July 16, 2013

Mr. Kirt Richardson, Quality Assurance Manager
Babcock & Wilcox Canada Ltd.
581 Coronation Boulevard
Cambridge, Ontario, Canada, N1RV3

SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION REPORT NO. 99900067/2013-201, NOTICE OF VIOLATION AND NOTICE OF NONCONFORMANCE

Dear Mr. Richardson:

From June 3 - 6, 2013, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at the Babcock & Wilcox Canada's (hereafter referred to as BWC) facility in Cambridge, Ontario, Canada. The enclosed report presents the results of the inspection.

The purpose of this limited-scope routine inspection was to assess BWC's compliance with provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," and selected portions of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." This technically-focused inspection specifically evaluated BWC's implementation of quality activities associated with the design, fabrication, and testing activities of the once-through steam generators (ROTSGs) for the Davis-Besse Nuclear Power Station (hereafter referred to as Davis-Besse), BWC is currently under contract with FirstEnergy Nuclear Operating Company to provide the ROTSGs for Davis-Besse. This NRC inspection report does not constitute NRC endorsement of BWCs overall quality assurance (QA) program.

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

The enclosed NOV cites the violation, and the subject inspection report details the circumstances surrounding it. The NOV cites BWC for failing to adequately specify in procurement documents for safety-related material suppliers that the provisions of 10 CFR Part 21 apply.

You are required to respond to this letter and to follow the instructions specified in the enclosed NOV when preparing your response. In your response to the enclosed NOV, BWC should document the results of the extent of condition review for this finding and determine if there are any effects on other safety-related components. If you have additional information that you believe the NRC should consider, you may provide it in your response to the NOV. The NRC's review of your response to the NOV also will determine if further enforcement action is necessary to ensure compliance with regulatory requirements.

In addition, the NRC inspection team found that the implementation of your QA program did not meet certain regulatory requirements imposed on you by your customers or NRC licensees. Specifically, the NRC inspection team determined that BWC was not fully implementing its QA program in the areas of procurement document control and control of purchased material, equipment, and services. The enclosed NON to this letter identifies the specific findings and references to the pertinent requirements, and the enclosed inspection report describes in detail the circumstances surrounding it. In response to the enclosed NON, BWC 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. We will consider extending the response time if you show good cause for us to do so.

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

Sincerely,

/RA/

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

Docket No.: 99900067

Enclosures:
1. Notice of Violation
2. Notice of Nonconformance
3. Inspection Report No. 99900067/2013-201 and Attachment

In addition, the NRC inspection team found that the implementation of your QA program did not meet certain regulatory requirements imposed on you by your customers or NRC licensees. Specifically, the NRC inspection team determined that BWC was not fully implementing its QA program in the areas of procurement document control and control of purchased material, equipment, and services. The enclosed NON to this letter identifies the specific findings and references to the pertinent requirements, and the enclosed inspection report describes in detail the circumstances surrounding it. In response to the enclosed NON, BWC 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. We will consider extending the response time if you show good cause for us to do so.

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

Sincerely,

/RA/

Edward H. Roach, Chief
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Docket No.: 99900067

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2. Notice of Nonconformance
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See next page

ADAMS Accession No.: ML13177A131 NRO-002

OFFICE	NRO/DCIP/CMVB	NRO/DCIP/CMVB	NRR/DE/ESGB	RIII/DRS/EB1
NAME	YDiaz-Castillo	JOrtega-Luciano	AJohnson	ESanchez-Santiago
DATE	07/02/2013	07/02/2013	07/02/2013	07/02/2013
OFFICE	NRO/DCIP	NRO/DCIP/CMVB		
NAME	TFrye	ERoach		
DATE	07/02/2013	07/16/2013		

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SUBJECT: NUCLEAR REGULATORY COMMISSION INSPECTION REPORT NO. 99900067/2013-201, NOTICE OF VIOLATION AND NOTICE OF NONCONFORMANCE

DISTRIBUTION:
TSakadales
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NOTICE OF VIOLATION

Babcock & Wilcox Canada Ltd.
581 Coronation Boulevard
Cambridge, Ontario, Canada, N1RV3

Docket No. 99900067
Report No. 2013-201

During a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Babcock & Wilcox Canada's (hereafter referred to as BWC) facility in Cambridge, Ontario, Canada, from June 3, 2013, through June 6, 2013, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

> Section 21.31, "Procurement documents," of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, requires that "Each individual, corporation, partnership, dedicating entity, or other entity subject to the regulations in this part shall ensure that each procurement document for a facility, or a basic component issued by him, her or it on or after January 6, 1978, specifies, when applicable, that the provisions of 10 CFR Part 21 apply."
>
> Contrary to the above, as of June 6, 2013, BWC failed to specify in procurement documents for safety-related material suppliers that the provisions of 10 CFR Part 21 apply. Specifically, BWC did not impose the requirements of 10 CFR Part 21 on the safety-related purchase orders issued to Bruck GmbH for a base support ring forging and a shroud support ring forging and issued to Sheffield Forgemasters Engineering Ltd for an upper tubesheet forging.

This issue has been identified as Violation 99900067-2013-201-01.

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

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

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

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html, to the extent possible it should not include any personal privacy, proprietary, or Safeguards Information (SGI) so that the agency can make it available to the public without

redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information would create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If SGI is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements"

In accordance with 10 CFR 19.11, "Posting of Notices to Workers," you may be required to post this notice within 2 working days of receipt.

Dated this 16th day of July 2013.

NOTICE OF NONCONFORMANCE

Babcock & Wilcox Canada Ltd.
581 Coronation Boulevard
Cambridge, Ontario, Canada, N1RV3

Docket No. 99900067
Report No. 2013-201

Based on the results of a U.S. Nuclear Regulatory Commission inspection conducted at the Babcock & Wilcox Canada's (hereafter referred to as BWC) facility in Cambridge, Ontario, Canada, from June 3, 2013 through June 6, 2013, it appears that BWC did not conduct certain activities in accordance with NRC requirements that were contractually imposed upon BWC by its customers or NRC licensees:

A. Criterion IV, "Procurement Document Control," of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," states, in part, that "Measures shall be established to assure that applicable regulatory requirements, design bases, and other requirements which are necessary to assure adequate quality are suitably included or referenced in the documents for procurement of material, equipment, and services, whether by the applicant or by its contractors or subcontractors."

   BWC's supplement to its Quality Assurance Manual, "General QA Program Supplement for 10CFR50 Appendix B and 10CFR21 Requirements," Revision 11, dated November 1, 2011, states, in part, that "If an item being procured includes both Code and non-Code Safety Related parts, the procurement documents shall include requirements for both [the American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel (B&PV)] Code Section III (NCA-4000 or NCA-3800) <u>and</u> 10CFR50 Appendix B quality programs."

   Contrary to the above, as of June 6, 2013, BWC failed to include the applicable regulatory requirements in procurement documents that are necessary to ensure that adequate quality is suitably included or referenced. Specifically, BWC did not impose the requirements of Appendix B to 10 CFR Part 50 in its ASME B&PV Code and non-Code safety-related purchase orders (POs). For example, the NRC inspection team identified four vendors for where the POs did not include the requirements of Appendix B to 10 CFR Part 50: Valinox Nucleaire SA for tube plug material; Nova Machine Products for a base support platform component; Fin-Tech for electro-polishing services; Patriot Forge for a main feedwater header inspection plug bar; and Industeel Belgium for upper shroud support components.

This issue has been identified as Nonconformance 99900067/2013-201-02.

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

assessed by the applicant or designee at intervals consistent with the importance, complexity, and quantity of the product or services

Subsection NCA-3842.2, “Evaluation of the Qualified Material Organization’s Program by Certified Material Organizations of Certificate Holders,” of the ASME B&PV Code Section III, states, in part, that “Evaluation of a Material Organization’s Quality System Program by parties other than the Society, as provided by NCA-3820(b), shall be performed in accordance with the requirements of (a) through (i) below. […] (a) The Quality System Program shall be surveyed, accepted, and audited by the party performing the evaluation on the basis of its compliance with the applicable material requirements of this Section and the requirements of NCA-3850.”

