOP's do not include a procedure for the use of these ribbons or the meaning of the colors," dated December 13, 2012
- CAR No. 063, "Posting of 10 CFR Part 21 in the shop and office is not the latest version per Cives procedure SOP 15-02 Sect 1," dated December 13, 2012
- CAR No. 064, "Although the Cives Nuclear QA Manual states that non-conforming material will be placed in a clearly identified and designated hold area (5.15.3), the implementing procedure (QP 15.01 and SOP 15-01-1) do not define how this segregation will be performed," dated December 13, 2012
- CAR No. 065, "The record for welding machine calibration, while were on file available, were not included," dated December 13, 2012
- CAR No. 066, "Random in-process inspection as outlined in SOP 08-01-1, para 4.4.2 has not been completed and documented," dated December 13, 2012
- CAR No. 067, "There is no procedure for checking nor identification of the acceptance criteria for monitoring blast media and blast air for contaminants and cleanliness as required in SOP 05-01-3, para 9.4," dated December 14, 2012
- CAR No. 068, "SOP 12-01-6 does not specifically address the calibration of stud welding machines," dated December 14, 2012

- CAR No. 069, "SOP 10-03-1 states that welds shall be inspected to AWS d1.1. Project specification contains additional requirements that 1 out of each 100 studs shall be tested. There is no documented instruction that QC inspectors have been trained to this additional requirement. There is documented evidence that the inspection has been done," dated December 14, 2012
- CAR No. 070, "Stud welding machines did not have a self-adhering sticker indicating calibration per SOP 12-01-6, para 5.2.3. Documentation of certification was on file and available with Quality Assurance," dated December 14, 2012

#### Nonconformance Reports

- Cives Form 15-01-02, "Nonconformance Log"
- Cives Steel Company, Southern Division, "NQA-1 NCR Trend Report," dated October 12, 2012
- Cives Steel Company, Southern Division, "NQA-1 NCR Trend Report," dated November 17, 2012
- NCR No: 361-12, "Plates shipped to the job site on load 1 with illegible stamps," dated August 6, 2012
- NCR No: 615-12, "143 plates had studs with weld repairs that were not bent per AWS D1.1 for testing," dated August 6, 2012
- NCR No. 616-12, "22 plates had studs welded with a lack of 360 degree flash without the required 15 degree bend test," dated August 6, 2012
- NCR No. 617-12, "13 plates were fabricated over tolerance for length and shipped to the jobsite on load 1," dated August 6, 2012
- NCR No. 619-12, "4 plates were fabricated with stud locations over tolerance for center to center dimensions and shipped to the jobsite on load 1," dated August 6, 2012
- NCR No. 620-12, "2 plates had the wrong size listed on the material list included in the documentation package for load 1 shipped to the Vogtle site," dated August 6, 2012
- NCR No. 177, "After re-inspection of 66 plates they were found to have paint damage due to long term storage outside and handling," dated December 4, 2012
- NCR No. 184, "After re-inspection of 90 plates, they were found to be short," dated December 5, 2012

#### 5. LIST OF ACRONYMS

ASTM	American Society for Testing Materials
AWS	American Welding Society
CAR	corrective action request
CFR	<i>Code of Federal Regulations</i>
CMVB	Construction Mechanical Vendor Branch
DCIP	Division of Construction Inspection and Operational Programs
IP	inspection procedure
M&TE	measuring and test equipment
NDE	nondestructive examination
NMR	nonconforming material report
NON	notice of nonconformance
NRC	U.S. Nuclear Regulatory Commission
NRO	Office of New Reactors
PO	purchase order



QA	quality assurance
QAM	quality assurance manual
QC	quality control