

November 18, 2014

Mr. Dean Hudson, Quality Manager  
Oregon Iron Works, Inc.  
Nuclear Product Division  
9700 S.E. Lawnfield Rd.  
Clackamas, Oregon 97015

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION REPORT OF  
OREGON IRON WORKS NO. 99901448/2014-201 AND 99901449/2014-201  
AND NOTICE OF NONCONFORMANCE

Dear Mr. Hudson:

On September 22-26, 2014, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Oregon Iron Works, Inc. (OIW) facilities in Clackamas, OR and Vancouver, WA. The purpose of this limited-scope routine inspection was to assess OIW'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 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 OIW's implementation of quality activities associated with the fabrication and inspection of the CA20 Auxiliary Building Modules for the Westinghouse Electric Company AP1000 reactor design. The enclosed report presents the results of the inspection. This NRC inspection report does not constitute an NRC endorsement of OIW's overall quality assurance (QA) or Part 21 programs. During this inspection, the NRC inspection team looked at fabrication and inspection activities associated with inspections, tests, analyses, and acceptance criteria (ITAAC) from Revision 19 of the approved certified AP1000 design control document. Specifically, these activities were associated with the future closure of ITAAC 3.3.00.02a.i.d. The NRC inspection team did not identify any findings associated with the ITAAC contained in Section 4 of the attachment to this report.

During this inspection, the NRC inspection team found that the implementation of OIW's QA program failed to meet certain NRC requirements imposed on you by your customers. Specifically, the NRC inspection team determined that OIW was not fully implementing its QA program in the areas of (1) corrective action, (2) design control, (3) nonconforming materials, parts, or components, and (4) control of purchased material, equipment, and services. The specific findings and references to the pertinent requirements are identified in the enclosures to this letter. In response to the enclosed notice of nonconformance (NON), OIW should document the results of the extent of condition review for these findings and determine if there are any effects on other safety-related components.

Please provide a written explanation or statement within 30 days of this letter in accordance with the instructions specified in the enclosed NON. The agency will consider extending the response time if you show good cause for us to do so. In accordance with 10 CFR 2.390, "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure(s), and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system ADAMS (Agencywide Documents Access and Management System), accessible at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response, (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, 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 is 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 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."

Sincerely,

**/RA/**

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

Docket No.: 99901448 and 99901449

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901448/2014-201  
and 99901449/2014-201 and Attachment

Please provide a written explanation or statement within 30 days of this letter in accordance with the instructions specified in the enclosed NON. The agency will consider extending the response time if you show good cause for us to do so. In accordance with 10 CFR 2.390, "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure(s), and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system ADAMS (Agencywide Documents Access and Management System), accessible at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response, (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, 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 is 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 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."

Sincerely,

/RA/

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

Docket No.: 99901448 and 99901449

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901448/2014-201 and 99901449/2014-201 and Attachment

DISTRIBUTION:

ASakadales  
 KKavanagh  
 RRasmussen  
 MErnstes  
 dhudson@oregoniron.com  
 bdunkin@oregoniron.com

**ADAMS Accession No.: ML14308A463**

NRO-002

OFFICE	NRO/DCIP/MVIB	NRO/DCIP/MVIB	NRO/DCIP/EVIB	NRO/DCIP/MVIB	NRR/DE/MCB
<b>NAME</b>	RPatel	LMicewski	ARamirez (JOrtega for)	JOrtega	JHoncharik
<b>DATE</b>	11/7/2014	11/7/2014	11/7/2014	11/7/2014	11/7/2014
<b>OFFICE</b>	NRO/DCIP/MVIB	RII/DCP/CPB1*	NRO/DCIP	NRO/DCIP/MVIB	
<b>NAME</b>	NMcMurray	CHuffman	TFrye	ERoach	
<b>DATE</b>	11/7/2014	11/5/2014	11/7/2014	11/18/2014	

**OFFICIAL RECORD COPY**

## NOTICE OF NONCONFORMANCE

Oregon Iron Works, Inc.  
9700 S.E. Lawnfield Rd.  
Clackamas, OR 97015  
Docket No. 99901448

Oregon Iron Works, Inc.  
3515 SE Columbia Way  
Vancouver, WA 98661  
Docket No. 99901449

Based on the results of a NRC inspection conducted at the Oregon Iron Works, Inc. (OIW) facilities located in Clackamas, OR and Vancouver, WA, on September 22, 2014, through September 26, 2014, certain activities were not conducted in accordance with NRC requirements which were contractually imposed on OIW 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, in part, 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."

Section 16 of OIW's Quality Assurance Manual, Issue 3, Revision 1, dated July 18, 2014, states, in part, that "Conditions adverse to quality are to be identified promptly and corrected as soon as practical." It further states that "... a Corrective Action Request (CAR) will be utilized to document the condition, cause, and actions taken to prevent recurrence."

Contrary to the above, as of September 26, 2014, OIW did not ensure that conditions adverse to quality, such as deficiencies and nonconformances were promptly documented and corrected. In addition, OIW's records did not always document the current status, plan of action, or commitments for work in progress to correct problems and prevent recurrence.

Specifically,

1. On July 7, 2014, OIW documented in NPD-CAR-14-34 that an internal audit identified that a third party vendor, Cal-Cert, was used to determine the weight of rebar used as a basic component installed in CA20 module, which was not in the scope of their accreditation. The NRC inspection team identified that NPD-CAR-14-34 corrective actions only included actions to obtain Cal-Cert's procedure for weight calibration, as well as a copy of training records. OIW corrective actions failed to identify for the evaluation of scope of supply and method of verification to establish Cal-Cert as an appropriate provider of weight measurement services to verify the density of the rebar.

2. On November 1, 2013, an OIW employee initiated NPD-CAR-13-31 which identified an issue associated with the temporary storage of measuring and test equipment (M&TE). The NRC inspection team identified that NPD-CAR-13-31 did not identify any proposed corrective actions to address the temporary storage of M&TE and that no objective evidence was found to demonstrate the action(s) taken by OIW to correct this issue.
3. On July 7, 2014, OIW documented in NPD-CAR-14-33 that an internal audit identified that OIW was using a light meter which had been calibrated by a calibration laboratory that was neither audited nor dedicated by OIW for their calibration services. The NRC inspection team identified that NPD-CAR-14-33 did not identify any proposed corrective actions to address the inadequate procurement of commercial grade calibration services used for a light meter and that no objective evidence was found to demonstrate the action(s) taken by OIW to correct this issue.

This issue has been identified as Nonconformances 99901448/2014-201-01 and 99901449/2014-201-01.

- B. Criterion III, "Design Control," of Appendix B to 10 CFR Part 50 states, in part, that "Measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components."

Criterion VII of Appendix B to 10 CFR Part 50 states, in part, that "These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, and examination of products upon delivery."

Sections 4.1 of OIW QP-2786-(07)-10, "Commercial Grade Dedication of Items and Services for 10 CFR 50 Appendix B Project," Revision 1, January 31, 2014, states, in part, that "The dedicating entity shall assure that a component technical evaluation has been performed which identifies the item as safety-related, determines the item's critical characteristics and safety function, identifies the failure modes and effects, and defines the tolerances for acceptance criteria based on the item's intended safety-related function."

Section 4.6 of OIW QP-2786-(07)-10 states, in part, that "Sampling of the items for dedication shall, as a minimum, meet the requirements of one of the three options including production traceability, line item/single product manufacturer, or line item/multiple product manufacturers based on a random sample selection as defined in Section 1.4.3 of EPRI TR-017218, "Guideline for Sampling in the Commercial-Grade Item Acceptance Process."

Contrary to the above, as of September 26, 2014, OIW failed to ensure the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems, and components. Additionally, OIW failed to establish appropriate measures that included provisions for source evaluation of subcontractors.

Specifically,

1. OIW, as a dedicating entity failed to perform a technical evaluation to justify that the selection of critical characteristics for dedication of various components such as plates, rebar, weld wires, and metallurgical testing services used as basic components installed in CA20 module assemblies would provide reasonable assurance that they would perform their intended safety functions. The NRC inspection team identified six examples of plates, rebar, weld wires, and metallurgical testing services that were procured as commercial-grade and then inadequately dedicated to be used as safety-related components by OIW.
2. OIW failed to perform a technical evaluation to identify additional technical requirements such as tolerances, accuracies, ranges over which the item is to be calibrated, specific industry standards to be used, etc., to be included in the purchase order for commercial calibration services. The NRC inspection team identified two examples where OIW procured commercial calibration services (CAL-CERT and JJ Calibration), without performing a technical evaluation to identify critical characteristics and acceptance methods for the dedication of calibration services as required by OIW's commercial grade dedication program.
3. OIW failed to perform and document adequate engineering justification to support their determination of the dedication sampling plan. The NRC inspection team identified several examples of plates, rebar, weld wires, and testing services that were procured as commercial grade items and then inadequately sampled as part of the dedication process to be used as safety-related components by OIW.
4. OIW failed to conduct a commercial-grade survey or source surveillance to verify that American Steel Portland, Industrial Welding Services, Inc., and Professional Services Inc.'s quality programs included the requisite processes, such as material traceability and lot and batch controls, for the control of critical characteristics necessary to provide reasonable assurance that commercial-grade materials and services to be used as basic components will perform their intended safety function. OIW relied on these suppliers' issued certified material test reports or certificate of conformance as the sole method to verify critical characteristics of acceptance (e.g., tensile properties, yield, and elongation) during the commercial-grade dedication of plates, rebar, weld wires and metallurgical testing services.

This issue has been identified as Nonconformances 99901448/2014-201-02 and 9990149/2014-201-02

- C. Criterion XV, "Nonconforming Materials, Parts or Components," of Appendix B 10 CFR Part 50 states, in part, that "Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures."

Criterion XVII, "Quality Assurance Records," of Appendix B states, in part, that "Sufficient records shall be maintained to furnish evidence of activities affecting quality. Records shall be identifiable and retrievable."

Section 15 of OIW's Quality Assurance Manual, Issue 3, Revision 1, dated July 18, 2014, states, in part, that "... a nonconformance and its disposition shall be documented on a Nonconformance Report, and that proposed disposition shall be made by a Project Engineer or Project Manager." It further states that Nonconformance Reports are maintained as Quality Records in accordance with Section 17 of OIW's Quality Assurance Manual, which states, in part, that "...records are preserved and controlled."

Contrary to the above, as of September 26, 2014, OIW failed to review, disposition, and appropriately document resolution on several nonconforming items and was unable to retrieve some nonconformance reports.