Contrary to the above, as of June 6, 2013, BWC failed to adequately qualify a material organization as an approved supplier in accordance with the requirements of NCA-3842.2. Specifically, BWC inadequately qualified Bruck GmbH as a Qualified Material Organization based on Bruck’s International Organization for Standardization (ISO) 9001:2008, "Quality Management System (QMS) - Requirements," Quality Systems Manual.

This issue has been identified as Nonconformance 99900067/2013-201-03.

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Chief, Construction Mechanical Vendor Branch, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this Notice of Nonconformance. This reply should be clearly marked as a “Reply to a Notice of Nonconformance” and should include for each noncompliance: (1) the reason for the noncompliance or, if contested, the basis for disputing the noncompliance; (2) the corrective steps that have been and the results achieved; (3) the corrective steps that will be to avoid further noncompliance; and (4) the date when the corrective action will be completed. Where good cause is shown, the NRC will consider extending the response time.

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

Dated this 16th day of July 2013.

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

Docket No.:	99900067
Report No.:	99900067/2013-201
Vendor:	Babcock & Wilcox Canada 581 Coronation Boulevard Cambridge, Ontario, Canada, N1RV3
Vendor Contact:	Mr. Kirt Richardson Quality Assurance Manager E-mail: krichardson@babcock.com Phone: (519) 621-2130
Nuclear Industry Activity:	Babcock & Wilcox Canada (hereafter referred to as BWC) is an American Society of Mechanical Engineers Boiler and Pressure Vessel Code Nuclear Certificate Holder. BWC designs and manufactures large components for the nuclear industry. BWC is currently under contract with First Energy Nuclear Operating Company to provide the replacement once-through steam generators for the Davis-Besse Nuclear Power Station.
Inspection Dates:	June 3-6, 2013
Inspectors:	Yamir Diaz-Castillo NRO/DCIP/CMVB Jonathan Ortega-Luciano NRO/DCIP/CMVB Andrew Johnson NRR/DE/ESGB Elba M. Sánchez-Santiago RIII/DRS/EB1
Approved by:	Edward H. Roach, Chief Mechanical Vendor Branch Division of Construction Inspection and Operational Programs Office of New Reactors

EXECUTIVE SUMMARY

Babcock & Wilcox Canada
99900067/2013-201

The U.S. Nuclear Regulatory Commission (NRC) conducted this inspection to verify that Babcock & Wilcox Canada (hereafter referred to as BWC) 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 BWC 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 at the BWC facility in Cambridge, Ontario, Canada from June 3 - 6, 2013.

This technically-focused inspection specifically evaluated BWC's implementation of quality activities associated with the design, fabrication, and testing activities of the once-through steam generators (ROTSGs) for the Davis-Besse Nuclear Power Station (hereafter referred to as Davis-Besse), BWC is currently under contract with FirstEnergy Nuclear Operating Company to provide the ROTSGs for Davis-Besse. In addition to the Davis-Besse ROTSGs, the NRC inspection staff evaluated some activity associated with the Bellefonte Nuclear Generating Station ROTSGs.

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

- nondestructive examination liquid penetrant testing of 24 machined plugs used in helium leak testing of the Bellefonte Nuclear Generating Station's ROTSGs

- nondestructive examination ultrasonic testing of the Davis-Besse Unit 1 hot-leg piping butt weld No. 27 (straight pipe to elbow weld)

- manual weld-cladding buildup of the Davis-Besse Unit 1 ROTSG hot-leg inlet nozzle

- calibration of two micrometers and a pressure gage

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

These regulations served as the bases for the NRC inspection:

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

During the course of this inspection, the NRC inspection team implemented Inspection Procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," dated April 25, 2011, IP 43004, "Inspection of Commercial-Grade Dedication Programs," dated April 25, 2011, and

IP36100, “Inspection of 10 CFR Part 21 and Programs for Reporting Defects and Noncompliance,” dated February 13, 2012.

This was the second NRC inspection of the BWC’s facility in Cambridge, Ontario, Canada. The last NRC inspection was conducted in August 2007 and the results are documented in Inspection Report No. 99900067/2007-201, dated October 9, 2007. The report identified one violation of NRC requirements and three nonconformances to NRC requirements that were contractually imposed on BWC by its customers. This inspection report documents the NRC’s review of BWC’s implementation of corrective actions for these issues.

With the exception of the notice of violation and nonconformances described below, the NRC inspection team concluded that BWC’s QA policies and procedures comply with the applicable requirements of 10 CFR Part 21 and Appendix B to 10 CFR Part 50, and that BWC’s personnel are implementing these policies and procedures effectively. The results of this inspection are summarized below.

10 CFR Part 21 Program

The NRC inspection team issued Violation 99900067/2013-201-01 in association with BWC’s failure to implement the regulatory requirements of 10 CFR Part 21. Violation 99900067/2013-201-01 cites BWC for failing to specify in procurement documents for safety-related material suppliers that the provisions of 10 CFR Part 21 apply. Specifically, BWC did not impose the requirements of 10 CFR Part 21 on the safety-related purchase orders issued to Bruck GmbH for a base support ring forging and a shroud support ring forging from and issued to Sheffield Forgemasters Engineering Ltd for an upper tubesheet forging.

Design Control and Commercial Grade Dedication

The NRC inspection team concluded that BWC is implementing its design control and commercial-grade dedication programs in accordance with the regulatory requirements of Criterion III, “Design Control,” of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that BWC is implementing its policies and procedures associated with the design control and commercial-grade dedication programs. No findings of significance were identified.

Oversight of Contracted Activities and Internal Audits

The NRC inspection team issued Nonconformance 99900067/2013-201-02 in association with BWC’s failure to implement the regulatory requirements of Criterion IV, “Procurement Document Control,” in Appendix B to 10 CFR Part 50. Nonconformance 99900067/2013-201-02 cites BWC for failing to include the applicable regulatory requirements in procurement documents that are necessary to ensure that adequate quality is suitably included or referenced. Specifically, BWC did not impose the requirements of Appendix B to 10 CFR Part 50 in its American Society of Mechanical Engineers Boiler & Pressure Vessel Code and non-Code safety-related purchase orders.

The NRC inspection team issued Nonconformance 99900067/2013-201-03 in association with BWC’s failure to implement the regulatory requirements of Criterion VII, “Control of Purchased Material, Equipment, and Services,” of Appendix B to 10 CFR Part 50. Nonconformance 99900067/2013-201-02 cites BWC for failing to adequately qualify a material organization as an approved supplier in accordance with the requirements of NCA-3842.2, “Evaluation of the

Qualified Material Organization's Program by Certified Material Organizations of Certificate Holders," of the American Society of Mechanical Engineers Boiler & Pressure Vessel Code. Specifically, BWC inadequately qualified Bruck GmbH as a Qualified Material Organization based on Bruck's International Organization for Standardization (ISO) 9001:2008, "Quality Management System (QMS)-Requirements," Quality Systems Manual.

Control of Special Processes

The NRC inspection team concluded that BWC is implementing its control of special processes program 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 BWC is implementing its policies and procedures associated with the control of special processes program. No findings of significance were identified.

Test Control

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

Control of Measuring and Test Equipment

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

Nonconforming Material, Parts, or Components

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

Corrective Action

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

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspection team reviewed BWC's policies and implementing procedures that govern BWC's Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," program to verify compliance with the regulatory requirements. In addition, the NRC inspection team evaluated the 10 CFR Part 21 postings and a sample of BWC's purchase orders (PO) 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 verified the content of BWC's 10 CFR Part 21 postings, as well as the location of each posting. The NRC inspection team also verified that BWC'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 BWC's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

For a sample of six evaluations performed by BWC under its 10 CFR Part 21 program, the NRC inspection team verified that BWC had effectively implemented the requirements for evaluating deviations and failures to comply. In addition, the NRC inspection team reviewed a sample of corrective action reports (CAR) and nonconformance reports (NCR) to verify that BWC had appropriately determined that an evaluation of the reported issues was not necessary in accordance with 10 CFR Part 21.

