

July 21, 2017

Mr. Mark Stapleton
Nuclear Operations Manager
Greenberry Industrial
2273 NW Professional Drive, Suite 200
Corvallis, OR 97330

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT
NO. 99901480/2017-201 OF GREENBERRY INDUSTRIAL

Dear Mr. Stapleton:

From June 5-9, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Greenberry Industrial (here after referred to as Greenberry) facility in Corvallis, Oregon and Vancouver, Washington. The purpose of this limited-scope routine inspection was to assess Greenberry's compliance with provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," and selected portions of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

This technically-focused inspection specifically evaluated Greenberry's implementation of the quality activities associated with the fabrication, assembly, and testing of the safety-related AP1000 containment floor modules being supplied for the Westinghouse Electric Company (WEC) AP1000 reactor design and that will be delivered to Vogtle Electric Generating Plant Units 3 & 4 and V.C. Summer Nuclear Generation Station Units 2 & 3. The inspection also evaluated activities related to Section III, "Rules for Construction of Nuclear Power Plant Components," of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, the American Welding Society (AWS) D1.1, "Structural Welding Code – Steel," 2000 Edition and AWS D1.6, "Structural Welding Code - Stainless Steel," 1999 Edition. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute NRC endorsement of Greenberry's overall quality assurance or Part 21 programs.

During this inspection, the NRC staff also reviewed activities associated with fabrication of structural sub-modules to support closure of inspections, tests, analyses, and acceptance criteria (ITAAC) from Revision 19 to the certified AP1000 Design Control Document Tier 1. Specifically, these activities are associated with ITAACs 3.3.00.02a.i.a (760) for Vogtle Electric Generating Plant Units 3 & 4 and V.C. Summer Nuclear Generation Station Units 2 & 3. The NRC inspection team did not identify any findings associated with the ITAAC contained in Section (4) of the attachment to this report.

Based on the results of this inspection, the NRC inspection team found the implementation of your QA program met the requirements imposed on you by your customers or NRC licensees. No findings of significance were identified.

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

Sincerely,

/RA Paul Prescott Acting For/

Kerri A. Kavanagh, Chief
Quality Assurance Vendor Inspection Branch-3
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Docket No.: 99901480

Enclosure:
Inspection Report No. 99901480/2017-201
and Attachment

SUBJECT: NUCLEAR REGULATORY COMMISSION VENDOR INSPECTION REPORT
NO. 99901480/2017-201 OF GREENBERRY INDUSTRIAL

Dated July 21, 2017

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DATE	07/10/17	07/13/17	07/14/17
OFFICE	RII/DCO	NRO/DCIP	
NAME	TPonko*	KKavanagh (PPrescott for)	
DATE	07/11/17	07/20/17	

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

Docket No.: 99901480

Report No.: 99901480/2017-201

Vendor: Greenberry Industrial
2273 NW Professional Drive, Suite 200
Corvallis, OR 97330

Vendor Contact: Mr. Mark Stapleton
Nuclear Operations Manager
Mark.stapleton@greenberry.com
Phone: 1-541-757-8458

Nuclear Industry Activity: Greenberry Industrial is under contract by Chicago Bridge & Iron /WECTEC to fabricate safety-related containment floor section modules for the Westinghouse AP1000 reactor plant design. Greenberry performs nuclear structural weld work in accordance with American Welding Society (AWS) D1.1, "Structural Welding Code – Steel," 2000 Edition and AWS D1.6, "Structural Welding Code - Stainless Steel," 1999 Edition.

Inspection Dates: June 5-9, 2017

Inspectors: Jermaine Heath NRO/DCIP/QVIB-1 Team Leader
Jonathan Ortega-Luciano NRO/DCIP/QVIB-2
John Honcharik NRO/DEI/MCB
Tony Ponko RII/DCO/IB4

Approved by: Kerri A. Kavanagh, Chief
Quality Assurance Vendor Inspection Branch-3
Division of Construction Inspection
and Operational Programs
Office of New Reactors

Enclosure

EXECUTIVE SUMMARY

Greenberry Industrial
99901480/2017-201

The U.S. Nuclear Regulatory Commission (NRC) staff conducted a vendor inspection at the Greenberry Industrial (hereafter referred to as Greenberry) facilities in Corvallis, Oregon and Vancouver, Washington, to verify that it had implemented an adequate quality assurance (QA) program that complies with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." In addition, the NRC inspection team also verified that Greenberry implemented a program under 10 CFR Part 21, "Reporting of Defects and Noncompliance," that met the NRC's regulatory requirements. The NRC inspection team conducted the inspection on June 5-9, 2017.

This technically-focused inspection specifically evaluated Greenberry's implementation of quality activities associated with the design, fabrication, and testing of safety-related AP1000 containment floor modules that will be delivered to Vogtle Electric Generating Plant (Vogtle) Units 3 and 4 and Virgil C. Summer Nuclear Station (V.C. Summer) Units 2 and 3. Specific activities observed by the NRC inspection team included:

- In-process fabrication of sub-modules CA55 GM5 and CA55 GM4 for Vogtle Unit 3 and V.C. Summer Unit 2, respectively
- Inspection of completed sub-modules CA57 GM2 and CA55 GM1, for Vogtle Unit 4 and V.C. Summer Unit 3, respectively
- Welding on structural module CA55 for Vogtle Unit 3
- Welding on duplex stainless steel structural module CA57, weld numbers 1, 4, and 39 for V.C. Summer Unit 2
- Liquid penetrant testing inspection of duplex stainless steel base metal repair on structural module CA55 for V.C. Summer Unit 2
- Magnetic particle testing inspection of structural module CA55, weld numbers 99 through 105 for Vogtle Unit 3
- Stud welding on duplex stainless steel structural module CA55 including pre-production test welding for V.C. Summer Unit 2
- Welding on structural module CA58 for Vogtle Unit 4, welds 36 and 37 at Greenberry's Vancouver facility
- Fit-up inspection of structural module CA55, weld number 1 for Vogtle Unit 4 at Greenberry's Vancouver facility
- Calibration of a 6 inch digital caliper and a depth gage

In addition to observing these activities, the NRC inspection team verified that measuring and test equipment (M&TE) was properly identified, marked, calibrated, and used within its calibrated range.