Specifically,

1. On February 28, 2014, nonconformance reports NPD-NCR-14-032 and NPD-NCR-14-033 were generated to document that during recalibration the "as found" condition of four calibrated tools was identified as being outside of specified tolerances. On July 30, 2014, NPD-NCR-14-236 documented an additional calibrated item that was identified "as found" out of tolerance. The NRC inspection team did not identify any objective evidence to demonstrate that OIW had performed an evaluation of usage, the extent of condition, or dispositioned the item identified as nonconforming.
2. OIW could not retrieve nonconformance reports NPD-NCR-14-032, NPD-NCR-14-033, and NPD-NCR-14-236 when the inspectors requested them for review.

This issue has been identified as Nonconformances 99901448/2014-201-03 and 99901449/2014-201-03.

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Chief, Mechanical Vendor Inspection Branch, Division of Construction 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 noncompliances, and (4) the date when your corrective action will be completed. Where good cause is shown, consideration will be given to 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 document system (Agencywide Documents Access

Management System), 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 it can be made 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 withholding of such material, 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 18th day of November 2014.



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

Docket No.: 99901448 and 99901449

Report No.: 99901448/2014-201 and 99901449/2014-201

Vendor: Oregon Iron Works, Inc.  
  
9700 S.E. Lawnfield Rd.  
Clackamas, OR 97015  
  
3515 S.E. Columbia Way  
Vancouver, WA 98661

Vendor Contact: Mr. Dean Hudson  
Quality Assurance Manager  
E-mail: dHUDSON@oregoniron.com  
Phone: 503-653-6300

Nuclear Industry Activity: Oregon Iron Works, Inc. is under contract to Chicago Bridge & Iron to fabricate, assemble, inspect, transport, and deliver the CA20 Auxiliary Building modules for the Westinghouse Electric Company AP1000 reactor design.

Inspection Dates: September 22-26, 2014

Inspectors: Jonathan Ortega-Luciano NRO/DCIP/MVIB Team Leader  
Laura Micewski NRO/DCIP/MVIB  
Raju Patel NRO/DCIP/MVIB  
Nicholas McMurray NRO/DCIP/MVIB  
Annie Ramirez NRO/DCIP/EVIB  
John Honcharik NRO/DE/MCB  
Chad Huffman RII/DCP/CPB1

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

## **EXECUTIVE SUMMARY**

Oregon Iron Works, Inc.  
99901448; 99901449/2014-201

The NRC staff conducted a vendor inspection at the Oregon Iron Works, Inc. (OIW) facilities to verify that it had implemented an adequate quality assurance (QA) program that complies with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." In addition, the NRC inspection also verified that OIW implemented a program under 10 CFR Part 21, "Reporting of Defects and Noncompliance," that met the NRC's regulatory requirements. The NRC inspection team conducted the inspection from September 22-26, 2014. This was the first NRC inspection at the OIW facilities.

This technically-focused inspection specifically evaluated OIW's implementation of quality activities associated with the fabrication and inspection of the CA20 Auxiliary Building modules for the Westinghouse Electric Company (WEC) AP1000 reactor design. These modules and submodules are being fabricated for the Vogtle Electric Generating Plant Unit 4 and VC Summer Unit 3.

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

- Machine stud welding on Submodule CA20\_08
- Flux-cored arc welding (FCAW) of partial joint penetrations numbers 15c and 16c on Submodule CA20\_15 and the channel truss weld on Submodule CA20\_17
- FCAW of complete joint penetrations numbers 41 and 42 on Submodule CA20\_11
- Fit-up and tack welding of weld joint 817 for pancake assembly on Submodule CA20\_08
- Visual inspection of stud welds on Submodule CA20\_08
- Magnetic-particle and ultrasonic inspections of angle splice for channel truss on Submodule CA20\_11
- Calibration of ultrasonic inspection equipment
- Calibration of FCAW welding machine
- Lift and rotation of Submodule CA20\_08
- Review of commercial grade dedication packages for plates, rebar, and weld wires
- Review of numerous training records; specific examples include qualification and certification for the lead auditors

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

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

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

During the course of this inspection, the NRC inspection team implemented Inspection Procedure (IP) 43002, "Routine Inspections of Nuclear Vendors"; IP 43004, "Inspection of Commercial-Grade Dedication Programs"; IP 36100, "Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance"; IP 36100.01, "Inspection of 10 CFR 50.55(e) Programs for Reporting Defects and Noncompliance During Construction"; IP 65001.01, "Inspection of ITAAC-Related Foundations and Buildings"; IP 65001.A, "Inspection of the As-Built Attributes for Structures, Systems, and Components Associated with ITAAC"; and IP 65001.F, "Inspection of the ITAAC-Related Design and Fabrication Requirements."

The information below summarizes the results of this inspection.

### Corrective Action

The NRC inspection team issued Nonconformances 99901448/2014-201-01 and 99901449/2014-201-01 in association with OIW's failure to implement the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. Nonconformances 99901448/2014-201-01 and 99901449/2014-201-01 cite OIW for failure to document and correct deviations, nonconformances, and concerns documented in corrective action requests (CARs). Immediate and interim corrective actions, cause(s), and extent of conditions are not always documented in a prompt manner. The status of the CAR in progress is left to the memory of the individual staff member assigned to work on the actions. This has resulted in several CARs not being performed adequately and in a timely manner, and CARs that had been closed without addressing the issue(s) of concern.

### Commercial Grade Dedication

The NRC inspection team issued Nonconformance 99901448/2014-201-02 and 9990149/2014-201-02 in association with OIW's failure to implement the regulatory requirements of Criterion III, "Design Control," and Criterion VII, "Control of Purchased Material Equipment and Services," of Appendix B to 10 CFR Part 50. Nonconformances 99901448/2014-201-02 and 9990149/2014-201-02 cite OIW for failing to perform a technical evaluation to justify that the critical characteristics and associated acceptance methods selected for various components of the CA20 module assemblies to provide reasonable assurance that the CA20 module would perform their intended safety functions.

Further, for the procurement of commercial calibration services from CAL-CERT and JJ Calibration, OIW failed to conduct a technical evaluation to identify additional technical requirements such as tolerances, accuracies, ranges over which the item is to be calibrated, specific industry standards to be used, etc., to be included in the purchase order for the specific M&TE being calibrated. OIW failed to perform and document adequate engineering justification to support their determination of the dedication sampling plan. In addition, OIW failed to conduct a commercial-grade survey, source verification, or other surveillance of its commercial suppliers to verify that the suppliers' quality programs were capable of appropriate control of material traceability. This issue is common for OIW's procurement and dedication of rebar, weld wires, plates, and flat bars used as safety-related components in AP1000 CA20 module.

### Nonconforming Material, Parts, or Components

The NRC inspection team issued Nonconformances 99901448/2014-201-03 and 99901449/2014-201-03 in association with OIW's failure to implement the regulatory requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," and Criterion XVII, "Quality Assurance Records," of Appendix B to 10 CFR Part 50. Nonconformances 99901448/2014-201-03 and 99901449/2014-201-03 cite OIW for failing to review, disposition, and appropriately document resolution of several nonconforming items. OIW was also unable to retrieve three nonconformance reports, which are required quality records.

### Other Inspection Areas

The NRC inspection team determined that OIW is implementing its programs for 10 CFR Part 21; training and qualification of personnel; manufacturing control; inspection; and handling, storage, and shipping in accordance with the applicable regulatory requirements of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed and activities observed, the NRC inspection team also determined that OIW is implementing its policies and procedures associated with these programs. No findings of significance were identified.

## **REPORT DETAILS**

### 1. Corrective Action

#### a. Inspection Scope

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

The NRC inspection team reviewed a sample of the Corrective Action Requests (CARs) associated with the fabrication of safety-related AP1000 CA20 modules to verify the adequacy of OIW's implementation and control of its corrective action program (CAP). The inspectors also evaluated the adequacy of OIW's implementation of corrective actions for findings of conditions adverse to quality identified by Chicago Bridge and Iron (CB&I) source inspectors as Notices of Unsatisfactory Conditions. In addition, inspectors verified that OIW's corrective action process provides a connection to the 10 CFR Part 21 program.

The NRC inspection team discussed the CAP with OIW's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

#### b. Observations and Findings

During the review of corrective action reports, the NRC inspection team identified three examples where OIW had not corrected and documented conditions adverse to quality adequately or in a timely manner, as required by Criterion XVI of Appendix B to 10 CFR Part 50. The NRC inspection team noted that OIW initiated CARs for deviations, nonconformances, or concerns; but failed to perform and document their corrective actions completely and in a prompt manner. The NRC inspection team issued Nonconformances 99901448/2014-201-01 and 99901449/2014-201-01 for the following examples:

1. On July 7, 2014, OIW documented in NPD-CAR-14-34 that an internal auditor identified that OIW incorrectly contracted the services of a third party vendor, Cal-Cert, to determine the weight of rebar that was used for the fabrication of AP1000 CA20 safety-related modules. Cal-Cert is in OIW's Approved Vendor Database for performance of some types of calibration. However, calibration of weight is not in their scope of accreditation. OIW's corrective actions to NPD-CAR-14-34 were to obtain Cal-Cert's procedure for weight calibration, as well as a copy of training records of the personnel weighing the rebar. The NRC inspection team determined that these actions were inadequate in that OIW corrective actions failed to identify for the evaluation of scope of supply and method(s) of verification to establish Cal-Cert as an appropriate provider of weight measurement services. In addition the inspectors were not able to find any objective evidence documenting the cause, recommendations for corrective or preventative actions, commitment to corrective actions, management review and verification, or implementation and effectiveness of corrective actions taken by OIW to address NPD-CAR-14-34. This is contrary to Section 16 of OIW's Quality Assurance Manual, which states, in part, that for a condition adverse to quality "a Corrective Action Request (CAR) will be utilized to document the condition, cause, and actions taken to prevent recurrence."