However, during the review of the safety-related POs for a base support ring forging and a shroud support ring forging from Bruck GmbH and for an upper tubesheet forging from Sheffield Forgemasters Engineering Ltd. (both of these vendors are material suppliers), the NRC inspection team noted that the POs did not adequately specify that the provisions of 10 CFR Part 21 apply. The NRC inspection team identified this issue as an example of Violation 99900067/2013-201-01 for BWC's failure to specify in procurement documents for safety-related material suppliers that the provisions of 10 CFR Part 21 apply. BWC initiated CAR No. 9099 to address this issue. BWC should document the results of the extent of condition review for this CAR and determine whether any previously delivered safety-related components are affected.

c. Conclusion

The NRC inspection team issued Violation 99900067/2013-201-01 in association with BWC's failure to implement the regulatory requirements of 10 CFR Part 21. Violation 99900067/2013-201-01 cites BWC for failing to specify in procurement documents for safety-related material suppliers that the provisions of 10 CFR Part 21 apply. Specifically, BWC did not impose the requirements of 10 CFR Part 21 on the safety-related purchase orders issued to Bruck GmbH for a base support ring forging and a shroud support ring forging from and issued to Sheffield Forgemasters Engineering Ltd for an upper tubesheet forging.

2. Design Control

a. Inspection Scope

The NRC inspection team reviewed BWC's policies and implementing procedures that govern the design-control program to verify their compliance with the regulatory requirements of Criterion III, "Design Control," in Appendix B to 10 CFR Part 50, as well as with the requirements of Subsection NCA, "General Requirements for Division 1 and Division 2 Rules for Construction of Nuclear Facility Components," and Subsection NB, "Class 1 Components," of Section III, "Rules for Construction of Nuclear Facility Components," of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, 2001 Edition, 2003 Addenda. The NRC inspection team also reviewed a sample of engineering drawings, design reports, and contract changes.

In addition, the NRC inspection team reviewed BWC's program for the dedication of commercial-grade items for use in safety-related applications to verify its compliance with the applicable regulatory requirements. Furthermore, the NRC inspection team also discussed the design control and commercial-grade dedication programs with BWC's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

b.1 Implementation of BWC's Design Control Process

BWC has been awarded a contract from FirstEnergy Nuclear Generation Corporation (FENOC) to design and fabricate the ROTSGs for Davis-Besse. The NRC inspection team reviewed the Certified Design Specification (CDS) and the BWC manufacturing and engineering operating procedures associated with the design control process. The CDS contains information such as material specifications, applicable ASME B&PV Code construction requirements, qualification reports, test requirements, and test reports. The NRC inspection team also reviewed all of the Notice of Contract Change/Clarification (NCC) documents that had been approved for the Davis-Besse ROTSGs. An NCC is used by FENOC and BWC to implement changes to the CDS. The NRC inspection team verified that the NCCs received a level of review commensurate with that applied to the original design by a qualified design engineer. The review included an analysis of the acceptability of the change request in regard to the associated requirements in the ASME B&PV Code and Appendix B to 10 CFR Part 50. In addition, the NRC team also reviewed a sample of engineering drawings that had been issued for use in the fabrication of the Davis-Besse hot-leg inlet nozzle and the cold-leg outlet nozzle.

The NRC inspection team reviewed B&W Report No. 205S-LR-04, "First Energy Nuclear Generation Corporation, Davis Besse Nuclear Power Station ASME Code Reconciliation Report," Revision 0, dated June 2011. The NRC inspection team verified that this report addressed the differences between the ASME B&PV Code Edition and Addenda used for the original Davis-Besse once-through steam generators and the ASME B&PV Code edition and addenda used for the ROTSGs.

In response to recent operating experience regarding various tube degradation mechanisms identified in steam generators operating in the United States, BWC performed design changes to address these degradation mechanisms. The NRC inspection team reviewed the CDS for

the design changes that had been implemented to mitigate these various degradation mechanisms.

The ROTSGs at Oconee Nuclear Station (hereafter referred to as Oconee) Units 1, 2, and 3 experienced excessive tube wear from the tube support plates. BWC addressed this degradation mechanism by changing the design of the tube support plates. The NRC inspection team reviewed B&W Report No. 205S-FIV-01, "Replacement Once-Through Steam Generators Flow Induced Vibration and Wear Report," Revision 0, dated December 2012, and verified that the changes were adequately incorporated into the Davis-Besse ROTSGs design. In addition, some of the Oconee ROTSGs have also experienced tube-to-tube wear as a result of inadequate tensile preloading during manufacturing, which reduces the compressive loading seen by the tubes during full power operation. BWC performed an analysis of the tensile and compressive loading of the tubing in the Oconee ROTSGs, which resulted in an increase in the hydraulic expansion length of the tubes in the Davis-Besse ROTSGs. The NRC inspection team reviewed B&W-TR-2012-0024, "Davis Besse Proposed Hydraulic Expansion Length Increase," Revision 1, dated October 2012, and verified that the changes were adequately incorporated into the Davis-Besse ROTSGs design.

Arkansas Nuclear One Unit 1 experienced tube-to-tube wear and tube-to-tube support plate wear resulting from tube support plate binding. BWC addressed this degradation mechanism by changing the material of the tube support plates and changing the mechanism that supports the tube support plates. The NRC inspection team reviewed B&W-TR-2012-0024, "Davis Besse Proposed Hydraulic Expansion Length Increase," Revision 1, dated October 2012, and verified that the changes were adequately incorporated into the Davis-Besse ROTSGs design.

BWC reanalyzed the tube-to-tubesheet joints in the Davis-Besse ROTSGs to support a manufacturing change in response to a difficulty that BWC experienced with the tack expansion of the tube-to-tubesheet joint on the Crystal River Unit 3 ROTSGs (this tack expansion is the initial expansion of a tube into the tubesheet bore hole, which holds the tube stationary while the tube is welded to the primary face of the tubesheet). After drilling the tubesheet holes, an oxide layer developed on the surface of the tubesheet holes, which, after tack expansion of the tubes into the tubesheet holes, resulted in a number of tubes failing helium leak tests. BWC Report No. 205S-SR-07, "Replacement Once-Through Steam Generators Tube-to-Tubesheet Joint Qualification Report," Revision 2, March 28, 2013, detailed a new post-drilling process that corrected the issue and was implemented on the Davis-Besse ROTSGs. The NRC inspection team reviewed this technical report and verified that the report adequately addressed the corrective actions taken.

b.2 Implementation of BWC's Commercial Grade Item Dedication Program

The NRC inspection team reviewed a sample of dedication packages associated with the Davis-Besse ROTSGs. The NRC sample included items such as round bars, orifice plates, orifice locking plates, and tie rod locking bolts. The NRC inspection team 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 verification methods to verify effective implementation of BWC's dedication process. The NRC inspection team noted that BWC performed verification activities as part of the dedication of these items in accordance with a commercial-grade dedication form. This form contains the requirements and the acceptance criteria established by BWC's engineering department, including recording actual values of critical dimensions on inspection reports when conducting inspection and test activities related to the dedication process. No issues of significance were identified.

c. Conclusion

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

3. Oversight of Contracted Activities and Internal Audits

a. Inspection Scope

The NRC inspection team reviewed BWC's policies and implementing procedures that govern the implementation of BWC's oversight of contracted activities and internal audits program to verify compliance with the requirements of Criterion IV, "Procurement Document Control," Criterion VII, "Control of Purchased Material, Equipment, and Services," and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of POs, external and internal audits, and receipt inspection records to evaluate compliance with BWC's program and technical requirements. In addition, the NRC inspection team reviewed the disposition of audit findings to resolve for adequacy and timeliness. Furthermore, the NRC inspection team discussed the oversight of contracted activities with BWC's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

b.1 Procurement Document Control

The NRC inspection team reviewed a sample of POs issued by BWC in support of the Davis-Besse ROTSGs to determine whether the requirements identified in the procedures were imposed on applicable purchasing documents. The NRC inspection team found that most of the POs adequately documented the procurement requirements as established by the governing BWC's policies and procedures which include (1) task definitions and responsibilities, (2) imposition of appropriate quality, technical, and regulatory requirements, and (3) identification of applicable codes and standards. The NRC inspection team also found that these POs adequately defined contract deliverables, disposition of nonconformances, access rights to subtier suppliers, and extension of contractual requirements to subcontractors.