These regulations served as the bases for the NRC inspection:

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

During the course of this inspection, the NRC inspection team implemented the following Inspection Procedures (IPs):

- IP 43002, "Routine Vendor Inspections"
- IP 43004, "Inspection of Commercial-Grade Dedication Programs"
- IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance"
- IP 65001.03, "Inspection of ITAAC-Related Installation of Piping"
- IP 65001.B, "Inspection of the ITAAC-Related Welding Program"
- IP 65001.F, "Inspection of the ITAAC-Related Design and Fabrication Requirements"

This was the first NRC inspection of Greenberry's Corvallis and Vancouver locations. The NRC inspection team concluded that Greenberry's QA policies and procedures comply with the applicable requirements of Appendix B to 10 CFR Part 50 and 10 CFR Part 21, and that Greenberry's personnel are implementing these policies and procedures effectively. The results of this inspection are summarized below.

Inspection Areas

The NRC inspection team determined that Greenberry is implementing its programs for design control, commercial-grade dedication, procurement document control, supplier oversight, control of special processes, control of M&TE, nonconforming materials, parts or components, corrective actions and internal audits in accordance with the applicable regulatory requirements of Appendix B to 10 CFR Part 50. Also, Greenberry is implementing its 10 CFR Part 21 program in accordance with the regulatory requirements. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team also determined that Greenberry is implementing its policies and procedures associated with these programs. No findings of significance were identified.

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

The U.S Nuclear Regulatory Commission (NRC) inspection team reviewed Greenberry Industrial's (hereafter referred to as Greenberry) policies and implementing procedures that govern Greenberry's 10 CFR Part 21, "Reporting of Defects and Noncompliance," program to verify compliance with the regulatory requirements. In addition, the NRC inspection team evaluated the 10 CFR Part 21 postings and a sample of Greenberry's purchase orders (POs) for compliance with the requirements of 10 CFR 21.21, "Notification of Failure to Comply or Existence of a Defect and its Evaluation," and 10 CFR 21.31, "Procurement Documents." The NRC inspection team also verified that Greenberry's nonconformance and corrective action procedures provide a link to the 10 CFR Part 21 program.

The NRC inspection team discussed the 10 CFR Part 21 program with Greenberry's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

While inspecting Greenberry's 10 CFR Part 21 program, the NRC inspection team specifically concentrated on Part 21 Final Report, "Deviations on Structural Modules Vogtle Unit 3 AP1000 Project," dated September 12, 2016 (ADAMS accession No. ML16258A454) involving underbead weld cracking and plasma-cutter-induced microcracking in AP1000 containment floor modules delivered to Vogtle Unit 3 and 4. The NRC inspection team verified that Greenberry provided interim and final reports (with periodic updates) that effectively informed the NRC and affected licensees of the identified defect and plans for corrective actions that met regulatory requirements. Section 7, "Nonconforming Materials, Parts, or Components and Corrective Action," provides additional details on Greenberry's actions. As a result of the NRC inspection teams review, Greenberry submitted an update to its Part 21 notification dated July 6, 2017 indicating that the outstanding evaluation was completed under Westinghouse Electric Company's (WEC's) corrective action process through WEC's Nonconformance & Disposition (N&D) reports. The attachment to this inspection report lists all documents reviewed by the NRC inspection team. No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that Greenberry is implementing its Part 21 program in accordance with the regulatory requirements of 10 CFR Part 21. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Greenberry is implementing its policies and procedures associated with the 10 CFR Part 21 program. No findings of significance were identified.

2. Design Control

a. Inspection Scope

The NRC inspection team reviewed Greenberry's policies and implementing procedures that govern its design control program to verify compliance with the regulatory requirements of Criterion III, "Design Control," of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," and the requirements of Section III, "Rules for Construction of Nuclear Facility Components," of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code.

The NRC inspection team reviewed a sample of containment floor structural modules for the WEC AP1000 reactor design that were in various stages of fabrication and being prepared for delivery to Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3. The NRC inspection team reviewed Greenberry's procedures, specifications, shop drawings, shop travelers, requests for information (RFIs), and quality assurance practices associated with fabrication of structural sub-modules for the AP1000 containment internal structures (CISs) to verify that relevant technical requirements associated with fabrication of the CIS structural sub-modules had been correctly translated from the construction documents into fabrication packages. This review was conducted in order to support future closure of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) 3.3.00.02a.i.a (760) for Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3.

The NRC inspection team discussed the design control program with Greenberry's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

The NRC inspection team verified that the shop drawing prepared by Greenberry for fabrication of the structural sub-modules were consistent with the engineering drawings, construction specifications, and quality assurance requirements provided by the design authority, including any relevant engineering and design coordination reports (E&DCRs). The NRC inspection team also confirmed that any inconsistencies or errors on the engineering drawings that were identified by the structural detailers during development of the shop drawings were addressed through the RFI process and that any required design changes were documented by the design authority using the E&DCR process.

The NRC inspection team observed in-process fabrication of sub-modules CA55 GM5 and CA55 GM4 for Vogtle Unit 3 and V.C. Summer Unit 2, respectively; and completed sub-modules CA57 GM2 and CA55 GM1, for Vogtle Unit 4 and V.C. Summer Unit 3, respectively. These sub-modules are fabricated using steel shapes and plates and are components of the composite operating floors at elevation 135'-3" of Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3. The NRC inspection team reviewed the overall configuration, sizes of shapes and plates, and dimensions and connection details of the sub-modules listed above to verify the sub-modules were being, or had been, fabricated in accordance with the engineering drawings and technical requirements, including those documented in the respective updated final safety analysis reports (UFSARs). The NRC inspection team reviewed a sample of weld travelers to verify that hold points had been

established at appropriate steps in the fabrication process and any applicable nondestructive examination (NDE) requirements had been performed. The NRC inspection team verified that, in general, the sub-modules identified above were being, or had been, fabricated in accordance with the construction documents and that any design deviations identified during fabrication were documented in nonconformance reports (NCRs) and forwarded to the design authority for reconciliation. The NRC inspection team did not identify any discrepancies potentially impacting the acceptance criteria of the relevant ITAAC that had not previously been identified and documented in existing NCRs.

c. Conclusion

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

3. Procurement Document Control, Supplier Oversight, and Internal Audits

a. Inspection Scope

The NRC inspection team reviewed Greenberry's policies and implementing procedures that govern the implementation of its procurement document control, oversight of contracted activities and internal audit program to verify compliance with the requirements of Criterion IV, "Procurement Document Control," Criterion VII, "Control of Purchased Material, Equipment, and Services," and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of POs, external and internal audits, and receipt inspection records to evaluate compliance with the applicable regulatory and technical requirements. The NRC inspection team also reviewed the disposition of audit findings to ensure findings were adequately resolved in a timely manner.