2. On November 1, 2013, an OIW employee documented a concern in NPD-CAR-13-31 which identified issues with control of measuring and test equipment (M&TE). Section 9.1 of OIW's Quality Assurance Manual states, in part, that "All calibrated equipment is handled, stored and transported in a manner which shall not adversely affect calibration or condition of the equipment." NPD-CAR-13-31 was closed without addressing the concern about temporary M&TE equipment storage in a wooden crate that was neither labeled as M&TE nor secured in a manner similar to the secured storage location for M&TE issuance. This is contrary to Section 16 of OIW's Quality Assurance Manual, which states, in part, that "Conditions adverse to quality are to be identified promptly and corrected as soon as practical."
3. On July 7, 2014, OIW documented in NPD-CAR-CAR-14-33 that an internal auditor identified that OIW was using Light Meter S/N 839537/839538 that was calibrated by an OEM Spectronics. This commercial laboratory was neither audited nor dedicated as an approved supplier by OIW. Use of this light meter to validate the adequacy of hand-held lights prior to visual inspections is required by OIW procedure, but is not an American Society of Mechanical Engineers (ASME) or the American Welding Society (AWS) Code requirement. The NRC inspection team requested OIW to verify the status of the light meter and found that it was still in use and had not been segregated. The inspectors identified that NPD-CAR-14-33 did not identify any proposed corrective action(s) to address the inadequate procurement of commercial grade calibration services used for a light meter and that no objective evidence was found to demonstrate the action(s) taken by OIW to correct this issue. This is contrary to Section 16 of OIW's Quality Assurance Manual, which states, in part, that for a condition adverse to quality "a Corrective Action Request (CAR) will be utilized to document the condition, cause, and actions taken to prevent recurrence." OIW staff stated that the corrective actions are in progress, and consist of identifying and contracting with a new calibration laboratory, purchasing additional light meters, and maintaining the M&TE usage log to track the use of the light meter.

c. Conclusion

The NRC inspection team issued Nonconformances 99901448/2014-201-01 and 99901449/2014-201-01 in association with OIW's failure to implement the regulatory requirements of Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. Nonconformances 99901448/2014-201-01 and 99901449/2014-201-01 cite OIW for failure to document and correct deviations, nonconformances, and concerns documented in corrective action requests. Immediate and interim corrective actions, cause(s), and extent of conditions are not always documented in a prompt manner. The status of the CAR in progress is left to the memory of the individual staff member assigned to work on the actions. This has resulted in several corrective actions not always being performed adequately and in a timely manner, and CARs closed without addressing all issues of concern.

## 2. Design Control

### a. Inspection Scope

The NRC inspection team reviewed OIW's policies and implementing procedures that govern the design control programs to verify their compliance with the regulatory requirements of Criterion III, "Design Control," in Appendix B to 10 CFR Part 50. The inspectors reviewed procedures, work packages, shop drawings, and as-built submodules to determine whether the design control process was performed in a planned, controlled, and orderly manner. The NRC inspection team also reviewed the process for implementing design changes initiated by Westinghouse Electric Company (WEC), CB&I, and OIW; which are handled through an Engineering & Design Coordination Report (E&DCR).

The NRC inspection team confirmed that OIW is using the latest approved design drawings for fabrication, that the appropriate quality standards were specified and included in design documents, that sufficient coordination between WEC, CB&I, and OIW was taking place for the design and fabrication of the module, and that design changes were being effectively controlled and approved. The inspectors reviewed nonconformance reports with dispositions of "repair" or "use-as-is," requests for information to the design authority by OIW, and the resulting WEC E&DCRs to determine whether organizational interfaces were intact and preserved the approved design of submodules.

The NRC inspection team reviewed applicable E&DCRs to determine whether design changes were subject to design control measures commensurate with those applied to the original design. The inspectors reviewed the WEC Technical Documents List and OIW Master Document List to determine whether supplemental design documents applicable to the modules were appropriately communicated to OIW, tracked, and implemented.

The NRC inspection team reviewed the design drawings, standard structural details, and standard weld details supplied from WEC to OIW and compared them to the detailed shop drawings used for fabrication to determine whether the structural dimensions, weld types, weld sizes, and materials matched those originally specified for submodules CA20\_04, CA20\_06, CA20\_07, and CA20\_08. The inspectors observed completed work on modules CA20\_06 (06001A-1), CA20\_07 (07001A-2), CA20\_07 (07001-A1), and CA20\_04 (04001A-1) to determine whether the as-built products matched the design drawings and were fabricated and tested in accordance with applicable code requirements from AWS D1.1, AWS D1.6, and ACI 349. Specifically, the inspectors reviewed stud weld installation, ladder truss fabrication and final assembly of the wall plates to form the submodules. The inspectors reviewed work packages WO 2786-4507 Release 1 and 2 (lower halves of CA20\_07), WO 2786-4507 Release 3 (upper half of CA20\_07), and WO 2786-4004 Release 1 (CA20\_04) to determine whether documents provided to the shop matched the approved design and were sufficiently detailed to allow the design to be implemented.

The NRC inspection team also reviewed OIW's quality procedure (QP)-2786-(07)-10, "Commercial Grade Dedication of Items and Services for 10 CFR 50 Appendix B Projects," which provides the methodology for dedicating commercial-grade items and services for use in safety-related applications, including the development of critical characteristics, dedication methods, and the acceptance criteria. The inspectors reviewed several dedication packages,

including dedication plans, the criteria for the selection of critical characteristics, the basis for sampling plan selection, and the selection of acceptance methods to verify effective implementation of the OIW commercial grade dedication process. The inspectors also reviewed the dedication of calibration services to verify how OIW developed its commercial-grade dedication plan for third-party calibration services.

The NRC inspection team discussed the design control and commercial-grade dedication programs with OIW's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

The NRC inspection team did not observe any dedication activities. However, they reviewed completed dedication packages to verify that OIW properly developed and implemented a plan for commercial grade items (CGIs). For seismic category 1, Class C, safety-related CA20 modules fabricated by OIW for the AP1000 WEC reactor design, the inspectors reviewed a sample of dedication packages that includes weld wire, rebar, plates, and flat bar that were commercially procured. The inspectors reviewed several OIW's commercial grade dedication (CGD) packages to verify that the associated material specifications contained the critical characteristics and that the inspection reports adequately documented the acceptance of the criteria.

Sections 4.1 of QP-2786-(07)-10 requires OIW as the dedicating entity to perform and document technical evaluations to identify the necessary technical and quality assurance requirements that ensure the part will meet the intended design conditions, and that the associated dedication plan addresses the technical evaluation as well as the basis for selection of the critical characteristics and the acceptance methods. Section 4.6 of OIW QP-2786-(07)-10 states, in part, that "Sampling of the items for dedication shall, as a minimum, meet the requirements of one of the three options including production traceability, line item/single product manufacturer, or line item/multiple product manufacturers based on a random sample selection as defined in Section 1.4.3 of EPRI TR-017218, "Guideline for Sampling in the Commercial-Grade Item Acceptance Process." For each part or item been dedicated by OIW, the deputy QA Manager prepares the dedication plan with a CGD form. This CGD form contains information relevant to the determination of a part as a CGI, as well as the safety function classification, critical characteristics, and acceptance method for the item.

For the sample of commercial-grade components selected, the NRC inspection team requested that OIW provide the technical evaluations performed by the engineering group to create a dedication plan associated with the part. During discussions with OIW personnel, the inspectors determined that OIW did not document the technical evaluations or the engineering justification performed to select the critical characteristics and acceptance methods contained within the dedication plans. The inspectors found that OIW as the dedicating entity did not perform the technical evaluations; instead OIW provided the dedication plan that were been used by its customers to perform technical evaluations. Technical evaluations identify the necessary technical and quality requirements needed to provide reasonable assurance that the CGI will perform its intended safety functions. The NRC inspection team identified this issue as one example of Nonconformances 99901448/2014-201-02 and 99901449/2014-201-02 for OIW's failure to provide objective evidence that technical evaluations had been performed by OIW as



the dedicating entity to provide reasonable assurance that the commercial-grade items to be used as basic components will perform their intended safety function.

During review of OIW's CGD program, the NRC inspection team noted that OIW uses the process described in the Arizona Public Service (APS) Company safety evaluation report (Agencywide Documents Access and Management System Accession (ADAMS) No. ML052710224) to dedicate commercial calibration services for use in safety-related applications. Accreditation by an accrediting body recognized by the National Voluntary Laboratory Accreditation Program (NVLAP) through the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA) may only be used as the basis for qualifying a commercial calibration laboratory as part of the CGD process when all of the requirements described in the APS safety evaluation report are met. These requirements include performing a technical evaluation to identify any additional technical requirements for the specific M&TE being calibrated that need to be included in the purchase order (PO), such as tolerances, accuracies, ranges over which the item is to be calibrated, specific industry standards to be used, etc. For the procurement of commercial calibration services from CAL-CERT and JJ Calibration Services, OIW did not perform a technical evaluation to identify additional technical requirements to be included in the PO for the specific M&TE being calibrated. The NRC inspection team identified OIW's failure to conduct a technical evaluation to identify critical characteristics for the dedication of calibration services as an example of Nonconformances 99901448/2014-201-02 and 99901449/2014-201-02.

In addition, during review of CGD packages, the NRC inspection team identified that OIW performs sampling during dimensional inspection and destructive testing for material verification on a sample of items procured. OIW's Dedication Procedure, QP-2786-(07)-10, outlines OIW's standard for sampling. This procedure follows EPRI-TR-0172818, "Guideline for Sampling in the Commercial-Grade Item Acceptance Process," for sampling. OIW adopts the Normal Sampling Plan methodology, the most conservative approach outlined in the EPRI document. However, the NRC inspection team determined that OIW did not establish adequate engineering justification to support their determination of the sampling plan selected to be used as part of the dedication process. The NRC inspection team identified several examples of plates, rebar, weld wires, and testing services that were procured as commercial grade items and then inadequately sampled as part of dedication process to be used as safety-related components by OIW. The NRC inspection team identified this issue as an example of Nonconformances 99901448/2014-201-02 and 99901449/2014-201-02.

The NRC inspection team noted that OIW did not adequately verify its commercial suppliers' (American Steel Portland for plates; Harris Rebar Columbia Basin for rebar; Industrial Welding Supply LLC a distributor of Lincoln Electric for weld wires; and Professional Services Inc., a metallurgical testing supplier) performance, and failed to establish assurance that the remaining items were from the same controlled lot, heat, or batch and would reasonably be able to perform their safety function. Further, the inspectors identified that OIW relied on Certified Material Test Report (CMTR) or Certificate of Conformance or Analysis as the sole method to verify critical characteristics of acceptance of entire lots of rebar, weld wire, and plates without conducting a commercial grade survey and source surveillance of the supplier to verify that the supplier quality program was capable of appropriate control and material traceability. The NRC inspection team identified these issues as an example of Nonconformances 99901448/2014-201-02 and 99901449/2014-201-02.

### c. Conclusion

The NRC inspection team issued Nonconformance 99901448/2014-201-02 and 9990149/-2014-201-02 in association with OIW's failure to implement the regulatory requirements of Criterion III, "Design Control," and Criterion VII, "Control of Purchased Material, Equipment and Services," of Appendix B to 10 CFR Part 50. Nonconformances 99901448/2014-201-02 and 9990149/-2014-201-02 cite OIW for failing to perform a technical evaluation to justify that the critical characteristics and associated acceptance methods selected for various components of the CA20 module assemblies provide reasonable assurance that the CA20 module would perform their intended safety functions.