However, during the review of the POs issued to Valinox Nucleaire SA for tube plug material, to Nova Machine Products for a base support platform component, to Fin-Tech for electro-polishing services, to Patriot Forge for a main feedwater header inspection plug bar, and to Industeel Belgium for an upper shroud support components, the NRC inspection team noted that the POs did not impose the requirements of Appendix B to 10 CFR Part 50 as required by BWC's QA Manual, "General QA Program Supplement for 10 CFR Part 50 Appendix B and 10 CFR Part 21 Requirements," Revision 11, dated November 1, 2011, and the customer specifications. The NRC inspection team identified this issue as an example of Nonconformance 99900067/2013-201-02 for BWC's failure to include the applicable regulatory requirements in procurement documents that are necessary to assure that adequate quality is suitably included or referenced. BWC initiated CAR No. 9110 to address this issue. BWC

should document the results of the extent of condition review for this CAR and determine whether any previously delivered safety-related components are affected.

b.2 Maintenance of the Qualified Suppliers List

The NRC inspection team reviewed the qualified suppliers list (QSL) to ensure that (1) qualified and approved suppliers were listed, (2) that the lists were maintained, distributed, and periodically updated by authorized personnel, and (3) that any revisions to the lists were implemented following the applicable procedures. The NRC inspection team confirmed that the suppliers performing work for BWC were appropriately listed on the QSL. In addition, the NRC inspection team confirmed that the scope of supply was documented and consistent for the activities contracted. No issues of significance were identified.

b.3 External and Internal Audits

The NRC inspection team reviewed a sample of external and internal audits to verify the implementation of BWC's audit program. The NRC inspection team verified that BWC had prepared and approved plans that identify the audit scope, focus, and applicable checklist criteria before the initiation of the audit activity. The NRC inspection team confirmed that the audit reports contained a review of the relevant QA criteria in Appendix B to 10 CFR Part 50 for the activities that individual suppliers performed and documentation of pertinent supplier guidance associated with each criterion. For audits that resulted in findings, the NRC inspection team verified that the supplier had established a plan for corrective action and that BWC had reviewed and approved the corrective action and verified its satisfactory completion and proper documentation. BWC's audit program also requires the performance of annual evaluations of suppliers to ensure that they are effectively implementing their approved QA programs. For a sample of annual evaluations, the NRC inspection team verified that these were performed in accordance with BWC's procedures and contained all the required information.

However, during the review of the last audit performed at Bruck GmbH, a material supplier, the NRC inspection team noted that Bruck GmbH's quality systems manual is based on International Organization for Standardization (ISO) 9001:2008, "Quality Management System (QMS) - Requirements," and that the audit was performed using a checklist based on Subsection NCA-3800, "Metallic Material Organization's Quality System Program," of the ASME B&PV Code. During further discussion with BWC's staff, the NRC inspection team learned that BWC had qualified Bruck GmbH as an approved supplier in accordance with Subsection NCA-3842.2, "Evaluation of the Qualified Material Organization's Program by Certified Material Organizations of Certificate Holders," of the ASME B&PV Code. Although the ASME B&PV Code allows for the qualification of material organizations by Certificate Holders, the material organizations' quality systems program must meet the requirements of NCA-3800. Therefore, the NRC inspection team requested that BWC provide a copy of Bruck GmbH's quality manual in order to verify that it met the requirements of NCA-3800. BWC did not provide the NRC inspection team a copy of Bruck GmbH's quality manual. The NRC inspection team identified this issue as an example of Nonconformance 99900067/2013-201-03 for BWC's failure to adequately qualify a material organization as an approved supplier in accordance with the requirements of NCA-3842.2. At the time of the inspection BWC had not initiated a CAR to address this issue. BWC should document the results of the extent of condition review for this Nonconformance and determine whether any previously delivered safety-related components are affected. BWC's extent of condition review should include an evaluation that provides reasonable assurance that the items provided would perform their intended safety function.

b.4 Qualification and Training of Auditors, Lead Auditors and Inspection Personnel

The NRC inspection team reviewed a sample of the training and qualification records of BWC's lead auditors, auditors and inspection personnel and confirmed that auditing and inspection personnel had completed all the required training and had maintained qualification and certification in accordance with BWC's policies and procedures. No issues of significance were identified.

c. Conclusion

The NRC inspection team issued Nonconformance 99900067/2013-201-02 in association with BWC's failure to implement the regulatory requirements of Criterion IV of Appendix B to 10 CFR Part 50. Nonconformance 99900067/2013-201-02 cites BWC for failing to include the applicable regulatory requirements in procurement documents which are necessary to ensure that adequate quality is suitably included or referenced. Specifically, BWC did not impose the requirements of Appendix B to 10 CFR Part 50 in its ASME Code and non-Code safety-related POs.

The NRC inspection team issued Nonconformance 99900067/2013-201-03 in association with BWC's failure to implement the regulatory requirements of Criterion VII of Appendix B to 10 CFR Part 50. Nonconformance 99900067/2013-201-03 cites BWC for failing to adequately qualify a material organization as an approved supplier in accordance with the requirements of NCA-3842.2, "Evaluation of the Qualified Material Organization's Program by Certified Material Organizations of Certificate Holders," of the ASME B&PV Code. Specifically, BWC inadequately qualified Bruck GmbH as a Qualified Material Organization based on Bruck's ISO 9001:2008, "Quality Management System (QMS) - Requirements," Quality Systems Manual.

4. Control of Special Processes

a. Inspection Scope

The NRC inspection team reviewed BWC's policies and implementing procedures that govern the control of special processes to verify compliance with the regulatory requirements of Criterion IX, "Control of Special Processes," in Appendix B to 10 CFR Part 50 and with portions of the ASME B&PV Code, 2001 Edition, 2003 Addenda: Subsection NB of Section III; Section V, "Nondestructive Examination"; and Section IX, "Welding and Brazing Qualification." The NRC inspection team also reviewed a sample of welding and nondestructive examination (NDE) documents and observed welding and NDE activities associated with the fabrication of the Davis-Besse ROTSGs. In addition, the NRC inspection team discussed the control of special processes' program with BWC's management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b.1 Welding Process

The NRC inspection team observed the manual weld cladding buildup of the hot-leg inlet nozzle for the Davis-Besse Unit 1 ROTSGs. This welding was performed using the shielded metal arc welding process qualified for corrosion resistant overlay welding. The NRC inspection team verified that the Welding Procedure Specification (WPS) and its accompanying Procedure Qualification Record (PQR) were prepared in accordance with the requirements of Subsection

NB of Section III and Section IX of the ASME B&PV Code, and the applicable BWC policies and procedures.

In addition, the NRC inspection team reviewed a sample of welding records associated with manual welds performed on the Davis-Besse ROTSGs. The NRC inspection team verified that the WPSs and associated PQRs (e.g., procedures used, type of weld filler material) met the requirements of Subsection NB of Section III and Section IX of the ASME B&PV Code, and the applicable BWC policies and procedures.

The NRC inspection team verified that qualified welders performed welding on the fabrication of ASME B&PV Code items in accordance with approved WPS. The NRC inspection team also confirmed that, for a sample of certified material test reports, the reports indicated the materials' compliance with the requirements for chemical composition and mechanical properties, as required by Subsection NB of Section III of the ASME B&PV Code. No issues of significance were identified.

b.2 Control of Weld Material

The NRC inspection team performed a walked down of the welding material storage and welding material issue areas and verified that welding material was adequately controlled, and that covered weld electrodes were kept in ovens held at specified temperatures to control moisture, as applicable, in accordance with the requirements of Section IX of the ASME B&PV Code. The temperature indications for storage areas were all within calibration periodicity. The NRC inspection team also reviewed procedures and corrective action records associated with the control of weld material to verify that proper guidance on the use and disposal of weld material was provided. The NRC inspection team observed that BWC clearly identified welding materials at all times, and that it retained identification of acceptable material throughout storage, handling, and use until the material was actually consumed in the welding process.

b.3 Nondestructive Examination

The NRC inspection team observed an ultrasonic (UT) examination of a butt weld on the Davis-Besse Unit 1 hot leg and a liquid penetrant test (PT) exam of 24 machined plugs used in helium leak testing of the Bellefonte ROTSGs. The NRC inspection team verified that both examinations were performed by qualified personnel and qualified procedures in accordance with the requirements of Section V of the ASME B&PV Code. The NRC inspection team confirmed that BWC performed both examinations using, certified NDE inspectors, approved NDE materials, and calibrated M&TE.