The NRC inspection team confirmed that external and internal audit reports contained objective evidence of the review of the relevant quality assurance criteria of Appendix B to 10 CFR Part 50. The NRC inspection team also verified that external and internal audits were performed by qualified auditors. In addition, the NRC inspection team also reviewed a sample of training and qualification records of Greenberry's auditors and confirmed that auditing personnel had completed all the required training and had maintained qualification and certification in accordance with Greenberry's policies and procedures.

The NRC inspection team also discussed the procurement document control, oversight of contracted activities and internal audit program with Greenberry's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team concluded that Greenberry is implementing its procurement document control, oversight of contracted activities and internal audit program in accordance with the regulatory requirements of Criterion IV, Criterion VII, and Criterion XVIII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that Greenberry is implementing its policies and procedures associated with its procurement document control, oversight of contracted activities and internal audit program. No findings of significance were identified.

4. Control of Special Processes

a. Inspection Scope

The NRC inspection team reviewed Greenberry's policies and implementing procedures that govern control of special processes to verify compliance with the regulatory requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50 as well as with the requirements of the American Welding Society (AWS) D1.1, "Structural Welding Code-Steel," 2000 Edition and AWS D1.6, "Structural Welding Code – Stainless Steel," 1999 Edition.

Specifically, for welding activities, the NRC inspection team reviewed shop travelers, weld procedure specifications, supporting procedure qualification records, welder qualification and the calibration certificates of the welding equipment. For NDE, the NRC inspection team reviewed magnetic particle testing (MT) procedures, liquid penetrant testing (PT) procedures, MT and PT reports, Radiographic (RT) procedures, and Level II and Level III inspector qualifications, and the calibration certificates of the measuring equipment.

The NRC inspection team also discussed the manufacturing control program with Greenberry's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

b.1 Welding Process

At the time of the inspection, Greenberry was fabricating structural modules for Vogtle Units 3 and 4 and V. C. Summer Units 2 and 3. The NRC inspection team witnessed welding of structural modules CA55 (Vogtle Unit 3 and Unit 4, and V.C. Summer Unit 2), CA57 (V. C. Summer Unit 2) and CA58 (Vogtle Unit 4) in accordance with the applicable Greenberry procedures including the use of the preheat process. The NRC inspection team verified that the welding procedure specifications (WPSs) were qualified in accordance with the requirements of AWS Codes D1.1 and D1.6 using the supporting procedure qualification records (PQRs) and the applicable Greenberry procedures.

The NRC inspection team verified that the applicable welding data; such as weld material and heat/lot number, WPS, inspection procedures used and final inspection results were recorded in accordance with the applicable Greenberry procedures and instructions. The welding data was recorded on the associated weld record for each weld joint along with the applicable NDE results. The NRC inspection team also observed that specific tools such as grinding wheels and wire brushes were designated for use on duplex stainless steel as required by procedures.

b.2 Control of Weld Material

The NRC inspection team observed the weld material storage area and verified that weld material was adequately controlled, including that flux-cored weld wire was either in hermetically sealed containers, or was rebaked in baking ovens to control the moisture content within the requirements of the applicable filler metal specification and AWS Codes D1.1 and D1.6. The NRC inspection team also verified that calibrated thermocouples were used and the instruments had valid calibration documentation in accordance with applicable Greenberry procedures. The NRC inspection team verified that weld material was controlled at all times until its consumption.

b.3 Non-destructive Examination

The NRC inspection team witnessed PT inspection for a duplex stainless steel base metal repair on CA55 module for V.C. Summer Unit 2, and MT inspections of CA55 module, weld numbers 99 through 105 for Vogtle Unit 3 in accordance with the applicable Greenberry procedures. The inspection team verified that the examinations were performed by qualified personnel using a qualified procedures in accordance with the requirements of AWS Codes D1.1 and D1.6. The NRC inspection team also observed appropriate cleaning was performed in accordance with applicable Greenberry procedures.

b.4 Qualification and Training of Welding and Nondestructive Examination Personnel

The NRC inspection team reviewed the associated welder qualification records and confirmed that the welders completed the required training and maintained their qualifications in accordance with Greenberry procedures. The NRC inspection team also verified that the applicable procedure for welder qualification met the requirements of AWS Codes D1.1 and D1.6.

The NRC inspection team reviewed the Greenberry procedures for MT, PT, and ultrasonic testing (UT) inspections, and verified that they were consistent with the applicable AWS Code requirements. The NRC inspection team also reviewed the Level III non-destructive examiner and Level II non-destructive inspector qualification records and confirmed they were qualified in accordance with the requirements in AWS Codes D1.1 and D1.6, with sufficient training and previous inspection experience.

c. Conclusions

The NRC inspection team concluded that Greenberry is implementing its special processes program in accordance with the regulatory requirements of Criterion IX of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and interviews conducted, the NRC inspection team also determined that Greenberry is adequately implementing its policies and procedures associated with the use of controlling special processes. No findings of significance were identified.

5. Commercial-Grade Dedication

a. Inspection Scope

The NRC inspection team reviewed Greenberry's policies and implementing procedures that govern the commercial-grade dedication (CGD) program to verify their compliance with the regulatory requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50.

The NRC inspection team selected a sample of items and services that were dedicated by Greenberry for use in safety-related applications to verify compliance with the applicable technical and regulatory requirements. Specifically, the NRC inspection team evaluated Greenberry's technical evaluations and verified that the evaluations appropriately identified the critical characteristics and verified the technical attributes necessary to provide reasonable assurance that the components being dedicated would perform their intended safety function. The NRC inspection team also evaluated the criteria for the selection of critical characteristics, the basis for the selection of the sampling plan, and the selection and implementation of verification methods to verify effective implementation of Greenberry's CGD process.

The NRC inspection team also discussed the CGD program with Greenberry's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

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

6. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed Greenberry's policies and implementing procedures that govern the measuring and testing equipment (M&TE) program to verify compliance with the requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50.

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

The NRC inspection team also verified that when M&TE equipment is received from the calibration service supplier and the calibration certificate states that it was found to be out of calibration, Greenberry generates a nonconformance report to identify items that have been accepted using this equipment since the last valid calibration date and to perform an extent of condition review.

The NRC inspection team also discussed the M&TE program with Greenberry's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

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

7. Nonconforming Materials, Parts, or Components and Corrective Action

a. Inspection Scope

The NRC inspection team reviewed Greenberry's policies and implementing procedures that govern the control of nonconformances and corrective actions to verify compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," and Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50.