Further, for the procurement of commercial calibration services from CAL-CERT and JJ Calibration, OIW failed to conduct a technical evaluation to identify additional technical requirements such as tolerances, accuracies, ranges over which the item is to be calibrated, specific industry standards to be used, etc., that may need to be included in the purchase order for the specific M&TE being calibrated. OIW failed to perform and document adequate engineering justification to support their determination of the dedication sampling plan. In addition, OIW failed to conduct a commercial-grade survey, source verification, or other surveillance of its commercial suppliers to verify that the suppliers' quality programs were capable of appropriate control of material traceability. This issue is common for OIW's procurement and dedication of rebar, weld wires, plates, and flat bars used as safety-related components in AP1000 CA20 module.

### 3. Nonconforming Materials, Parts, or Components

#### a. Inspection Scope

The NRC inspection team reviewed policies and implementing procedures that govern 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. The inspectors verified that OIW's processes and procedures include the identification, documentation, segregation, evaluation, and disposition of nonconforming items. These processes also apply the categories of "repair," "rework," "reject," or "use-as-is" and list the applicable justifications that will be adequately supported and properly documented.

The NRC inspection team verified that OIW's nonconformance process provides a link to the 10 CFR Part 21 program. In addition, the inspection team reviewed a sample of NCRs and nonconforming items on the shop floor to verify implementation of OIW's nonconformance program.

#### b. Observations and Findings

During the review of a sample of nonconformance reports (NCRs), the NRC inspection team identified two examples of deficiencies involving failure to review, take action, and appropriately document resolution on several nonconforming items, and three examples of NCRs that were irretrievable for inspection.

On February 28, 2014, NPD-NCR-14-032 and NPD-NCR-14-033 were generated to document that during recalibration, the “as found” conditions of four calibrated tools were identified as being outside of specified tolerances. These items included a ½-13 UNC-2B thread plug gage, a 1-8 UNC thread plug gage, a ¼” drive 30-150 in□lb CDI torque wrench, and a 3/8” drive 5-75 ft□lb Snap-On torque wrench. On July 30, 2014, NPD-NCR-14-236 documented that an additional item, a torque screwdriver model C47410, was identified “as found” out of tolerance. The NRC inspection team noted that OIW had not performed an evaluation of usage, the extent of condition, or dispositioned the items identified as nonconforming. This is not in accordance with Section 15 of OIW’s Quality Assurance Manual, which states, in part, that “... a nonconformance and its disposition shall be documented on a Nonconformance Report...” As no evaluation of usage was performed or documented, the inspectors were not able to rule out the possibility that these tools had been used in the performance of work on safety-related items being manufactured at the facility. The NRC inspection team identified these issues as an example of Nonconformances 99901448/2014-201-03 and 99901449/2014-201-03.

OIW could not retrieve nonconformance reports NPD-NCR-14-032, NPD-NCR-14-033, and NPD-NCR-14-236 when the NRC inspection team requested them for review. The inspectors determined that OIW failure to retrieve three out of twenty four Nonconformance reports requested, which are required to be maintained because they furnish evidence of activities affecting is not in accordance with Sections 15 and 17 of OIW’s Quality Assurance Manual, which state, in part, that Nonconformance Reports are maintained as Quality Records and that records are preserved and controlled. The NRC inspection team identified these issue as an example of Nonconformances 99901448/2014-201-03 and 99901449/2014-201-03.

#### c. Conclusion

The NRC inspection team issued Nonconformances 99901448/2014-201-03 and 99901449/2014-201-03 in association with OIW’s failure to implement the regulatory requirements of Criterion XV, “Nonconforming Materials, Parts, or Components,” and Criterion XVII, “Quality Assurance Records,” of Appendix B to 10 CFR Part 50. Nonconformances 99901448/2014-201-03 and 99901449/2014-201-03 cite OIW for failing to review, disposition, and appropriately document resolution on several nonconforming items. OIW was also unable to retrieve three nonconformance reports, which are required quality records.

#### 4. Oversight of Contracted Activities and Audits

##### a. Inspection Scope

The NRC inspection team reviewed OIW’s policies and implementing procedures that govern the implementation of its oversight of contracted activities and audits programs 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 issued by OIW in support of several safety-related activities to verify that the requirements identified in the procedures were imposed in the applicable purchasing documents. The inspection team verified that the OIW POs adequately defined contract deliverables, instructions for the disposition of nonconformance,

access rights, and provisions for the extension of contractual requirements to subcontractors. In addition, the inspection team verified that all of the safety-related POs reviewed included clauses invoking the provisions of 10 CFR Part 21 and requiring the vendor or supplier to conduct safety-related work under its approved QA program.

The NRC inspection team reviewed OIW's approved vendor database (AVD) to ensure that qualified and approved suppliers were listed; that authorized personnel maintained, distributed, and periodically updated the list; and that any revisions to the list were implemented following the applicable procedures. The inspectors verified that the AVD documented (1) the vendor name, (2) the scope of work, (3) the approval date, and (4) the due date. The inspectors also confirmed that the suppliers performing work for OIW were appropriately listed on the AVD and that the scope of supply was documented and consistent for the activities contracted. In addition, the inspectors verified that, for the sample of vendors selected, OIW performed supplier audits as required and that the corrective actions related to these audits were implemented in a timely manner.

The NRC inspection team reviewed a sample of receipt inspection records, and external audit reports (including those conducted by third parties) to evaluate compliance and adequate implementation of OIW's technical and oversight program requirements. In addition, the inspectors reviewed a sample of internal audits, and auditor qualification records. Also, the inspection team reviewed the disposition of corrective actions to resolve deficiencies identified by audit findings for adequacy and timeliness. The inspectors confirmed that the audits are performed in accordance with the OIW program and regulatory requirements.

The NRC inspection team discussed the oversight of contracted activities and external and internal audit programs with OIW's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

a. Observations and Findings

No findings of significance were identified.

b. Conclusion

The NRC inspection team determined that OIW is implementing its oversight of contracted activities in accordance with the regulatory 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. Based on the limited sample of documents reviewed, the NRC inspection team also determined that OIW is implementing its policies and procedures associated with the oversight of contracted activities. No findings of significance were identified.

5. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspection team reviewed OIW's policies and implementing procedures that govern the facility's compliance with the requirements of 10 CFR Part 21, "Reporting of Defects and

Noncompliance.” In addition, the NRC inspection team evaluated the 10 CFR Part 21 postings and a sample of OIW’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 OIW’s nonconformance and corrective action procedures provide a link to the 10 CFR Part 21 program. Furthermore, the NRC inspection team discussed the 10 CFR Part 21 program with OIW’s management and technical staff. At the time of the inspection, OIW had not performed any evaluations under 10 CFR Part 21. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

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

6. Training and Qualification of Personnel

a. Inspection Scope

The NRC inspection team reviewed OIW’s policies and implementing procedures that govern the training and qualification program to verify compliance with the requirements of Criterion II, “Quality Assurance Program,” of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed OIW’s long-range and short-range training plans and the system used to track training. The NRC inspection team reviewed the indoctrination, training, and qualification of lead auditors and auditors, nondestructive examination personnel, Quality Control (QC) personnel, and welding personnel to ensure that proficiency is achieved and maintained. The NRC inspection team verified that all personnel performing activities affecting quality had completed the required training and met all the specified requirements in accordance with OIW’s policies and implementing procedures.

The NRC inspection team discussed the training and qualification program with OIW’s staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

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

7. Material Traceability

a. Inspection Scope

The NRC inspection team reviewed OIW's policies and implementing procedures that govern material traceability to verify compliance with the regulatory requirements of Criterion VIII, "Identification and Control of Material, Parts, and Components," of Appendix B to 10 CFR Part 50.

The NRC inspection team observed that all materials were marked with unique identifiers traceable to procurement records. This number is unique and assigned once the receipt inspection is completed. Only the Clackamas, OR facility receives material and performs receipt inspections. For a sample of the CA20 submodules, the NRC inspection team observed that identification markings were: (1) traceable to design and shop drawings, (2) carried and remained legible through the manufacturing process between both facilities, and (3) applied using materials and methods that provided a clear and legible identification that did not adversely affect the function or service life of the modules.

The NRC inspection team verified the traceability and storage of material between the multiple storage locations. OIW uses Fab-Trol-MRP, an internal computer database system, to track material locations per project. This system is also used to track the location of materials between the two facilities.

The NRC inspection team discussed the material traceability program with OIW's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

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

## 8. Manufacturing Control

### a. Inspection Scope

The NRC inspection team reviewed OIW's policies and implementing procedures that govern the control of special processes to verify compliance with the regulatory requirements Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50, AWS D1.1 Structural Welding Code – Steel, 2000 Edition, and the American Society for Nondestructive Testing (ASNT) SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing," 1996 Edition.

The NRC inspection team reviewed a sample of welding and nondestructive examination (NDE) documents associated with the fabrication and inspection of the CA20 building submodules for the Westinghouse Electric Company (WEC) AP1000 reactor design. The inspectors verified that the applicable welding data; such as weld material identification number, welding procedure specifications (WPS), inspection procedures, and the final inspection results were recorded on weld travelers.

The NRC inspection team witnessed semi-automatic Flux Cored Arc Welding (FCAW) on submodules 11, 15 and 17 for the AP1000 CA20 building, and machine stud welding for submodule CA20\_08 for the AP1000 CA20 building. The inspectors verified that WPSs CS-ST-002 and CS-2101 used for these submodules were qualified in accordance with the requirements of AWS D1.1 and the applicable OIW procedures. The inspectors also reviewed an additional sample of WPSs and procedure qualification records (PQR) to verify that the documents were in accordance with the requirements of AWS D1.1 and the applicable OIW procedures.

The NRC inspection team observed OIW's weld filler wire control storage and issue areas to ensure that the weld filler metal was adequately controlled at all times until its consumption, and reviewed records associated with the storage, issuance, and return of weld filler wires. The weld filler metal was either in hermetically sealed containers or was kept in baking ovens to control the moisture content within the requirements of AWS D1.1. The inspectors also verified that baking ovens used for SMAW filler metal used calibrated thermometers in accordance with the applicable OIW procedures. In addition, the inspectors verified that OIW's storage and control of weld filler material was in accordance with OIW PP-NPD-(09)-08 "Handling and Control of Welding" Revision 5, dated April 16, 2014.

The NRC inspection team witnessed in-process visual (VT), magnetic particle (MT), and ultrasonic testing (UT) inspection on complete joint penetration weld joint numbers 41 and 42 on submodule CA20\_11. The inspectors also observed visual inspection of the fit-up for tack weld number 817 for the ladder truss on submodule CA20\_08, fillet weld numbers 15c and 16c for submodule CA20\_15, and stud welds on submodule CA20\_08. The inspectors found the OIW NDE procedures to be consistent with the AWS Code.