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

The NRC inspection team reviewed a sample of training and qualification records for BWC's welding personnel and confirmed that they had completed all the required training and had maintained qualification and certification in accordance with BWC's policies and procedures. The NRC inspection team also confirmed that the welding operators were qualified in accordance with the applicable requirements of Sections III and IX of the ASME B&PV Code. In addition, the NRC inspection team verified that the welder performance qualification list was adequately maintained.

The NRC inspection team selected a sample of training and qualification records for BWC's Level II and Level III NDE personnel and confirmed that that they were trained and qualified in

accordance with American Society for Nondestructive Testing SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing," 1992 Edition, and the applicable requirements of Section III of the ASME B&PV Code.

c. Conclusion

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

5. Test Control

a. Inspection Scope

The NRC inspection team reviewed BWC's policies and implementing procedures that govern the test control program to verify compliance with the requirements of Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the test control program with BWC's management and technical staff. The NRC inspection team also reviewed a sample of test procedures and records of completed tests. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

b.1 Test Procedures

The NRC inspection team verified that BWC's test procedures adequately included the technical, quality, and regulatory requirements identified in the associated customer POs and technical specifications. Specifically, the NRC inspection team reviewed the test procedures for the hydrostatic testing, charpy V-notch testing, and drop weight testing. The NRC inspection team also verified that BWC's test procedures provided an adequate description of the test responsibilities, objectives, sequences, instructions, parameters, M&TE usage, acceptance criteria, and post-test activities, and that they also met the applicable requirements of Section III of the ASME B&PV Code.

b.2 Test Program Implementation

At the time of the inspection, BWC was not performing any testing activities. The NRC inspection team reviewed a sample of records of completed tests (e.g., charpy V-notch and drop weight testing) associated with the fabrication of the Davis-Besse ROTSGs. This review included verification of the inspection parameters to ensure they adequately represented the design requirements as stated in the PO or other required specifications. The NRC inspection team also verified that qualified personnel performed the testing and that the equipment used was qualified and calibrated.

c. Conclusion

The NRC inspection team concluded that BWC is implementing its test control program in accordance with the regulatory requirements of Criterion XI of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined

that BWC is implementing its policies and procedures associated with the test control program. No findings of significance were identified.

6. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed BWC'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 also reviewed a sample of calibration records and observed the calibration of two micrometers and a pressure gage. The NRC inspection team also verified that when M&TE equipment is received from the calibration service supplier and the calibration certificate states that it was found to be out of calibration, BWC generates an NCR to identify items that have been accepted using this equipment since the last valid calibration date and to perform an extent of condition review. In addition, the NRC inspection team discussed the M&TE program with BWC'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 verified that the M&TE requirements in BWC's procedures provide a system for the control of M&TE. The M&TE program ensures that devices used in activities that affect quality are of the proper range, type, and accuracy to verify conformance with the established requirements. The NRC inspection team also performed a visual sample inspection of several M&TE devices and found that the sampled M&TE had the appropriate calibration stickers and current calibration dates, including the calibration due date. The NRC inspection team also verified that the selected M&TE was calibrated using procedures traceable to known industry standards. The sample included equipment used for welding purposes as well as NDE equipment. The NRC inspection team also observed the calibration of two micrometers and a pressure gauge. The NRC inspection team verified the qualification of the personnel performing the calibration and reviewed the applicable procedures to ensure that proper guidance and acceptance criteria were documented in the procedure.

c. Conclusion

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

7. Nonconforming Materials, Parts, or Components

a. Inspection Scope

The NRC inspection team reviewed BWC's policies and implementing procedures that govern the control of nonconformances to verify compliance with the requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of nonconformance reports and verified that the disposition and control of nonconformances was in accordance with BWC's procedural guidelines. In

addition, the NRC inspection team discussed the nonconformance program with BWC'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 verified that BWC's applicable procedures associated with the nonconformance process provide for (1) reference to instructions or procedures for repair and rework activities (where required), reinspection of repaired and reworked items, and notification to affected organizations of nonconforming conditions, (2) deficiencies or nonconformances identified by customers to be entered into the corrective action program, adequately assessed, and properly dispositioned, and (3) reference to the applicable procedures to appropriately identify the responsibility and authority for review and disposition of nonconforming items, and control further processing, delivery, and installation of nonconforming items until disposition is completed.

For the sample of NCRs reviewed, the NRC inspection team verified that BWC implemented an adequate program to assess and control nonconforming items, including appropriate identification, documentation, segregation, evaluation, and disposition of these items. The NRC inspection team verified that the NCRs properly applied the BWC requirements of use-as-is acceptable, reject, repair or rework, or scrap and provided the applicable technical justifications to be adequately supported and properly documented, including the need for additional design control measures as necessary, commensurate with those applied to the original design. The NRC inspection team also verified that BWC's nonconformance process provides a connection to BWC's 10 CFR Part 21 program.

In addition, the NRC inspection team performed walkdowns of the shop floor to verify that there were designated areas to segregate and control the various nonconforming materials.

c. Conclusion

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

8. Corrective Action

a. Inspection Scope

The NRC inspection team reviewed the current status of the corrective actions implemented in response to the findings from the 2007 NRC inspection at BWC. The NRC inspection team also reviewed BWC's 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 CARs and verified that (1) the CARs' disposition and control provide adequate documentation and description of conditions adverse to quality, and (2) the CARs specify the cause of these conditions and the corrective actions to prevent recurrence. In addition, the NRC inspection team discussed the corrective action program with BWC's management and technical staff.

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

b. Observations and Findings

b.1 Corrective Action Associated with Violation 99900067/2007-201-01

The NRC issued Violation 99900067/2007-201-01 for BWC's failure to provide adequate guidance to meet the requirements of 10 CFR Part 21 in procedure QOP-004, "Reporting of Defects and Noncompliance," Revision 4, dated August 14, 2007. Specifically, BWC failed to provide procedural guidance for the interface of the corrective action and nonconformance reporting processes with the 10 CFR Part 21 program to ensure effective identification and evaluation of deviations and failures to comply associated with a substantial safety hazard.

In its response to the NRC, BWC stated that a review was conducted, covering a time period from 1998 to 2007, of all corrective action requests, audit findings, and root cause analysis investigations related to nuclear projects in their database. In addition, BWC conducted a review of all NCRs in the NCR database for nuclear projects in the United States. As a result of these reviews, BWC concluded that no deviations were found that required an evaluation under the provisions of 10 CFR Part 21 other than those previously evaluated.

The NRC inspection team reviewed CAR No. 147, which BWC initiated to correct the weaknesses identified by the NRC in Violation 99900067/2007-201-01. CAR No. 147 described the corrective actions detailed above, provided objective evidence of the completion of corrective actions, and was closed on April 3, 2008.

The NRC inspection team reviewed the documentation that provided objective evidence for the completion of the corrective actions. The NRC inspection team determined that BWC's corrective actions were adequate to address the identified finding. Based on its review, the NRC inspection team closed Violation 99900067/2007-201-01.

b.2 Corrective Action Associated with Nonconformance 99900067/2007-201-02

The NRC issued Nonconformance 99900067/2007-201-02 for BWC's failure to adequately follow its implementing procedures. Specifically, BWC failed to revise the contract information sheet (CIS) within one month following approval of the notification of contract change (NCC) No. 142J-020, "PT Buttering Each Layer 7 Last Pockets," Revision 1, and to properly conduct grinding activities prior to visual inspections in accordance with the requirements of Shop Instruction Sheet [SIS] 295695, "ICI [Incore Instrumentation] and CRDM [Control Rod Drive Mechanism] to RPV [Reactor Pressure Vessel] Reactor Head Welding," Revision 1.