The NRC inspection team also discussed the nonconformance and corrective action programs with Greenberry's management and technical staff. The attachment to this inspection report lists the documents reviewed and personnel interviewed by the NRC inspection team.

b. Observations and Findings

b.1 Corrective Action Associated with Part 21 Final Report, "Deviations on Structural Modules Vogtle Unit 3 AP1000 Project (ADAMS accession No. ML16258A454)"

On September 12, 2016, Greenberry notified the NRC of a defect associated with containment floor structural module CA33 for the Vogtle Unit 3 AP 1000 project. The NRC inspection team reviewed Greenberry's evaluation of the conditions reported in Part 21 final report. The NRC inspection team reviewed N&D reports submitted to WEC for these conditions which affected structural modules for Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3, along with WEC's response whose corrective actions included additional inspection, cut/reweld work, and/or weld repair. The NRC inspection reviewed Greenberry's implementation of WEC's corrective actions (NCR No. 229-NCR-169 and No. 229-NCR-185) related to underbead weld cracking and heat affected zone cracking on plasma cut edges. The NRC inspection team verified implementation of the corrective actions to mitigate underbead cracking that included increasing preheat, weld sequencing to control residual stresses and removal of a minimum 1/8-inch of metal from the plasma cut edges. The NRC inspection team also verified that all previously affected welds were volumetrically inspected and repaired as necessary to ensure that no cracks are present in completed welds.

No findings of significance were identified.

c. Conclusion

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

8. Entrance and Exit Meetings

On June 5, 2017 the NRC inspection team discussed the scope of the inspection with Mark Stapleton, Nuclear Operations Manager, Ed Reister, Quality Manager, and other members of Greenberry's management and technical staff. On June 9, 2017 the NRC inspection team presented the inspection results and observations during an exit meeting with Mark Stapleton, Ed Reister, and other members of Greenberry's management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

ATTACHMENT

1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit	Interviewed
Jermaine Heath	Inspection Team Leader	NRC	X	X	
Jonathan Ortega-Luciano	Inspector	NRC	X	X	
John Honcharik	Technical Specialist	NRC	X	X	
Tony Ponko	Inspector	NRC	X	X	
Kerri Kavanagh	Branch Chief	NRC		X	
Mark Stapleton	Nuclear Ops Manager	Greenberry	X	X	
Dennis Weaver	Nuclear Eq. Engineer	Greenberry	X	X	
Ed Reister	QA Manager	Greenberry	X	X	
Gerald Furgala	Project Manager	Greenberry	X	X	
Brent Delahunt	Production Manager	Greenberry	X	X	
Lloyd B. Mills	Nuclear Engineer	Greenberry	X	X	
Powell McLean	Project Manager	Westinghouse	X	X	
Robert Boyd	Project Rep	SCE&G	X	X	
Ross Latimer	Quality Engineer/Project Coordinator	Greenberry			X
Alex Kemmer	Welder	Greenberry			X
Joe Lucero	Welder	Greenberry			X
Dale Reed	Welder	Greenberry			X
Aaron Crist	Welder	Greenberry			X
Kenny Poulson	Welder	Greenberry			X
Joey Bottcher	Welder	Greenberry			X
Kathy Burdge	Welder	Greenberry			X
Josh Rockholt	QC Coordinator	Greenberry			X

Name	Title	Affiliation	Entrance	Exit	Interviewed
Bob Boye	Inspector	Greenberry			X
Ryan Symns	Inspector	Greenberry			X
Al Schnoor	Inspector	Greenberry			X
David Smith	Inspector	Greenberry			X
Jason Schwartz	Inspector	Greenberry			X
Scott Knutson	QC Manager	Greenberry			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 43002, "Routine Vendor Inspections," dated January 27, 2017
- IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated January 27, 2017
- IP 65001.03, "Inspection of ITAAC-Related Installation of Piping," dated August 19, 2008
- IP 65001.B, "Inspection of the ITAAC-Related Welding Program," dated September 25, 2013
- IP 65001.F, "Inspection of the ITAAC-Related Design and Fabrication Requirements," dated September 20, 2013

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSIONS

Item Number	Status	Type	Description
N/A	N/A	N/A	N/A

4. INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA

The U.S. Nuclear Regulatory Commission (NRC) inspection team identified the inspections, tests, analyses, and acceptance criteria (ITAAC) listed below related to components being fabricated and tested at Greenberry Industrial (Greenberry). At the time of the inspection, fabrication of AP1000 sub-modules for the containment internal structures (CISs) of Vogtle Unit 4 and V.C. Summer Unit 3 was in process. The NRC inspection team reviewed Greenberry procedures, work instructions, shop drawings, and fabrication records to verify that no conditions potentially impacting ITAAC closure were present. The NRC inspection team also observed CIS structural sub-modules that had been completed (with the exception of minor nonconforming conditions that had yet to be repaired) to verify that the sub-modules met technical requirements and that any design deviations had been appropriately identified and reconciled through the design authority. The ITAAC cited below are for future use by the NRC staff during the ITAAC closure process; the listing of these ITAAC does not signify that they have been met and/or closed. The NRC inspection team did not identify any findings associated with the ITAAC listed below.

Appendix C to the Combined License for Vogtle Electric Generating Plant Unit 3	No. 760	ITAAC 3.3.00.02a.i.a
Appendix C to the Combined License for Vogtle Electric Generating Plant Unit 4	No. 760	ITAAC 3.3.00.02a.i.a
Appendix C to the Combined License for Virgil C. Summer Nuclear Station Unit 2	No. 760	ITAAC 3.3.00.02a.i.a
Appendix C to the Combined License for Virgil C. Summer Nuclear Station Unit 3	No. 760	ITAAC 3.3.00.02a.i.a

4. DOCUMENTS REVIEWED

Policies and Procedures

- “Greenberry Fabrication Nuclear Quality Program,” Revision 3, dated March 21, 2013
- Greenberry Fabrication NQA-1 Quality Procedure (GQP)-N 18.01, “Internal Audits,” Revision 6, dated May 1, 2014
- GQP-N 02.03, “Auditor Qualification & Certification,” Revision 1, dated November 7, 2013
- GQP-N 15.01, “Control of Nonconforming Items,” Revision 7, dated August 4, 2015
- GQP-N 15.02, “Reporting of Defects and Noncompliance to 10CFR21 and 10CFR50.55(e),” Revision 6, dated July, 7, 2015
- GQP-N 16.01, “Corrective Action Report Processing,” Revision 4, dated February 9, 2015
- GQP-N 03.02, “Procurement,” Revision 1, dated March 27, 2013
- GQP-N 03.03, “Procurement for CBI,” Revision 0, dated March 10, 2014
- GQP-N 07.04, “Source Surveillance,” Revision 2, dated December 17, 2013
- GQP-N 07.05, “Commercial Grade Survey,” Revision 1, dated December 28, 2013
- GQP-N 12.01, “Control of Measurement & Test Equipment,” Revision 3, dated December 21, 2015
- GQP-N 03.02-CBI, “Commercial Grade Dedication for CBI,” Revision 3, dated October 29, 2014
- GQP-N 04.01, “Procurement Document Control,” Revision 3, dated November 27, 2013