During VT, MT, and UT, the NRC inspection team witnessed and verified that the Level II inspectors performed the examinations in accordance with the OIW procedures and appropriate acceptance criteria. The inspectors also reviewed a Level III non-destructive examiner and a sample of Level II non-destructive inspector qualification records and confirmed that they were

qualified in accordance with the requirements in ASNT SNT-TC-1A. The inspectors verified that vision tests were performed yearly and inspectors and Level III examiners are recertified as required by the AWS Code and ASNT SNT-TC-1A. The NRC inspection team noted that most non-destructive inspectors had previous experience and training in their respective non-destructive test methods.

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

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team determined that OIW is implementing its program to control the use of special processes in accordance with the regulatory requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that OIW is implementing its policies and procedures associated with the control of special processes program. No findings of significance were identified.

9. Inspection

a. Inspection Scope

The NRC inspection team reviewed OIW's policies and implementing procedures that govern the inspection program to verify compliance with the regulatory requirements of Criterion X, "Inspection," of Appendix B to 10 CFR Part 50.

The NRC inspection team verified that OIW's procedures for inspection activities provided measures for the generation of inspection documents such as travelers, instructions, checklists, or other appropriate means. For a sample of inspection documents, the inspectors verified that these documents included the appropriate information as required by OIW procedures such as the inspection date, type of observation, results of examinations and tests, the initials of the QC inspector, and mandatory hold points were indicated and work did not proceed without appropriate approval.

The NRC inspection team verified that OIW had a process in place to initiate a nonconformance report when a counterfeit, fraudulent, and suspect item (CFSI) was suspected. The inspectors interviewed two QC inspectors to assess their understanding of controlling and documenting when CFSI is suspected. The inspectors noted that the QC inspectors were knowledgeable on the use of documents to verify, document, and report CFSI.

The NRC inspection team evaluated OIW's receipt inspection area to determine if OIW had adequate material control. The inspectors observed that accepted materials were adequately



identified, and that rejected materials segregated in a nonconformance hold area were properly marked with red and yellow hold tags depending on the level of approval.

The NRC inspection team discussed the inspection program with OIW's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusions

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

10. Control of Measuring and Test Equipment

a. Inspection Scope

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

The NRC inspection team, for a sample of M&TE, determined that they had the appropriate calibration stickers with the respective calibration service and current calibration dates including the calibration due date. The inspectors also verified that the M&TE had been calibrated, adjusted, and maintained at prescribed intervals. In addition, the calibration records reviewed by the inspectors indicated the "as-found" or "as-left" conditions, accuracy required, calibration results, calibration dates, owner of the calibration services, and the due date for recalibration. The inspectors also verified that the selected M&TE was calibrated using procedures traceable to known industry standards including those outsourced for calibration. All M&TE equipment was traceable with a unique ID number. The number is traced and can be retrieved using an M&TE log which contains all of the information regarding the calibration of the item.

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

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

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team determined that OIW 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 OIW is implementing its policies and procedures associated with the control of M&TE. No findings of significance were identified.

11. Handling, Storage, and Shipping

a. Inspection Scope

The NRC inspection team reviewed OIW's policies and implementing procedures that govern the handling, storage, and shipping program to verify compliance with the requirements of Criterion XIII, "Handling, Storage, and Shipping," of Appendix B to 10 CFR Part 50.

The NRC inspection team reviewed the onsite storage and handling of materials. The inspectors verified the control and segregation of carbon and stainless steel, and the support and protection for CA20 modules currently in fabrication. The inspectors also reviewed the classification and use of storage level B, C, and D areas in accordance with Subpart 2.2, "Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants," of the American Society of Mechanical Engineers Nuclear Quality Assurance-1-1994 Edition.

The NRC inspection team observed permanent storage of carbon steel bars, studs, flat bars, and welding wire spools. The inspectors also evaluated the different locations of storage available including Clackamas, Vancouver, and the Green Transfer Storage facilities. These facilities are used to store the overflow of heat treated trusses produced for CA20 modules and other raw materials. In addition, the inspectors verified implementation of OIW's monthly inspections to confirm that the conditions of items stored are in compliance with PO requirements and OIW procedures.

The NRC inspection team discussed the handling, storage, and shipping program with OIW's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

No findings of significance were identified.

c. Conclusion

The NRC inspection team determined that OIW is implementing its nonconforming materials, parts, or components program in accordance with the regulatory requirements of Criterion XIII of

Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that OIW is implementing its policies and procedures associated with handling, storage, and shipping. No findings of significance were identified.

## 12. Entrance and Exit Meetings

On September 22, 2014, the NRC inspection team discussed the scope of the inspection with Mr. Bradley D. Dunkin, Vice President, and other members of OIW's management and technical staff. On September 26, 2014, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Bradley D. Dunkin and other members of OIW's management and technical staff. The attachment to this report lists the attendees at the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

## ATTACHMENT

### 1. ENTRANCE AND EXIT MEETING ATTENDEES

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>	<b>Interviewed</b>
Jonathan Ortega-Luciano	Inspection Team Leader	NRC	X	X	
Annie Ramirez	Inspector	NRC	X	X	
Raju Patel	Inspector	NRC	X	X	
Laura Micewski	Inspector	NRC	X	X	
John Honcharik	Inspector	NRC	X	X	
Nicholas McMurray	Inspector	NRC	X	X	
Chad Huffman	Inspector	NRC	X	X	
Dean Hudson	Quality Assurance Manager Nuclear Products	OIW	X	X	X
Adam Wilcher	Module Compliance Supervisor	SNC		X	
Alex Baldin	Storage Staff	OIW			X
Alex Berlin	Project Engineer	OIW			X
Andrew Chaney	Manufacturing Engineer	OIW			X
Anna McLendon	Quality Assurance Engineer	SNC		X	
Asia Jenkins	Supplier Compliance Manager	SNC		X	
Bill Bartlett	Source Inspector	CB&I			X
Bill White	Warehouse Storage & Shipping Manager	OIW			X
Billy Caldwell	Welder	OIW			X
Bradley Dunkin	Vice President Nuclear Products	OIW	X	X	X
Brent Morris	Control M&TE	OIW			X
Byron lowery	Quality Assurance Project Manager	SNC		X	

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>	<b>Interviewed</b>
Candi Larsen	CAPA Coordinator	OIW	X	X	X
Chess Archibald	QC Inspector	OIW			X
Chris Huggard	Lead Source Inspector	CB&I	X	X	X
Dan Teas	Quality Control Inspector	OIW			X
Daniel Grannan	Manager	CB&I	X	X	
Darren Delozier	Welder	OIW			X
Dave Johnson	Deputy Quality Assurance Manager	OIW	X	X	X
Dave Worsley	Purchasing Manager	OIW			X
Devlyn Kozol	Project Engineer	OIW			X
Forrest Hundley	Quality Assurance Manager	SNC		X	
James Neigel	Maintenance Manager	OIW			X
Jamie Schlarb	Project Inspection Coordinator	OIW	X	X	
Jason Wimmer	Quality Assurance Engineer	OIW	X	X	X
Jeff Burgess	Maintenance Manager	OIW			X
Joe Ernst	Project Manger	CB&I	X	X	X
John Heilman	Fabrication Foreman	OIW			X
Joshua Olson	Quality Assurance Supervisor	SNC		X	
Kahnne Bankston	Quality Specialist	SNC		X	
Kathy O'Donnell	Source Inspector	OIW			X
Ken Adams	Quality Assurance Engineer	OIW		X	
Kevin Kueller	Source Inspector	OIW			X
Kurt Erspamer	Receipt Inspector	OIW			X
Lana Wright	Lead Auditor	OIW		X	X
Mike Yox	Licensing Manager	SNC		X	

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>	<b>Interviewed</b>
Patrick McDevitt	Quality Control Level II	OIW			X
Rick Hinkle	Welder	OIW			X
Rod Konkin	Project Manger	OIW			X
Rusty Kaminsky	QA Engineer	OIW			X
Scott Goodman	Welder	OIW			X
Scott Ruth	Fabrication Foreman	OIW			X
Seth Fluharty	QA Engineer	OIW			X
Stacey Raben	Manager of Projects	OIW	X	X	X
Thomas Saunders	Supplier Compliance Director	SNC		X	
Verl Moultrie	Yard Shipping Manager	OIW			X
Vince Archibald	Quality Assurance Inspector Level III	OIW			X
Warren Washburn	Project Manger	OIW	X	X	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 36100.01, "Inspection of 10 CFR 50.55(e) Programs for Reporting Defects and Noncompliance during Construction," dated February 13, 2012.

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

IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated November 29, 2013.

IP 65001.01, "Inspection of ITAAC-Related Foundations and Buildings," dated October 3, 2007.

IP 65001.A, "Inspection of the As-Built Attributes for Structures, Systems, and Components Associated with ITAAC," 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 DISCUSSED

Item Number	Status	Type	Description	Applicable ITAAC
99901448/2014-201-01	Opened	NON	Criterion XVI	N/A
99901449/2014-201-01	Opened	NON	Criterion XVI	N/A
99901448/2014-201-02	Opened	NON	Criterion III Criterion VII	N/A
99901449/2014-201-02	Opened	NON	Criterion III Criterion VII	N/A
99901448/2014-201-03	Opened	NON	Criterion XV Criterion XVII	N/A
99901449/2014-201-03	Opened	NON	Criterion XV Criterion XVII	N/A

### 4. INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA

The NRC inspection team identified the following inspections, tests, analyses, and acceptance criteria (ITAAC) related to components being fabricated and inspected by OIW. At the time of the inspection, OIW was fabricating the CA20 Auxiliary Building submodules for Vogtle Electric Generating Plant Unit 4 and V.C. Summer Unit 3. For the ITAAC listed below, the NRC inspection team reviewed OIW's quality assurance controls in the areas of design control, inspection, nonconforming materials parts and components, and corrective actions.

The ITAAC's design commitments referenced below are for future use by the NRC staff during the ITAAC closure process; the listing of these ITAAC design commitments does not indicate that they have been met and closed. The NRC inspection team did not identify any findings associated with the ITAAC identified below.