In its response to the NRC, BWC stated that a review was conducted for all CIS packages for Project 142J to confirm that all of the approved NCCs received from the customer were incorporated adequately into the CISs. In addition, BWC conducted a review of all technical aspects related to the failure to follow procedural instructions regarding the grinding of the buttering layer on the 142J contract. The NRC inspection team reviewed CAR Nos. 148 and 149, which BWC initiated to correct the weaknesses identified by the NRC in Nonconformance 99900067/2007-201-02. CAR Nos. 148 and 149 described the corrective actions detailed above, provided objective evidence of the completion of corrective actions, and were closed on June 25, 2008, and May 1, 2008, respectively.

The NRC inspection team reviewed the documentation that provided objective evidence for the completion of the corrective actions. The NRC inspection team determined that BWC's corrective actions were adequate to address the identified finding. Based on its review, the NRC inspection team closed Nonconformance 99900067/2007-201-02.

b.3 Corrective Action Associated with Nonconformance 99900067/2007-201-03

The NRC issued Nonconformance 99900067/2007-201-03 for BWC's failure to provide objective evidence of the completion of a PT examination. Specifically, BWC failed to produce test reports that verified removal of all identified flaws, as required by Section 6.2.6 of SIS 295695 in relation to Job 142J, Work Order No. 854852, for the Entergy Palisades Nuclear Plant (hereafter referred to as Palisades).

In its response to the NRC, BWC stated that Work Order (WO) No. 854852 was revised to add an operation (Op No. 0505) to perform PT to confirm removal of visual cracking. As a result of the review, BWC generated PT reports for the last seven pockets on the Palisades reactor vessel head. The NRC inspection team reviewed CAR No. 150, which BWC initiated to correct the weaknesses identified by the NRC in Nonconformance 99900067/2007-201-03. CAR No. 150 described the corrective actions detailed above, provided objective evidence of the completion of corrective actions, and was closed on May 1, 2008.

The NRC inspection team reviewed the documentation that provided objective evidence for the completion of the corrective actions. The NRC inspection team determined that BWC's corrective actions were adequate to address the identified finding. Based on its review, the NRC inspection team closed Nonconformance 99900067/2007-201-03.

b.4 Corrective Action Associated with Nonconformance 99900067/2007-201-04

The NRC issued Nonconformance 99900067/2007-201-04 for BWC's failure to have procedures to implement a corrective action and a nonconformance control program. Specifically, BWC failed to create documented procedures to reflect BWCs current practices to implement the requirements of their corrective action and nonconformance program.

In its response to the NRC, BWC stated that it would develop procedures to address the identification of significant conditions adverse to quality and nonconformances; their entry into the corrective action and nonconformance control system and the evaluation and correction of the adverse conditions and nonconformances. BWC also stated that the procedure for corrective action would also describe the entry of audit findings, CARs, and similar documents received from external sources into the BWC corrective action system. Both the corrective action and nonconformance control programs include provisions to identify and screen for 10 CFR Part 21 program applicability and application.

The NRC inspection team reviewed CAR No. 151, which BWC initiated to correct the weaknesses identified by the NRC in Nonconformance 99900067/2007-201-04. CAR No. 150 described the corrective actions detailed above, provided objective evidence of the completion of corrective actions, and was closed on June 10, 2008.

The NRC inspection team reviewed the documentation that provided objective evidence for the completion of the corrective actions. The NRC inspection team determined that BWC's corrective actions were adequate to address the identified finding. Based on its review, the NRC inspection team closed Nonconformance 99900067/2007-201-04.

b.5 Implementation of BWC's Corrective Action Program

The NRC inspection team verified that BWC's implementing procedures provide assurance that conditions adverse to quality are promptly identified, documented and corrected or otherwise handled in accordance with the established requirements. The procedures also ensure that corrective or preventive action is taken to preclude recurrence. The NRC inspection team reviewed a sample of BWC's corrective actions to verify that the CARs provide (1) adequate documentation and description of conditions adverse to quality, (2) an appropriate analysis of the cause of these conditions and the corrective actions taken to prevent recurrence, (3) direction for review and approval by the responsible authority, (4) a description of the current status of the corrective actions, and (5) the followup actions taken to verify timely and effective implementation of the corrective actions. No issues of significance were identified. The NRC inspection team also verified that the corrective action process provides a connection to BWC's 10 CFR Part 21 program and that BWC had established a system for the review of CARs and identification of trends for significant conditions adverse to quality.

c. Conclusion

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

9. Entrance and Exit Meetings

On June 3, 2013, the NRC inspection team discussed the scope of the inspection with Ms. Pat Leishman, General Manager for Operations, and other members of BWC's management and technical staff. On June 6, 2013, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. John McQuarrie, BWC President, and other members of BWC's management and technical staff. The attachment to this report lists the attendees of the entrance and exit meetings, as well as those individuals whom the NRC inspection team interviewed.

ATTACHMENT

1. ENTRANCE/EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit	Interviewed
John McQuarrie	President	Babcock & Wilcox Canada (BWC)		X	
Craig S. Hansen	Nuclear Equipment Vice President	BWC	X	X	
Pat Leishman	Operations General Manager	BWC	X	X	
Ron Minshall	Operation Services General Manager	BWC		X	
Mike Hubert	Operational Excellence & Quality Director	BWC	X	X	
Jeff Millman	Nuclear Engineering Manager	BWC	X	X	X
Dave Hans	Clean Room Manager	BWC	X	X	
Dave Blanchette	Boiler Shop Manager	BWC	X	X	
Stephen Fluit	Engineering Services Manager	BWC	X	X	
Michael Flynn	Quality Control Manager	BWC	X	X	
Kirt A. Richardson	Quality Assurance Manager	BWC	X	X	X
Jack Kravets	Manufacturing Facilities Manager	BWC			X
John Needham	Manufacturing Supervisor	BWC			X
John A. Mohr	Sr. Quality Assurance Manager	BWC	X	X	
Thomas Michels	Quality Control (QC) Program Coordinator	BWC			
Steve Beadle	Quality Assurance, Quality Engineer	BWC	X	X	
Madhu S. Banerjee	Quality Assurance, Quality Engineer	BWC	X	X	X
Liam Moore	Quality Engineer	BWC	X	X	X
John Fyfe	QC Inspector	BWC			X
Randy Young	Lead Auditor	BWC	X	X	X
Tim Morrison	Project Manager	BWC			X
Paul W. Shipp	Project Engineer	BWC			X

Name	Title	Affiliation	Entrance	Exit	Interviewed
J. Thomas Boyd	Project Engineer	BWC	X		
Dorel Muth	Principal Welding Engineer	BWC			X
Steve Orbin	Welding Technologist	BWC			X
Craig Morris	Welder	BWC			X
Brian Weaver	Level III Nondestructive Examination Technician	BWC			X
Henri Jacquot	Level II Ultrasonic Testing (UT) Technician	BWC			X
Dan Kenkel	Level II UT Technician	BWC			X
Zbigniew Sitarz	Level II Penetrant Testing Technician	BWC			X
Frank Piriano	Gauge Laboratory Controller	BWC			X
Jim Vaslo	Machine Tool Operator	BWC			X
Harold Yetman	Machine Tool Operator	BWC			X
Jim Vlasveld	Machining Operator	BWC			X
Dave Walsh	Tool Crib Operator	BWC			X
John Topa	Electronic Repair Technician	BWC			X
Chuck Daft	Component Engineer	FirstEnergy Nuclear Operating Company (FENOC)	X	X	X
David W. Gerren	Senior Consultant Engineer	FENOC			X
Dale Hicks	FENOC Resident at BWC	FENOC			X
Iftekhar Siddiqui	Authorized Nuclear Inspector	Technical Standards & Safety Authority			X
Yamir Diaz-Castillo	Inspection Team Leader	NRC	X	X	
Jonathan Ortega-Luciano	Inspector	NRC	X	X	
Andrew Johnson	Inspector	NRC	X	X	

Name	Title	Affiliation	Entrance	Exit	Interviewed
Elba M. Sánchez-Santiago	Inspector	NRC	X	X	
Xuejun Wei	Observer, Technical Specialist	Canadian Nuclear Safety Commission	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 43002, "Routine Inspections of Nuclear Vendors," dated April 25, 2011.