- GQP-N 18.02, "Supplier Audit and Supplier Corrective Action Request," Revision 4, dated January 29, 2016
- Greenberry Fabrication Work Instruction (GWI) 12-04, "Verification of Digital Depth Gauges (Mitutoyo ID-1012EXBD)," Revision 1, dated October 28, 2015
- GWI 12.03, "Verification of Digital Caliper (≤ 24)," Revision 3 dated, October 29, 2015
- GWI 229-12, "Visual Inspection of Welded Fabrication," Revision 5, dated April 7, 2016
- GWI-229-21, "Base Metal and Weld Repair-Stainless Steel," Revision 4, dated 12/28/2015
- GWI-229-19, "Use of Traveler Package," Revision 8, dated 4/17/17
- GWI-229-09, "Base Metal and Weld Repair for Carbon Steel," Revision 8, dated 12/29/16
- GWI-229-11, "Processing, Layout and Fit-up," Revision 5, Dated 4/17/17
- GWI-229-12, "Visual Inspection of Welded Fabrication," Revision 5, dated 3/22/16
- GWI-229-055, "Weld Area HAZ Repair for WECTEC," Revision 1, dated 1/11/17
- GWI-229-16, "MT of Structural Welds (AWS D1.1)," Revision 4, dated 11/6/14
- GWI-229-17, "PT of structural welds (AWS D1.1 & D1.6)," Revision 2, dated 1/30/14
- GWI-229-05, "Control of Welding Consumables," Revision 5, 12/16/16
- GWI-229-08, "Control of Welding," Revision 7, dated 11/14/2016
- GWI-229-15, "UT of Structural welds (AWS D1.1)," Revision 7, dated 3/24/17
- GWI-229-25 "Control of Stud Welding", Revision 4, dated 3/21/17
- GWI -229-61, "UT of Structural Welds (AWS D1.1)," Revision 0, dated 2/22/17
- GWI 229-12, "Visual Inspection of Welded Fabrication," Revision 5, dated 3/22/16
- GWI 229-06, "Component Cleaning and Cleanliness (Class C, Class D)," Revision 4, dated 7/6/16
- GQP-N 02.04, "Qualification of Inspection & Test Personnel," Revision 4, dated 10/3/16
- GQP-N03.01, "Performance of Engineering Activities," Revision 4
- GWI 229-19, "Use of Traveler Package," Revision 8

Shop Drawings

- CA55-G1, "CA55 Floor Module," Revision 5, dated 5/23/17
- CA57-G1, "CA57 Floor Module," Revision 5, dated 4/3/17
- CA58-G1, "CA58 Floor Module," Revision 4, dated 11/30/16
- CA55-E1, "Isometric View," Revision 1
- CA55-E2, "Erection General Arrangement," Revision 1
- CA55-E3, "Erection Plan," Revision 1
- CA55-E4, "Details," Revision 1
- CA55-E5, "Erection Plan," Revision 2
- CA55-E6, "Details," Revision 1
- CA55-E7, "Erection Plan," Revision 1
- CA55-E8, "Details," Revision 2
- CA55-E9, "Erection Plan," Revision 1
- CA55-G1, "Shop Notes," Revision 5
- GA55-G2, "Drawing Index," Revision 20
- CA55-GM1-1, "GM1 Shop Details," Revision 7
- CA55-GM1-2, "GM1 Shop Details," Revision 1
- CA55-GM2-1, "GM2 Shop Details," Revision 9
- CA55-GM2-2, "GM2 Shop Details," Revision 4

- CA55-GM2-3, "GM2 Shop Details," Revision 10
- CA55-GM3-1, "GM3 Shop Details," Revision 8
- CA55-GM3-2, "GM3 Shop Details," Revision 2
- CA55-GM4-1, "GM4 Shop Details," Revision 5
- CA55-GM4-2, "GM4 Shop Details," Revision 1
- CA55-GM4-3, "GM4 Shop Details," Revision 6
- CA55-GM5-1, "GM5 Shop Details," Revision 5
- CA55-GM5-2, "GM5 Shop Details," Revision 2
- CA55-GM5-3, "GM5 Shop Details," Revision 6
- CA57-E1, "Erection Plan," Revision 3
- CA57-E2, "Erection Plan – Sections & Details," Revision 3
- CA57-E3, "Erection Plan – Sections & Details," Revision 4
- CA57-E4, "Erection Plan – Enlarged Hatch Plan & Seal Plate Plan," Revision 3
- CA57-E5, "Erection Plan – Isometric View," Revision 0
- CA57-G1, "Shop Notes," Revision 5
- CA57-G2, "Drawing Index," Revision 13
- CA57-GM1-1, "Shop Details – Grouped Member," Revision 2
- CA57-GM1-2, "Shop Details – Grouped Member," Revision 2
- CA57-GM1-3, "Shop Details – Grouped Member," Revision 3
- CA57-GM1-4, "Shop Details – Grouped Member," Revision 1
- CA57-GM1-5, "Shop Details – Grouped Member," Revision 6
- CA57-GM1-6, "Shop Details – Grouped Member," Revision 2
- CA57-GM1-7, "Shop Details – Grouped Member," Revision 1
- CA57-GM1-8, "Shop Details – Grouped Member," Revision 0
- CA57-GM2-1, "Shop Details – Grouped Member," Revision 0
- CA57-GM2-2, "Shop Details – Grouped Member," Revision 0
- CA57-GM2-3, "Shop Details – Grouped Member," Revision 0
- CA57-GM2-4, "Shop Details – Grouped Member," Revision 0
- CA57-GM2-5, "Shop Details – Grouped Member," Revision 0
- CA57-GM3-1, "Shop Details – Grouped Member," Revision 2
- CA57-GM3-2, "Shop Details – Grouped Member," Revision 1
- CA57-GM3-3, "Shop Details – Grouped Member," Revision 2
- CA57-GM3-4, "Shop Details – Grouped Member," Revision 1
- CA57-GM3-5, "Shop Details – Grouped Member," Revision 7
- CA57-GM4-1, "Shop Details – Grouped Member," Revision 3
- CA57-GM4-2, "Shop Details – Grouped Member," Revision 1
- CA57-GM4-3, "Shop Details – Grouped Member," Revision 2
- CA57-GM4-4, "Shop Details – Grouped Member," Revision 1
- CA57-GM4-5, "Shop Details – Grouped Member," Revision 4
- CA57-GM4-6, "Shop Details – Grouped Member," Revision 1
- CA57-GM5-1, "Shop Details – Grouped Member," Revision 1
- CA57-GM6-1, "Shop Details – Grouped Member," Revision 1
- CA57-GM7-1, "Shop Details – Grouped Member," Revision 1
- CA57-GM8-1, "Shop Details – Grouped Member," Revision 2
- CA57-GM9-1, "Shop Details – Grouped Member," Revision 0
- CA57-GM10-1, "Shop Details – Grouped Member," Revision 0
- CA57-GM11-1, "Shop Details – Grouped Member," Revision 0