Appendix C to the Combined License for Vogtle Electric Generating Plant Unit 3	No. 763	ITAAC 3.3.00.02a.i.d
--	---------	----------------------

### 5. DOCUMENTS REVIEWED

#### Calibration, Heat Treatment, Non-Destructive Examination, Inspection and Material Reports

- CAL-CERT Certificate of Calibration (C of C) Report No. 41632-O-06 dated April 13, 2013, for OIW PO No. 636-10-00316 for calibration of Plastic Shim S/Ns. PS-0005, PS-0010, PS-0020, PS-0030, PS-0040 and PS-0050
- CAL-CERT Certificate of Calibration Report No. 41632-O-06, dated April 13, 2012 for OIW Shim Serial No. PS-0040, on PO No. 636-10-00316

- CAL-CERT Certificate of Calibration for calibration of Pressure Gauge Model # 42070533, S/N M012270 per PO 2659-00118, dated March 14, 2014
- Cal-Cert Certificate of Calibration for calibration of Torque Wrench S/N 1110102846 per PO 636-60-00063, dated February 13, 2014
- CAL-CERT Certificate of Calibration for calibration of Torque Wrench S/N 0805500918 per PO 636-60-00065, dated February 14, 2014
- Transcat Certificate of Calibration for calibration of Dial Depth Gage, S/N 140709-1 per PO 2659-00118, dated July 9, 2014
- OIW Receipt Inspection Report (RIR) No. 1332, dated July 15, 2014, for PO No. 2786-00017, Revision 03, Line Items, 5, 6,8,9,10,16,18,22,23 and 25, acceptance of deformed hook bars to ASTM A706, Gr. 60 specification with source surveillance by OIW at Harris Rebar Columbia Basin with material procured by Harris Rebar Columbia Basin from Cascade Steel Rolling Mills Inc.
- RIR-1332, Revision 1, dated July 14, 2014, at Harris Rebar Basin, conducting source surveillance of bending and threading operation of rebar to OIW PO No. 2786-0017
- RIR No. 1095, dated April 23, 2014, PO No. 2786-00061, Revision 1, for acceptance of flat bar ¾" x 3" x 20' to ASTM A36-1991 Edition, received from American Steel Portland, traceable to NUCOR
- RIR No. 1216 dated April 21, 2014 for PO No. 2786-00018, Revision 1 for acceptance of 851 pieces of Flange Coupler EL28SAQSP004, Heat# L7899, HIC No. N6200 received from ERICO, an audited supplier of OIW
- RIR No. 1347 dated July 15, 2014, PO No. 2786-00089 for acceptance of safety-related angles 7"x4"x1/2" x 23' to ASTM A36-1991, Heat No. 1027051, received from EDGEN Murray Corporation, an audited supplier of OIW
- RIR No. 1396, dated July 19, 2014 for PO No. 636-60-0009114, Revision 2, for calibration services of OIW M&TE performed by Transcat, Inc., an audited supplier of OIW
- RIR No. 1411, dated August 1, 2014 for PO No. 2786-00082, Revision 1, for acceptance of Lenton Couplers P/N PJ9-EL28P9JQ, C3J EL28P9JQ, and Lenton Couplar Weldable Clevis C3J 36MM#11 procured from ERICO, an audited supplier of OIW
- RIR No. 1419, dated July 31, 2014 for PO No. 2786-00136, Revision 2, for acceptance of 12 Pipe Caps 16" True SCH. 40, material specification ASTM A403, Gr. 304L-13 to APP-CA20-GEF-701-100 with Heat# EE110 identified HIC No. N6493 received from Energy & Process Corporation, an audited and approved supplier of OIW
- Transcat Certificate of Calibration Report No. 1407101/1407102, dated July 11, 2014 for OIW Fluke Infrared Thermometer s/n 27620010 on PO No. 636-60-00091
- NELSON Stud Welding Certificate of Compliance Report dated March 31, 2014 for safety-related S3L ¾"x63/16" studs P/N 102098085-NQA material specification ASTM A108 Gr. 1015, on OIW PO No. 2786-00010, Revision 03, with technical evaluation performed by CB&I

#### Commercial Grade Dedication Packages

- OIW Commercial Grade Dedication Report (CGDR) No.NPD-CGD-2786-023A Revision 0, dated April 21, 2014, PO No. 2786-00061 Line Items 1 & 3 for 200 ¾"x 3" x 20' flat bars to ASTM A36, Heat No. SE13105891 from American Steel-Portland, material procured from NUCOR Steel Seattle, Inc., with technical evaluation performed by CB&I



- CGDR No. NPD-CGD-2786-021, dated May 30, 2014, PO No. 2786-0035 Line Item 6, for weld wire 1/8" AWS E8018-C1MR, OIW HIC No. N6115 from Industrial Welding Supply Inc., with technical evaluation performed by CB&I
- CGDR No. NPD-CGD-2786-013, Revision 1, dated June 2, 2014, PO No. 2786-00006, Revision 7, Items 7, OIW HIC No. N6037 and N6038 for 1/2" x 123' x 488' ASTM A572 Grade 60-07 plates from EVRAZ Oregon Steel Mills with slabs melted by NTMK Nizhny Tagil, Russia, with technical evaluation performed by CB&I
- CGDR No. NPD-CGD-2786-004, Revision 1, dated June 2, 2014, PO No. 2786-00006 Line Item 4, OIW HIC Nos. N6044 and N6045 for plate 1/2" x 74" x 486' to ASTM A 572 Gr. 60-07, with technical evaluation performed by CB&I
- CGDR No. NPD-CGD-2786-024, Revision 1, dated August 21, 2014, PO No. 2786-00017 Line Items 9, 10, 18, 19, 23, 28, 28, 29 and 30 for #9 reinforced steel rebar, OIW HIC Nos. N6156, N6176, N6288, to ASTM A 706-13 Edition, from Harris Rebar Columbia Basin, with material from CASCO Steel Rolling Mills, metallurgical test by PSI and Verification of Weights Report No. 48451-O-23 by CAL-CERT, with technical evaluation performed by CB&I
- CGDR No. NPD-CGD-2786-028G Revision 0, dated September 20, 2014, PO No. 636-60-00085 Line Items 1 through 3 for calibration of coating thickness gauge serial no. 649455, sling Psychrometer serial no. 72954, PTC surface thermometer serial no. 73959 and 50' tape measure serial no. 040501 commercially calibrated by CAL-CERT

#### Corrective Action Reports

13-23, 13-26, 13-31, 14-29, 14-30, 14-31, 14-32, 14-33, 14-34, 14-35, 14-36, 14-37, 14-38, 14-39, 14-41, 14-43, 14-44, 14-45, 14-46, 14-47, 14-48, 14-49, 14-50, 14-61, 14-71

#### Corrective Action Reports Generated during the NRC Inspection

14-73, 14-77, 14-78, 14-79, 14-80, 14-81, 14-82, 14-84, 14-85, 14-86, 14-87, 14-88, 14-90

#### Design Documents

- APP-1230-GEF-500, Floor Reinforcement Procurement Release Auxiliary Building Areas 5 and 6 EL 100' 0", Revision 0
- APP-CA00-GEF-000002, Module Reinforcement Clarification, Revision 0
- APP-CA00-GEF-058, Stud Spacing – General Note 3.7.5 Requirements, Revision 0
- APP-CA00-GEF-850020, General Note 3.7.5.11 - Studs, Revision 0
- APP-CA20-GEF-1021, E&DCR to change overlay plate E230 from type OC3 to Direct Weld and correct mislabeled plate number on Sub-module CA20\_05, Revision 0
- APP-CA20-GEF-1109, CA20 EL 135' 3" Rebar Placement at Access Opening, Revision 0
- APP-CA20-GEF-1196, Lateral Support OLPs for RNS-ME-01 A & B Heat Exchangers, Revision 0
- APP-CA20-GEF-1211, CA20 Security System (SES) Conduit Penetrations and NCS Penetrations, Revision 0
- APP-CA20-GEF-1271, CA20 OLP Plate Modifications for Sheet 350, Revision 0
- APP-CA20-GEF-1285, Modifications to CA20 Floor Rebar L-Hooks in 30 Inch Wide Walls, Revision 0.

- APP-CA20-GEF-201W, E&DCR to Revise CA20 Sub Assembly #06, Revision 0.
- APP-CA20-GEF-220, E&DCR for CA20 BOM Inconsistencies (Part II), Revision 0
- APP-CA20-GEF-359, E&DCR for sub-module 08 corrections, Revision 0
- APP-CA20-GEF-409, E&DCR for CA20 BOM Inconsistencies, Revision 0
- APP-CA20-GEF-850033, CA20 Fillet Weld Mod – Pipe Struts, Revision 0
- APP-CA20-GEF-850046, CA20 Mod Elect Penetrations, Revision 0.
- APP-CA20-GEF-850054, SSD/SWD-80 CA20 Edge Truss SA01, Revision 0.
- APP-CA20-GEF-850057, CA20-06 Weld Modifications, Revision 0
- APP-CA20-GEF-850065, CA20-08 Weld Modifications, Revision 0
- APP-CA20-GEF-850066, SSD/SWD-80 CA20 Edge Truss SA01, Revision 0.
- APP-CA20-GNR-850396, OIW APP-CA20-GEF-850054 detail SWD-80 Edge Truss, Revision 0
- APP-CA20-GNR-850402, CA20\_07 1-5/8" hole centerline dimension out of tolerance, Revision 0
- APP-CA20-GNR-850410, OIW-CA20\_07 Previously Cut Penetrations, Revision 0
- APP-CA20-GNR-850411, OIW CA\_07 Missing Chamfer, Revision 0
- APP-CA20-S5-04001, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_04 Isometric Views, Revision 6
- APP-CA20-S5-04002, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_04 Break-Down, Revision 6
- APP-CA20-S5-04003, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_04 Structural Outline Horizontal Sections/Views, Revision 5
- APP-CA20-S5-04004, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_04 Structural Outline Vertical Sections/Views, Revision 6
- APP-CA20-S5-04005, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_04 Structural Outline Specific Details (Sheet 1), Revision 6
- APP-CA20-S5-04006, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_04 Structural Outline Specific Details (Sheet 2), Revision 3
- APP-CA20-S5-06001, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_06 Isometric Views, Revision 4
- APP-CA20-S5-06002, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_06 Break-Down, Revision 4
- APP-CA20-S5-06003, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_06 Structural Outline Horizontal Sections/Views, Revision 3
- APP-CA20-S5-06004, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_06 Structural Outline Vertical Sections/Views, Revision 5
- APP-CA20-S5-06005, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_06 Structural Outline Specific Details, Revision 4
- APP-CA20-S5-07003, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_07 Structural Outline Horizontal Sections/Views, Revision 4
- APP-CA20-S5-07004, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_07 Structural Outline Vertical Sections/Views, Revision 6
- APP-CA20-S5-08001, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_08 Isometric Views, Revision 4
- APP-CA20-S5-08002, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_08 Break-Down, Revision 4