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

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Type	Description
99900067/2007-202-01	Closed	NOV	10 CFR Part 21
99900067/2007-202-02	Closed	NON	Criterion V
99900067/2007-201-03	Closed	NON	Criterion XVII
99900067/2007-201-04	Closed	NON	Criterion V
99900067/2013-201-01	Opened	NOV	10 CFR Part 21
99900067/2013-201-02	Opened	NON	Criterion IV
99900067/2013-201-03	Opened	NON	Criterion VII

5. DOCUMENTS REVIEWED

- Babcock & Wilcox Canada (BWC) Ltd., "Quality Assurance Manual for Nuclear Products," Revision 40, dated November 15, 2012

- Quality Assurance Manual, "General QA Supplement for 10CFR50 Appendix B and 10CFR21 Requirements," Revision 15, dated October 31, 2011

- Engineering Operating Procedure (EOP)-002, “Preparation, Revision, and Issuance of Nuclear Standard Technical Notes,” Revision 7, April 17, 2013

- EOP-003, “Nuclear Engineering Department Procedure,” Revision 34, April 18, 2013

- EOP-008, “ASME Section III Division I Specification Preparation,” Revision 0, April 14, 2010

- Manufacturing Operating Procedure (MOP)-003, “Control and Distribution of Drawings,” Revision 14, October 19, 2009

- MOP-010, “Processing of Non-Conformance Reports,” Revision 9, dated October 19, 2009

- MOP-022, “Issuance and Returning of Welding Materials for Nuclear Contracts,” Revision 26, dated December 4, 2012

- MOP-024, “Calibration of Electrical Instruments on Welding Machines,” Revision 15, dated October 3, 2009

- MOP-027, “Welder and Welding Operator Performance Qualification System,” Revision 32, dated December 1, 2011

- MOP-028, “Weld Procedure Qualification and Certification/Registration,” Revision 19, dated February 12, 2012

- MOP-029, “General Procedure for Nuclear Components,” Revision 11, dated September 24, 2009

- MOP-031, “Storage and Handling of Welding Materials for Nuclear Contracts,” Revision 18, dated December 4, 2012

- MOP-039, “Calibration of Numerically Controlled Machines Digital Readout System,” Revision 25, dated May 28, 2013

- MOP-049, “Requirements and Frequency Schedules,” Revision 13, dated May 28, 2013

- MOP-071, “Receiving Purchased Materials by Receiving Personnel,” Revision 08, dated October 25, 2012

- MOP-082, “Preparation and Issuance of Contract Information Sheets (CIS) for Nuclear Controls,” Revision 16, dated October 19, 2012

- MOP-093, “Handling of Nuclear Welding Material at Incoming Inspection,” Revision 3, dated September 4, 2003

- Nuclear Services Operating Procedure (NSOP) 024, “Qualification of B&W Nuclear Services Quality Control Personnel,” Revision 6, dated November 27, 2009

- Quality Control Instruction (QCI 703-002, “Incoming Source Inspection, Nuclear Contracts,” Revision 45, dated March 30, 2012

- QCI 703-010, “Supplier Qualification and Qualified Supplier List,” Revision 39, dated March 26, 2013
- QCI 703-012, “Gauge Lab Operation,” Revision 49, dated October 25, 2012
- QCI 703-019, “Pressure Gauge Calibration,” Revision 12, dated October 31, 2012
- QCI 703-027, “Calibration of 1-24” & 25-900mm Outside Micrometers,” Revision A, dated March 15, 1986
- QCI 703-082, “Qualification of Personnel Performing Source Assurance Inspection,” Revision 6, dated September 26, 2000
- QCI-703-087, “Vendor CAR and Escalation Process,” Revision 0, November 29, 2006
- QCI 703-088, “Supplier Audits,” Revision 13, dated April 3, 2013
- QCI 704-011, “Qualification of Inspection and Test Personnel,” Revision 34, dated March 3, 1986
- QCI 704-012, “Guidelines for Inspectors,” Revision 42, dated April 22, 2013
- Quality Operating Procedures (QOP)-004, “Reporting of Defects and Non-conformance,” Revision 10, dated May 16, 2013
- QOP 005, “Inclusion of 10 CFR Part 21 Requirements in Purchase Orders,” Revision 11, dated May 1, 2013
- QOP-006, “Commercial Grade Dedication,” Revision 15 dated May 6, 2013
- QOP-013, “Corrective and Preventive Action,” Revision 1 dated November 26, 2009
- QOP-014, “Nonconformance Report,” Revision 3, dated May 25, 2010
- QOP 016, “Quality Audit Procedure,” Revision 7, dated April 25, 2013
- QOP 017, “Qualification of Audit/Survey Personnel,” Revision 2, dated March 28, 2013
- QOP 022, “Procurement of Unqualified Source Material,” Revision 00, dated January 21, 2013
- Part 21 evaluation for two weld procedure specifications that did not meet the ASME Code Section IX, dated April 28, 2010
- Part 21 evaluation for a secondary deck seal skirt box material misidentification, dated June 8, 2010
- Part 21 evaluation for a deviation from a procedure qualification report, dated April 29, 2011

- Part 21 evaluation for a deviation associated with weld buildups, dated June 24, 2011
- Drawing No. 205SC201, “Base Support Flange Ordering,” dated January 31, 2008
- Drawing No. 205SC205, “Base Support Cone Ordering,” dated March 20, 2009
- Drawing No. 244ZD014, “RCS Pipe to Pipe UT Calibration Block,” Revision 1
- Drawing No. 244ZE111, “Final Assembly,” Revision 1, dated November 18, 2012
- Drawing No. 205SE191, “Upper Tubesheet Cladding and Assembly,” Revision 4, dated June 8, 2009
- Drawing No. 205SE310, “Lower Assembly to Base Support Assembly and Machining,” Revision 4, dated January 3, 2011
- 205S-1-162, “Ultrasonic Examination Report,” dated November 17, 2010
- 205SE273, “Tube Support Plate Installation,” Revision 4, dated July 27, 2010
- “244Z RCS Elbow Mock-up Stainless Steel Overlay Cladding”, dated December 21, 2012
- B&W PowerPoint Presentation, “Davis-Besse ROTSG Design,” June 3, 2013
- B&W-TR-2012-0024, “Davis Besse Proposed Hydraulic Expansion Length Increase,” Revision 1, October 2012
- B&W Report No. 205S-LR-04, “FirstEnergy Nuclear Generation Corporation, Davis Besse Nuclear Power Station ASME Code Reconciliation Report,” Revision 0, June 2011
- B&W Report No. 205S-FIV-01, “Replacement Once-Through Steam Generators Flow Induced Vibration and Wear Report,” Revision 0, December 2012
- B&W Canada Report No. 205S-SR-07, “Replacement Once-Through Steam Generators Tube-to-Tubesheet Joint Qualification Report,” Revision 2, March 28, 2013
- Technical Specification-3985, “Certified Design Specification for Replacement Steam Generators for FirstEnergy Corporation, Davis-Besse Nuclear Power Station,” Revision 2, December 2011
- Commercial-Grade Dedication (CGD) No. 2455, “Tie Rod Round Bar: 7/8”D (+0.004’/0.006’) x 13’-0” (+0.500”/-0.000”),” dated November 24, 2008
- CGD No. 2456, “Locking Bolt,” dated February 3, 2009
- CGD No. 2472, “Fixed and Adjustable Orifice Plates Segments Plate,” dated April 8, 2009
- CGD No. 2479, “Round Bar, 3 ½“ DIA. SA-479 Type .304L,” dated April 13, 2009