Engineering and Design Coordination Reports (E&DCRs)

- APP-CA00-GEF-850099, "CA37, CA55 & CA57 Intern. Connect," Revision 0
- APP-CA00-GEF-850117, "CA55 & CA57 Weld Detail Modifications to Reduce Restraint," Revision 0
- APP-CA55-GEF-850001, "Resolution of CA55 Detailing RFIs," Revision 0
- APP-CA55-GEF-850002, "CA55 Detailing RFI Resolution," Revision 0
- APP-CA55-GEF-850015, "CA55 Beams at Transitions," Revision 0
- APP-CA55-GEF-850020, "CA55 Detail Modifications," Revision 0
- APP-CA57-GEF-016, "CA57 Weld Detail Modifications," Revision 0
- APP-CA57-GEF-850008, "CA57 Drawing Corrections," Revision 0
- APP-CA57-GEF-850016, "Modification of APP-CA57-GEF-850009," Revision 0

Calibration, Heat Treatment, Non-Destructive Examination, Inspection and Test Records

- Certificate of Calibration from JJ Calibration, Inc. No. 568675 for Gage Block, dated August 13, 2014
- Certificate of Calibration from JJ Calibration, Inc. No. 623970 for Calibration Block, dated July 11, 2016
- Certificate of Calibration from JJ Calibration, Inc. No. 629345 for Anemometer, dated August 23, 2016
- Certificate of Calibration from JJ Calibration, Inc. No. 635056 for Clamp Meter, dated November 11, 2016
- Certificate of Calibration from JJ Calibration, Inc. No. 636163 for Pressure Gage, dated November 21, 2016
- Certificate of Calibration from JJ Calibration, Inc. No. 649399 for Light Meter, dated May 12, 2017
- Certificate of Calibration from JJ Calibration, Inc. No. 649400 for Thermometer with 3 Probes, dated May 12, 2017
- IMR Test Labs Test Report No. 201615371A for 0.50" Carbon Steel Plate, dated August 30, 2016
- IMR Test Labs Test Report No. 201615371B for 0.50" Carbon Steel Plate, dated August 30, 2016
- IMR Test Labs Test Report No. 201615371C for 0.50" Carbon Steel Plate, dated August 30, 2016
- IMR Test Report No. 201616701 for Filler Metal Qualification, dated September 19, 2016
- IMR Test Report No. 201616703 for Filler Metal Qualification, dated September 19, 2016
- Received Inspection Record – Vendor Erico-Lenton, Mechanical Rebar Couplers, Revision 1, dated August, 25, 2016
- Received Inspection Record – Vendor Stooddy, Stainless Weld Material, Revision 0, dated September 20, 2016
- Receiving Inspection Record – Vendor Farwest, ASTM A36 Plate, PO No. 425132, Revision 0, dated May 26, 2016
- Receiving Inspection Record – Vendor PDM Steel, ASTM A992 I Beam, Revision 0, dated April 24, 2017
- Verification of Calibration – Depth Gauge N1010, dated June 8, 2017
- Verification of Calibration – Digital Calipers N005, dated June 8, 2017
- Verification of Calibration – Digital Calipers Size 12" N1001, dated May 17, 2017
- Verification of Calibration – Digital Calipers Size 6" N1001, dated May 17, 2017

- Weld Equipment Meter Verification Worksheet: Weld Machine N1124, Wire Feeder N1125, dated June 5, 2017
- Weld Equipment Meter Verification Worksheet: Weld Machine N1141, Wire Feeder N1142, dated June 5, 2017

Purchase Orders, Audit Reports, and Commercial-Grade Dedication

- Commercial-Grade Dedication Plan No. 1: ASTM A36 Plate, Revision 5, dated November 11, 2015
- Commercial-Grade Dedication Plan No. 10: ASTM A240 321010 Duplex Plates, Revision 6, dated February 4, 2016
- Commercial-Grade Dedication Plan No. 15: ASTM A992 I beam, Revision 10, dated March 13, 2017
- Commercial-Grade Dedication Plan No. 29: Stainless Weld Material, Revision 2, dated April 15, 2016
- Commercial-Grade Dedication Plan No. 5: Calibration Services, Revision 0, dated March 6, 2014
- Commercial-Grade Dedication Plan No. 7: NDE Services, Revision 1, dated January 4, 2017
- Commercial-Grade Survey – ArcelorMittal, dated May 1, 2014
- Commercial-Grade Survey – EVRAZ, dated November 25, 2013
- Commercial-Grade Survey – J and J Calibration Services- Portland, OR, dated March 24, 2014
- Commercial-Grade Survey – Nelson Stud Welding, Elyria, OH, dated November 26, 2013
- Commercial-Grade Survey – Nucor Steel Tuscaloosa, Inc., dated November 9, 2015
- Commercial-Grade Survey – Nucor- Yamato, Blytheville, AR, dated June 16, 2014
- Commercial-Grade Survey – Nucor, Huger, SC, dated October 17, 2016
- Commercial-Grade Survey – Outokumpu – New Castle, Indiana, dated December 1, 2015
- Commercial-Grade Survey – Outokumpu – New Castle, Indiana, dated February 5, 2014
- Commercial-Grade Survey – Precision Strip – Minster, OH, dated March 1, 2016
- Commercial-Grade Survey – Victor Technology – Stoddy, Bowling Green, KY, dated December 27, 2014
- Greenberry Fabrication Audit Report for Erico Mechanical Splices and Position Couplers, dated September 2, 2014
- Greenberry Fabrication Audit Report for Weldstar, dated March 21, 2017
- N2017.229.A001 NQA-1 Audit Report for Superheat FGH, dated February 25, 2017
- Procurement & Acceptance Basis Document for Job No. 132290.001 – CBI Floor Modules – ASTM A36 Plates, Revision 4
- Procurement & Acceptance Basis Document for Job No. 132290.001 – CBI Floor Modules – ASTM A992 I Beam, Revision 6, dated March 13, 2017
- Procurement & Acceptance Basis Document for Job No. 132290.001 – CBI Floors Modules – Stainless Weld Material, Revision 0, dated May 11, 2016
- Procurement & Acceptance Basis Document for Job No. 229 – CBI Floors Modules – Duplex Plates, Revision 1, dated March 15, 2016.
- Procurement & Acceptance Basis Document No. 50 for Job No. 132290.001 CBI Floor Modules – Mechanical Rebar Couplers, Revision 3, dated August 29, 2016