- APP-CA20-S5-08003, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_08 Structural Outline Horizontal Sections/Views (Sheet 1), Revision 6
- APP-CA20-S5-08004, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_08 Structural Outline Vertical Sections/Views, Revision 4.
- APP-CA20-S5-08005, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_08 Structural Outline Specific Details, Revision 6.
- APP-CA20-S5-08006, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_08 Structural Outline Horizontal Sections/Views (Sheet 2), Revision 0
- APP-CA20-S5B-04001, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_04 Bill of Materials, Revision 6
- APP-CA20-S5B-06001, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_06 Bill of Materials, Revision 3
- APP-CA20-S5B-08001, Auxiliary Building Areas 5 & 6 Module CA20 Submodule CA20\_08 Bill of Materials, Revision 7
- APP-CA20-S5Y-00001, Auxiliary Building Areas 5 & 6 Module CA20 Submodules General Notes – I, Revision 6
- APP-CA20-S5Y-00200, Auxiliary Building Areas 5 & 6 Module CA20 Standard Welding Details, Revision 6
- APP-CA20-S5Y-00201, Auxiliary Building Areas 5 & 6 Module CA20 Standard Welding Details, Revision 6
- APP-CA20-S5Y-00202, Auxiliary Building Areas 5 & 6 Module CA20 Standard Welding Details, Revision 4
- APP-CA20-S5Y-00203, Auxiliary Building Areas 5 & 6 Module CA20 Standard Welding Details, Revision 4
- APP-CA20-S5Y-00204, Auxiliary Building Areas 5 & 6 Module CA20 Standard Welding Details, Revision 1
- APP-CA20-S5Y-00205, Auxiliary Building Areas 5 & 6 Module CA20 Standard Welding Details, Revision 0
- APP-ML05-GEF-030, Weld Number Additions to ML05 Drawings, Revision 0
- APP-ML05-GEF-068, Tolerances for Nelson Stud Placement on ML05 Pipe Penetrations, Revision 0.
- APP-WRS-GEF-089, Correct Sloping on Embedded WRS Piping, Revision 0
- APP-WRS-GEF-108, Reroute of WRS Piping to Resolve Clash with Reinforcing Bars, Revision 0
- DWG 2786-0600, Auxiliary Building Areas 5 & 6 Module CA20 – Standard Edge Truss, Revision 3
- DWG 2786-06001, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Wall Pancake, Sheets 1-11, Revision 7
- DWG 2786-06021, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Male Panel Sub-Assy, Sheets 1-4, Revision 7
- DWG 2786-06031, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Female Panel Sub-Assy, Sheets 1-2, Revision 4
- DWG 2786-06201, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Male Panel Plate, Sheets 1-4, Revision 3
- DWG 2786-06301, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Female Panel Plate, Sheets 1-5, Revision 3

- DWG 2786-06501, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Ladder Truss, Revision 5
- DWG 2786-06502, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Ladder Truss, Revision 4
- DWG 2786-06503, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Ladder Truss, Revision 4
- DWG 2786-06504, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Ladder Truss, Revision 4
- DWG 2786-06601, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Edge Truss, Revision 4
- DWG 2786-06602, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Edge Truss, Revision 5
- DWG 2786-06603, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Edge Truss, Revision 5
- DWG 2786-06604, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Edge Truss, Revision 1
- DWG 2786-06605, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Edge Truss, Revision 1
- DWG 2786-06606, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Edge Truss, Revision 1
- DWG 2786-06607, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Edge Truss, Revision 1
- DWG 2786-06801, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Panel Assembly, Revision 4
- DWG 2786-06802, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Panel Assembly, Revision 1
- DWG 2786-06803, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_06 Panel Assembly, Revision 1
- DWG 2786-08001, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Wall Pancake, Sheets 1-12, Revision 3
- DWG 2786-08021, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Male Panel Sub-Assy, Sheets 1-3, Revision 3
- DWG 2786-08022, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Male Panel Sub-Assy, Sheets 1-3, Revision 2
- DWG 2786-08031, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Female Panel Sub-Assy, Sheets 1-2, Revision 3
- DWG 2786-08032, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Female Panel Sub-Assy, Sheets 1-2, Revision 3
- DWG 2786-08201, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Male Panel Plate, Sheets 1-4, Revision 3
- DWG 2786-08202, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Male Panel Plate, Sheets 1-4, Revision 4
- DWG 2786-08301, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Female Panel Plate, Sheets 1-3, Revision 3
- DWG 2786-08302, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Female Panel Plate, Sheets 1-4, Revision 5

- DWG 2786-08501, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Module Ladder Truss, Sheet 1, Revision 3
- DWG 2786-08502, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Module Ladder Truss, Sheet 1, Revision 3
- DWG 2786-08601, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Edge Truss, Sheet 1, Revision 1
- DWG 2786-08602, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Edge Truss, Sheet 1, Revision 1
- DWG 2786-08603, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Edge Truss, Sheet 1, Revision 2
- DWG 2786-08604, Auxiliary Building Areas 5 & 6 Module CA20 – Module 08 Edge Truss, Sheet 1, Revision 0
- DWG 2786-08801, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Box Assembly, Sheet 1, Revision 3
- DWG 2786-08802, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Panel Assembly, Sheet 1, Revision 2
- DWG 2786-08803, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Panel Assembly, Sheet 1, Revision 2
- DWG 2786-08804, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Panel Assembly, Sheet 1, Revision 2
- DWG 2786-08805, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Panel Plate Assembly, Sheets 1-2, Revision 2
- DWG 2786-08808, Auxiliary Building Areas 5 & 6 Module CA20 – Submodule CA20\_08 Panel Assembly, Sheet 1, Revision 3

#### Miscellaneous

- OIW-OR-NOUC-007, dated July 18, 2014
- OIW-OR-NOUC-009, dated July 22, 2014
- OIW-OR-NOUC-011, dated July 24, 2014
- OIW-OR-NOUC-0012, dated July 25, 2014
- OIW-OR-NOUC-0015, dated July 31, 2014
- M&TE Activity Tracker for Bay 2 and Bay 6
- Form D-11, “Ultrasonic Examination Report,” Revision 3
- Weekly CAR Agenda, dated September 24, 2014

#### Nonconformance Reports

- 14-032, 14-033, 14-050, 14-060, 14-082, 14-085, 14-095, 14-114, 14-124, 14-125, 14-0129, 14-133, 14-152, 14-154, 14-161, 14-170, 14-236, 14-245, 14-246, 14-254, 14-276, 14-290, 14-291, 14-300

#### Policies and Procedures

- DCI-NPD-(17)-12.03, “Quality Records,” Revision 0, dated June 13, 2013

- OIW Nuclear Products NQA-1 Quality Assurance Manual Section 12- Control of Measuring test Equipment Revision 0
- OIW Project Plan (PP)-2786 (9)-1, "2786 Wall Fabrication –CA20 Manufacturing, Inspection and Testing Plan," Revision 4, dated July 31, 2014
- OIW Quality Procedure (QP)-NPD- (7)-01, "Receiving Inspection Control," Revision 5, dated March 31, 2014
- OIW Vendor Report dated August 27, 2014
- PI-2786-(09)-01, CB&I Sub-Mod Guidance for Welded Studs, Revision 1
- PI-2786-(09)-02, General Fabrication Instruction, Revision 1
- PI-2786-(9)-01, CB&I Sub-Module Guidance for Welded Studs, Revision 0
- PI-2786-(9)-02, CB&I General Fabrication Instruction, Revision 0
- PP- 2786 (9)-1, "2786 Wall Fabrication –CA20-08 Manufacturing, Inspection and Testing Plan Supplement," Revision 0, dated July 25, 2014
- PP-2786-(5)-01, Supplement to Control of Redline Corrections/Changes, Revision 1
- PP-2786-(9)-01, "Wall Fabrication – CA20 Manufacturing, Inspection, and Testing Plan," Revision 4, dated August 13, 2014
- PP-2786-(9)-01, "Wall Fabrication – CA20 Manufacturing, Inspection, and Testing Plan," Revision 2, dated March 7, 2014
- PP-2786-15-003, "Coating Application Procedure," Revision 3, dated July 28, 2014
- PP-NPD (13)-(7) Storage, Handling, Packing and Shipping, Rev 2. 4/7/2014
- PP-NPD-(9)-01, Base Metal Repair Control Procedures, Revision 12
- PP-NPD-(9)-02 Production Control Revision 4
- PP-NPD-(9)-08, "Handling and Control of Welding Consumables," Revision 5, dated April 15, 2013
- QI-NPD-(06)-07, Detail Drawing Approval and Distribution, Revision 0
- QI-NPD-(16)-05, "Corrective Action Levels," Revision 1, dated March 27, 2014
- QP-2155-(12)-06, "Control of Measuring and Test Equipment," Revision 1, dated March 14, 2007
- QP-2786-(07)-10, "Commercial Grade Dedication of Items and Services for 10CFR50 Appendix B Projects," Revision 1, dated January 31, 2014
- QP-2786-(07)-10, "Commercial Grade Dedication of Items and Services for 10CFR50 Appendix B Projects," Revision 2, dated September 5, 2014
- QP-NPD-(15)-01, "Nonconformance Control," Revision 0, dated October 3, 2013
- QP-NPD-(18)-01, "Internal Audits," Revision 0, dated October 3, 2013
- QP-NPD-(7)-08, "Dimensional Inspection," Revision 5, dated July 31, 2014
- QP-NPD-(7)-09, "Suspect Counterfeit, Items," Revision 3, dated December 27, 2013
- RP-OIW-(16)-02, "Reporting of Defects, Deficiencies, or Hazards," Revision 2, dated July 16, 2014
- NP-NPD(09)-04, Revision 3 Ultrasonic Testing Procedure AWS D1.1 and D1.5
- NP-NPD-(09)-05, Revision 1, MT/PT Acceptance Criteria AWS D1.1
- NP-NPD-(9)-09, Revision 2, Magnetic Particle Testing Procedure
- NP-NPD-(9)-10, Revision 0, Visual Examination of Welds and Material Surface Finishes

## Purchase Orders, Internal and External Audit Reports

- Audit Plan for Audit NP-13-01-01, "QAM Issue 2, Revision 1, Section 1 – Organization," dated March 26, 2013
- Audit Plan for internal audit June 23 to July 3, dated June 16, 2014
- Audit Report for Oregon Iron Works Internal Audit 2014, June 23 to July 3
- OIW-NP-13-15-V07, Audit report of Lincoln Electric, a welding material supplier, dated March 24, 2014
- OIW-NP-14-V02, Audit report of Nelson Stud Welding Inc., supplier of Nelson studs, dated January 31, 2014
- OIW-NP-14-V05, Audit report of Erico International Inc., a fabricator of Lenton Threaded couplers and Lenton Concrete products, dated February 25, 2014
- OIW-NP-14-V10, Audit report of IMR-KHA, a testing service supplier, dated September 11, 2014
- OIW Vendor Surveillance Report of Albina, dated September 15, 2014, for 90° bend test on 3 pieces of galvanized electrical conduit, OIW HIC No. N6363 on PO No. 2786-00166, Revision 1, Line 1 & 2 with Conduit Bend Inspection Report performed by Kevin Keeler on CGD Report No. NPD-CGD-2786-051A-2
- OIW Vendor Surveillance Report of EVRAZ Oregon Steel Mills, dated January 27-30, 2014, for PO No. 2786-00006, Revision 5, for plate finishing and die stamping of prolong material
- PO No. 2786-00006, Revision 7, dated May 14, 2014, to Evraz Oregon Steel Mills for procurement of commercial grade plates of different sizes to ASTM A572 Grade 60-2007 Edition, with PO Attachment B OIW Internal Receiving Instruction had invoked
- PO No. 2786-00007, Revision 4, dated April 28, 2014, to OUTO KUMPU, for procurement of commercial duplex stainless steel ASTM A240, UNS S32101
- PO No. 2786-00008 Revision 4 – Edgen Murray RIR# 1269
- PO No. 2786-00017, Revision 5, dated August 29, 2014, to Harris Rebar Basin, for procurement of deformed bar for Lenton C3J coupler couplers to ASTM A706 Grade 60, invoking source surveillance by OIW with PO Attachment A; Flowdowns PO 2786-00017
- PO No. 2786-00032- RIR # 1230- Independent Welding Supply
- PO No. 2786-00032, Revision 3, dated May 13, 2014, to Independent Welding Supply LLC., for procurement of safety-related E71T-1C-J Outer Shield 71m 0.045 x 33# AWS A5.20 weld spool, 3240 pounds of ENi-5 (Lincoln trade name LA-85)
- PO No. 2786-00050- Green Transfer & Storage
- PO No. 2786-00061- American Steel-Portland Five Flat-bars ¾ x 20'0" ASTM A36-1991 Ed
- PO No. 2786-00061, dated February 21, 2014 to American Steel-Portland, for commercial ¾" x 3' x 20' flat bar
- PO No. 2786-00077 Nelson Stud Welding
- PO No. 2786-00110, dated April 16, 2014, to Professional Service Inc., for safety-related mechanical analysis of rebar, OIW HIC No. N6152, N6153, N6154, N6155, N6156, N6157, N6158
- PO No. 2786-00112 American Steel RIR # 1217
- PO No. 2786-00137 – Independent Welding Supply
- PO No. 2786-00141, dated May 14, 2014, to American Steel-Portland, for procurement of 2 x 96 x 5" plates to ASTM A572, Grade 50, to 2007 Edition
- PO No. 2786-00182- Independent Welding Supply LLC

- PO No. 636-10-00316, Revision 0, dated April 5, 2012, to CAL-CERT Company, for commercial calibration services of Plastic Shims serial nos. PS-0005, PS-0010, PS-0015, PS-0020, PS-0030, PS-0040, PS-0050 and Fluke clamp Volt/Amp meter s/n 76505336
- PO No. 636-60-00085 Revision 0, dated May 23, 2014, to CAL CERT Company, for commercial calibration services of 50' tape, coating thickness gauge serial no. (s/n) 649455, sling Psychrometer s/n 72954, and surface thermometer s/n 73959
- PO No. 636-60-00091, dated July 14, 2014, issued to Transcat, Inc., for safety-related calibration services of go/no-go thread plug gages, feeler gages, Fluke Clamp meter and Fluke Surface Temperature Probe Model No. 80PK-27
- PO No. 636-60-00098, Revision 0, dated September 9, 2014, to JJ Calibration, for commercial calibration services of 12 Go/No-Go thread plug sets, and a stop watch model No. 1030 S/N W
- PO# 636-60-00080- Calibration Certificate Digital Caliper Calibration S/N 1073813 April 17, 2015
- PO#636-60-00074- Calibration Certificate Depth Micrometer S/N WSN071826 March 25, 2015
- PO#7516-00065r1- JJ Calibration Insulation Multimeter S/N 21150008 May 2, 2015
- PO # 636-10-00389- JJ Calibration Coating Thickness Gauge S/N 176461 July 2, 2015
- PO#2786-00026- Calibration Certificate Temperature/ Humidity Data Logger S/N 1403000/14070013 April 17, 2015
- PO# 636-60-00054- Fox Valle Metrology Thread Ring S/N 11E10-2 January 30, 2015
- PO#636-60-00065- Calibration Certificate Torque Wrench S/N 0908019437 February 14, 2015
- PO# 636-60-00048 IR Thermometer S/N 25170018 January 3, 2015
- PO# 636-60-00094 Radiometer White Light Only S/N 131375A/131375C December 5, 2015
- PO#2786-00049 Torque Wrench C081726 April 25, 2014
- PO# 2786-00026 Temperature/ Humidity Data logger S/N1430008/14035297 March 17, 2014
- PO#636-60-00094 Radiometer, White Light Only S/N 131376A/131376C, August 1, 2014

#### Training and Qualification Records

- Billy Caldwell, Welder Qualification, SMAW CS-2103
- Dan Teas, Quality Control Level II, MT and PT
- Darren Delozier, Welder Qualification, FCAW CS-2101
- Jason Bonnell, Welder Qualification, FCAW CS-2101
- Kevin Williams, Quality Control Level II, VT, MT, UT
- Nick Andrews, Welder Qualification, FCAW CS-2101
- Patrick McDevitt, Quality Control Level II, VT, MT, UT
- Rick Hinkle, Welder Qualification, FCAW CS-2101
- Scott Goodman, Welder Qualification, FCAW CS-2101
- Vince Archibald, Quality Assurance Level III, VT, MT, PT, UT
- Welder Maintenance Log
- Quality Assurance NPD Lead Auditor Certification, Form QF-37, Revision 1, for Brad Booth, dated September 19, 2014



- Quality Assurance NPD Lead Auditor Certification, Form QF-37, Revision 1, for Ken Adams, dated February 6, 2014
- Quality Assurance NPD Lead Auditor Certification, Form QF-37, Revision 1, for Vince Archibald, dated September 11, 2014
- Quality Assurance NPD Lead Auditor Certification, Form QF-37, Revision 1, for Lana Wright, dated January 23, 2014
- Quality Assurance NPD Lead Auditor Certification, Form QF-37, Revision 1, for Jerry Takeuchi, dated October 31, 2013
- Quality Assurance NPD Lead Auditor Certification, Form QF-37, Revision 1, for Robert Hossman, dated August 27, 2013
- OIW Personnel Certification Record to QP-NPD-(10)-03, for Receipt Inspection Personnel, SOL Angulo certified May 23, 2014 due May 23, 2017, with annual vision exam dated May 23, 2014
- OIW Personnel Certification Record to QP-NPD-(10)-03, Receipt Inspection personnel Kathy O'Donnell, certified on May 23, 2014 due May 23, 2017, eye exam dated June 11, 2014
- OIW QF-37 for Ken Adams, certified by written exam of score of 80%, and recertified with annual performance dated March 18, 2014
- OIW Quality Form (QF)-37, Revision 1, "Quality Assurance NPD Lead Auditor Certification," for Lana Wright, certified originally by a written exam with a score of 80%, and recertified with satisfactory performance dated January 3, 2014
- OIW Receipt Inspection Qualification Record to QP-NPD-(10)-03, for Kevin Keeler certified on July 17, 2014, due July 17, 2017 and eye exam dated June 27, 2014
- OIW-QF-37 for Brad Boothe, certified by written exam of score of 81%, certified date August 4, 2014
- OIW-QF-37 for Gregory Johnson, subcontracted auditor from LMJ International, certified through review of qualification and examination record dated March 25, 2013
- OIW Indoctrination and training record dated July 28, 2014 of Oregon Sandblasting and Coating personnel to OIW QA Program and procedures

#### Travelers

- 2786-TR06-PNK-1B, "Final Pancake Assy Sub Module 06 Mk 06001A-2"
- 2786-TR08-MS-2, "Fabricate Panel Sub-Assemblies Mk 08805A"
- 2786-TR08-PNK-2A, "Final Pancake Assy Sub-Module 08 MK 08002A-1"
- 2786-TR11-CH-1, "Angle Splices for Channel Trusses CA20-11)
- 2786-TR15-CHT-1 Rev 0, "Fit + Weld Channel Trusses for CA-2015"
- 2786-TR17-CHT-1, "Fit + Weld Angle Splices for Channel Trusses for CA20-11 Mk 11510A (Weld 39x8) + (Weld 40x8)"

#### Weld Repair Report

- NPD-WRR-14-107
- NPD-WRR-14-130
- NPD-WRR-14-148

- NPD-WRR-14-254
- NPD-WRR-14-162

### Weld Data Sheets

- 2786-WDS06-CHT-2, "Fit and Weld Channel Trusses for CA20-06 Mk 06501A (Qty 2), 06502A (Qty 2), 06502B (Qty 2), 06503A (Qty 2), 06504A (Qty 2), 06504B (Qty 2)"
- 2786-WDS06-MPL-1A, "Fit and Weld Internal Assy. @ at Male Panel 06021A-1 (Qty 1)"
- 2786-WDS06-PNK-1A, "Final Pancake Assy. Sub-Module 06 Mk 06001A-1"
- 2786-WDS06-PNK-1B, "Final Pancake Assy. Sub Module 06 Mk 06001A-2"
- 2786-WDS08-PNK-2A, "Final Pancake Assy. Sub-Module 08 MK 08002A-1"
- 2786-WDS11-CHT-1, "Fit + Weld Angle Splices for Channel Trusses for CA20-11 Mk 11510A (Weld 39x8) + (Weld 40x8)"
- 2786-WDS17-CHT-1, "Welded Channel Trusses"
- 2786-WDS-WDS08-MSC-2, "Fabricate Panel Sub-assembly MK08805A"
- 2786-WDS-WDS15-CHT-1, "Channel Trusses for CA20-15"

### Welding Procedure Specification (WPS) and Procedure Qualification Records (PQRs)

- WPS CS-2101: "Weld Procedure Specification WPS FCAW CJP, PJP and Fillet," Revision 9; Supporting PQRs: CS-636, CS-637, CS-632, CS-661, CS-662
- WPS CS-2102: "Weld Procedure Specification WPS SAW CJP, Fillet 02G-A572-60," Revision 3; Supporting PQR: CS-639
- WPS CS-2103: "Weld Procedure Specification WPS SMAW CJP, PJP, FW -2G, 3G, 4G," Revision 4; Supporting PQRs: CS-641, CS-643, CS-644
- WPS CS-ST-002: "Weld Procedure Specification WPS CS Weld Studs to CS Base Metal," Revision 1; Supporting PQRs: CS-630, CS-631, CS-632, CS-681
- WPS CS-ST-003: "FCAW Stud Fillet weld option, Revision 4; Supporting PQRs: CS-633, CS-634, CS-635, CS-682"
- WPS-2104, "OIW Partial Joint Penetration Welding Procedure," Revision 5