- Procurement & Acceptance Basis Document No. 82 for Job No. 132290.001, Revision 0, dated March 10, 2017
- Procurement & Acceptance Basis Document No.39: ASTM A108 Weld Studs, Revision 1, dated September 25, 2014
- Procurement Order No. 425158 from Greenberry Industrial, LLC to Stoodly – an ESAB Brand, Revision 0, dated August 1, 2016
- Purchase Order 425070 form from Greenberry Industrial, LLC to Erico-Lenton, Revision 1, dated May 5, 2015
- Purchase Order 425132 from Greenberry Industrial, LLC to Farwest Steel Revision 1 dated August 9, 2016
- Purchase Order 425205 from Greenberry Industrial, LLC to Weldstar Company, Revision 0, dated February 3, 2017
- Purchase Order from Greenberry Industrial, LLC to Outokumpu Stainless Steel Plates, Revision 0, dated June 9, 2015
- Purchase Order No. 425222 from Greenberry Industrial, LLC to PDM Steel Service Center, Revision 0, dated April 4, 2017
- Source Surveillance Report of Outokumpu for NDE Services, dated May 14, 2015
- Purchase Order Revision 132175-D100.CA005 between WECTEC – Stone & Webster and Greenberry Industrial LLC, “Vogtle EPC – Unit 3 & Site,” Rev. 30
- Document No. 132175-D1.000.CA005 – SOW, “Scope of Work/Supplemental QA Requirements for the CA22, CA31, CA32, CA33, CA34, CA35, CA36, CA37, CA41, CA42, CA44, CA45, CA51, CA52, CA55, CA56, CA57, and CA58 structural modules,” Rev. 10
- Purchase Order Revision 132177-D100.CA005 between WECTEC Global Project Services, Inc. and Greenberry Industrial LLC, “CA Module Fabrication, V.C. Summer EPC Unit 2,” Rev. 31
- Document No. 132177-D1.000.CA005 – SOW, “Scope of Work/Supplemental QA Requirements for the CA22, CA31, CA32, CA33, CA34, CA35, CA36, CA37, CA41, CA42, CA44, CA45, CA51, CA52, CA55, CA56, CA57, and CA58 structural modules,” Rev. 9

Internal Audits

- 2016-11 NQA-1 Internal Audit Report, dated December 18, 2016
- 2015-11 NQA-1 Internal Audit Report, dated December 15, 2015

Nonconformance Reports

- 29-NCR-208, p222 incorrect dimensions, dated March 15, 2017
- 229-NCR-55, CA32-GM1-2 incorrect plugs, dated February 26, 2015
- 229-NCR-151, nonconformances observed during inspection of module CA36-229E, dated March 2, 2016
- 229-NCR-36, CA33-GM1, welds failed UT second time, dated January 6, 2014
- 229-NCR-144, As-built configurations for CA35-GM2 not in accordance with affect E&DR 172 and 188, dated February 12, 2015
- 229-NCR-154, Indications observed in CA37-229E unsatisfactory conditions, dated March 11, 2016
- 229-NCR-143, CA33 not in accordance with contract design drawing, dated February 17, 2017

- NCR No. 229-NCR-185, "Thermally cut edges that are not welded require removal of the heat affected zone," Revision 0, dated 9/9/16
- NCR No. 229-NCR-169, "GWI-229-12 Rev 5, Attachment A states that any crack is prohibited, regardless of size or location," Revision 0, dated 5/6/16
- Nonconformance and Disposition Report (N&D) No. APP-CA37-GNR-850005, "GBI Covallis 229-NCR—169 Rev. 0 Underbead weld cracking on CA37VS3," Revision 0, dated 12/21/16
- N&D No. APP-CA37-GNR-850006, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA37VS2," Revision 0, dated 12/21/16
- N&D No. APP-CA35-GNR-850006, "GBI Covallis 229-NCR—169 Rev. 0 Underbead weld cracking on CA35SV4," Revision 0, dated 12/21/16
- N&D No. APP-CA37-GNR-850007, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA37SV4," Revision 0, dated 12/21/16
- N&D No. APP-CA37-GNR-850008, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA37SV3," Revision 0, dated 12/21/16
- N&D No. APP-CA35-GNR-850007, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA35SV3," Revision 0, dated 12/21/16
- N&D No. APP-CA35-GNR-850008, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA35VS3," Revision 0, dated 12/21/16
- N&D No. APP-CA35-GNR-850008, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA35VS2," Revision 0, dated 12/21/16
- N&D No. APP-CA33-GNR-850005, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA33VS2," Revision 0, dated 12/20/16
- N&D No. APP-CA37-GNR-850006, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA37SV3," Revision 0, dated 12/20/16
- N&D No. APP-CA37-GNR-850007, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA37VS2," Revision 0, dated 12/20/16
- N&D No. APP-CA37-GNR-850008, "GBI Covallis 229-NCR—169, Underbead weld cracking on CA37SV4," Revision 0, dated 12/20/16
- N&D No. APP-CA00-GNR-850015, "GBI Covallis 229-NCR—185 Revision 0 Thermally cut edges for SV3, SV4 and VS2, VS3," Revision 0, dated 10/28/16
- N&D No. APP-CA37-GNR-850016, "GBI Covallis 229-NCR—185 Revision 0 Thermally cut edges for SV3, SV4 and VS2, VS3," Revision 0, dated 12/20/16
- N&D APP-CA35-GNR-850000, "GBI Corvallis 229-NCR-11 Rev 0-CA35 E&DR 172 & 188, Revision 0, dated March 28, 2016.
- NCR No. 229-NCR-54, Revision 0
- NCR No. 229-NCR-65, Revision 0
- NCR No. 229-NCR-66, Revision 0
- NCR No. 229-NCR-78, Revision 0
- NCR No. 229-NCR-135, Revision 0
- NCR No. 229-NCR-167, Revision 0

Corrective Action Reports

- 2016-CAR-70, minimum preheat prior to welding, dated December 8, 2016
- 2015-CAR-50, QC2 Inspector without VT training records, dated September 26, 2015
- 2017-CAR-05, Preheat not checked according to procedure, dated March 9, 2017
- 2015-CAR-24, 2015-CAR-04 not properly evaluated for extent of condition

- 2016-CAR-28, Pentair-08 hand valves chemistry requirements not meeting CGD requirements, dated June 16, 2016
- 2016-CAR-27, FCAW weld material tested outside spec requirements, dated June 1, 2016
- 2016-CAR-26, linear indications observed in welds/base metal associated w/ Job 229, dated May 19, 2016
- 2017-CAR-08, PO issued more than 3 years elapsed since last supplier audit, dated April 13, 2017
- 2015-CAR-11, Incorrect plugs for CA32 and CA33 modules, dated March 16, 2015
- 2015-CAR-04, QC2 certification incorrectly validated, dated January 21, 2015
- 2016-CAR-70, "Minimum preheat prior to welding was not checked with an approved method," dated 12/8/2016
- 2015-CAR-50, "QC2 Inspector without training record for GWI-229-12 VT Inspection," dated 9/26/15
- 2015-CAR-17 (Inadequate Procedural Guidance for Evaluation and Repair of Stud Test Failure)
- 2015-CAR-18 (Review of NCRs & CARs for Process Evaluation Accuracy)
- 2015-CAR-67 (Multiple Fillet Welds Marked Typical Rather than Adjacent to Each Weld)
- 2016-CAR-10 (Studs were Hand Welded to Unapproved WPS)
- 2016-CAR-11 Electronic DAC (Distance Amplitude Correction) not Allowed per GWI 229-15

Corrective Action Reports Opened During the NRC Inspection

- 2017-CAR-18, NDE personnel qualifications not verified by Greenberry Level III, dated June 9, 2017
- 2017-CAR-14, Use of carbon steel clamps on stainless steel without isolation, dated June 8, 2017
- 2017-CAR-15, Adequacy of qualification of weld inspection personnel, dated June 8, 2017
- 2017-CAR-19, Annual internal audit must be reviewed by independent auditor, dated June 9, 2017
- 2017-CAR-20, GQP-N 07.05 instructions incomplete regarding critical characteristics and processes, dated June 9, 2017
- 2017-CAR-17, ASME III Survey checklist does not describe alignment with 10 CFR Part 50 App. B, dated June 9, 2017
- 2017-CAR-16, Incomplete weld detail allows for undersize PJP effective throat, dated June 8, 2017
- 2017-CAR-26, Safety-related POs did not invoke Appendix B

Part 21 Evaluations

- Initial reportability screening for 2015-CAR-50
- Initial reportability screening for 2017-CAR-05

Qualification and Training Records

- Lead Auditor Qualification for Dennis Weaver, and Kevin Kimmel
- Weld Inspector qualifications for Brian Bennett, Scott Knutson, and Al Schnoor
- Inspection and Test Personnel Qualification for Ross Latimer
- Justin Brunelle for Visual Inspection (VT) II
- Michael Fiskum for Radiography (RT) II, Magnetic Particle (MT) II, and Liquid Penetrant (PT) II
- Dan Rosian for MT II, PT II
- Ryan Sims for PT II, MT II
- Cameron Molt for PT II, MT II
- Brandon O'Brien for PT II, MT II
- Kevin Williams for MT II, PT II, UT II, VT II

Weld Records

- WPS No. N-FC-001, "Prequalified FCAW Procedure for Carbon Steel – AWS D1.1," Revision 7, dated 3/21/2016 with supporting PQRs N-FC-005-PQR-045, Revision 3, N-FC-005-PQR-116, Revision 1, and N-FC-005-PJP-PQR, Revision 0
- WPS No. N-FC-002, "Prequalified FCAW Procedure for Carbon Steel – AWS D1.1," Revision 6, dated 6/9/2016
- WPS No. N-FC-005, "FCAW Procedure for Duplex Stainless Steel – AWS D1.6," Revision 3, dated 7/29/15 with supporting PQRs N-FC-005-PQR-045, Revision 3, N-FC-005-PQR-116, Revision 1, and N-FC-005-PJP-PQR, Revision 0
- WPS No. N-FC-006, "FCAW Procedure for Duplex Stainless Steel – AWS D1.6," Revision 3, dated 7/27/15 with supporting PQRs N-FC-006-PQR-045, Revision 1, N-FC-006-PQR-116, Revision 1, and N-FC-006-PJP, Revision 0
- WPS No. N-FC-008, "Stud Welding Procedure for Duplex Stainless Steel – AWS D1.6," Revision 1, dated 7/28/16 with supporting PQRs N-FC-008-PQR-045, Revision 0, and N-FC-008-PJP-PQR, Revision 0
- Weld Certification Traveler – Filler Test No. 229-370-02, Revision 0 dated September 9, 2016
- Traveler for 229E-CA55-FB12-1, "CA55 Floor Module," Revision 1
- Traveler for 229C-CA57-GM4-1, "CA57 Floor Module," Revision 1
- Traveler for 229E-CA55-GM4-1, "CA55 Floor Module," Revision 1
- Traveler for 229E-CA55-FB8-1, "CA55 Floor Module," Revision 1
- Traveler for 229C-CA55-GM4-10, "CA55 Floor Module," Revision 1
- Traveler for 229B-CA58-FB2-1, "CA58 Floor Module," Revision 1

Miscellaneous

- Request For Information (RFI) 002, "Seismic Safety Related Function," Revision 1
- RFI 012, "ASTM A706 Rebar vs. A615," Revision 4
- RFI 051, "Visual Criteria for Welding," Revision 3
- RFI 068, "CA36: Stud Conflict with Angle," Revision 0
- RFI 103, "CA35: Correct Stud Count for Sub-module 01," Revision 0
- RFI 213, "CA55 Beam Connection Issues," Revision 1
- RFI 219, "CA55 Fillet Welds," Revision 1
- RFI 219, "CA55 Beams at Transitions," Revision 1
- RFI 219, "CA55 Beams at Transitions," Revision 1
- RFI 229, "CA55 Welding of MK 59, MK 60, MK 61 & MK 62 to FB08," Revision 1
- RFI 230, "CA55 Issues for WEC at North Edge," Revision. 0
- RFI 234, "CA55 No Note 7 on APP-CA55-S5-204"
- RFI 270, "CA57 Material Specifications of MK93 & MK94," Revision 1
- RFI 295, "CA57 Weld Callout Pickup," Revision 0
- RFI 296, "CA57 Bill of Materials Pickup," Revision 0
- RFI 302, "CA57 Splicing of Duplex Base Plates," Revision 0