- CGD No. 2484, “Fixed Orifice Locking Plate (internal component),” dated April 8, 2009
- Critical Characteristics for Commercial Grade Dedication Survey for Aberfoyle Metal Treaters Ltd., dated April 5, 2013
- Commercial Grade Item/Service Survey Checklist for Aberfoyle Metal Treaters Ltd., dated May 3, 2013
- Purchase Order (PO) No. CMX177357 to Bruck GMBH for a base support ring forging, dated July 21, 2011
- PO No. CMX222786 to Cambridge Material Testing Limited for testing services, dated May 29, 2013
- PO No. CMX174444 to Bruck GMBH for a SA-350 shroud support ring forging, dated May 27, 2011
- PO No. CM3345375 to Sheffield Forgemasters Engineering Ltd. for upper tubesheet forging, dated January 13, 2005
- PO No. CMX167260 to Yama Inspection Company Ltd. for inspection services, dated February 8, 2011
- PO No. CMX213828 to Patriot Forge Co. for main feedwater header inspection plug bar, dated January 22, 2013
- PO No. CMX205045 to Fin-Tech Inc. for primary heads electro polishing, 6 inch primary hand hole diaphragm electro polishing, and primary manway diaphragm electro polishing dated December 13, 2012
- PO No. CMX131504 to Conrex Steel Limited for lower and upper head component mockup, dated April 23, 2009
- PO No. CMX160427 to Tioga Pipe Supply Company, Inc. for upper head vent nozzle pipe cap, dated December 9, 2010
- PO No. CMX146069 to Industeel Belgium for shroud support lugs, shear lugs, and upper shroud support segments, dated January 14, 2010
- PO No. CMX197417 to Valinox Nucleaire SA for tube plug material, dated May 3, 2012
- PO No. CMX185644 to Nova Machine Products Inc. for base support platform bumper component, base support to base support platform component, base support platform to sliding support component, and upper lateral components
- PO No. CMX180329 to Samuel Plate Sales for shroud patch plate, dated September 6, 2011
- PO No. CMX222786 to Cambridge Material Testing Limited for weld material qualification, dated May 29, 2013

- PO No. CMX215047 to Olympus NDT Inc. for calibration of flaw detectors, dated February 4, 2013
- PO No. CMX214289 to Ulrich Metrology Inc. for calibration of a gauge block set, dated January 24, 2013
- PO No. CMX214381 to NDT products Ltd. for calibration a magnetic field indicator, dated January 28, 2013
- PO No. CMX221382 to Ulrich Metrology Inc. for calibration of two setting rings, dated May 6, 2013
- PO No. CMX221757 to NDT Products Ltd. for calibration of a light meter, dated May 14, 2013
- PO No. CMX162504 to ESAB Welding & Cutting for welding wire and welding material, dated November 9, 2010
- PO No. CMX149793 to ESA Welding & Cutting for GTAW consumables, dated March 16, 2010
- PO No. CMX185114 to Exocor for saw cladding consumables, dated December 5, 2011
- PO No. CMX101641 to Marubeni Canada Ltd. for the flange base support, dated March 28, 2008
- PO No. CMX139716 to Forge Monchieri S.P.S for the cone base support, dated September 10, 2009
- PO No. CMX180329 to Samuel Plates for steam generator plates, dated September 6, 2011
- B&W Canada's Qualified Suppliers List
- 2013 Internal Audit Schedule, Revision 00
- 2012 Internal Audit Schedule, Revision 05
- 2012 internal audits: Section 4.0 Indoctrination and Training, Section 6.0 Contract Review, Section 7.0 Design Control, Section 8.0 Procurement Control, Section 9.0 Document Control, Section 10.0 Identification and Control of Items, Section 11.0 Process Control, Section 12.0 Inspection and Test Control, Section 13.0 Special Processes, Section 14.0 Control of Measuring and Test Equipment, Section 15.0 Handling, Storage, and Shipping, Section 16.0 Nonconformance Control
- External audit report of Patriot Forge Co., dated July 9, 2012
- External audit report of Fin-Tech Inc., dated March 15, 2012
- External audit report of Tioga Pipe Supply Company Inc., dated February 13, 2012

- External audit report of Conrex Steel Limited, dated February 22, 2013
- External audit report of Industeel Belgium, dated June 14, 2012
- External audit report of Valinox Nucleaire SA, dated June 1, 2011
- External audit report of Nova Machine Products, Inc. dated November 10, 2011
- External audit report of Sheffield Forgemasters Engineering, Ltd., dated March 28, 2011
- External audit report of Bruck GMBH, dated October 6, 2011
- External audit report of Samuel Plate Sales, dated October 1, 2012
- External audit report of ESAB Perstorp AB, dated February 13, 2012
- External audit report of ESAB Group, dated September 28, 2009
- Commercial-Grade Survey (CGS) No. C020-13, "Preliminary CGD Survey Report," dated May 10, 2013
- CGS No. A071-13, "Commercial Grade Dedication Survey of Aberfoyle Metal Treaters Ltd.," dated May 2, 2013
- CGS No. B025-13S, "CGD Survey of Buehler Canada's Quality Program," dated May 13, 2013
- Source Assurance Supplier Annual Review Check Sheets for these vendors: Fin-Tech Inc., Industeel Belgium, Samuel Plate Sales, Tioga Pipe Supply Inc., Valinox Nucleaire SA, Nova Machine Products Inc., and Patriot Forge Co.
- Certified Material Test Report (CMTR) No. 2069066 for the shroud support ring forging, Revision 0, dated August 6, 2011
- CMTR No. 2069518 for a base support ring forging, dated September 23, 2011
- CMTR No. 5400090 for an upper tubesheet forging, dated December 12, 2005
- Receiving inspection report No. CM724547 for a shell can forging, dated April 15, 2010
- Receiving inspection report No. CM696131 for a tube support plate, dated April 6, 2009
- Receiving inspection report No. CM724357 for a secondary manway and primary hand hole washers, dated April 14, 2010
- Receiving inspection report No. CM731231 for a shroud patch plate disc, dated July 6, 2010
- Work Order (WO) 887750, "Elbow, Outer 2 Clad/Mach," Revision 5, dated June 3, 2013

- WO 876490, “NDE Examination Report Part No. 5246310,” dated February 22, 2011
- WO 875438, “NDE Examination Report Part No. 5244665,” dated August 3, 2010
- Shop Instruction Sheet (SIS) 260263, “RCS Elbow Stainless Steel (A No. 8) Overlay Welding and Weld Repair,” Revision 2, dated February 28, 2012
- SIS 259778, “Ultrasonic Examination of Nuclear Steam Generator Welds and Components,” Revision 2, dated March 10, 2009
- SIS 259730, “Davis-Besse Replacement Once Through Steam Generators Hydrostatic Test and Dryout,” Revision 0, dated May 15, 2013
- SIS 260184, “Liquid Penetrant Examination of Nuclear Steam Generator Welds and Components,” Revision 1, dated April 29, 2011
- SIS 259772, “Liquid Penetrant Examination of Nuclear Steam Generators and Components,” Revision 1, dated November 21, 2008
- SIS 259735, “Weld Material Qualification Test,” Revision 1, dated August 23, 2011
- SIS 259770, “Visual Examination of Welds on Nuclear Steam Generators and Components,” Revision 3, dated November 21, 2008
- Dimensional Inspection Report Nos. 232-2001, 234-5001, and 232-5301
- Digital Measurement Metrology Laboratory Calibration Certificate, Asset LC-3425912, dated April 17, 2013
- Calibration Certificate Nos. 354-140 and 560-0201
- Weld Procedure Specification (WPS) Nos. 10765, 20544, 22839, and 53111
- Procedure Qualification Record Nos. 10714, 21002, 22816, 53103, and 60204
- Weld Material Qualification Nos. 12-057 and 12-115
- Training and qualification records for these Level II inspection personnel: Ziggy Sitarz, Joseph Lama, John A. Fyfe, Drazen Bukva, and Paul Mall
- Training and qualification records for these auditors and lead auditors: Tom Childress, Randy Young, Kirt Richardson, Tom Michels, Madhu Banerjee, Shailesh Kamble, and Lee Lama
- L1RCA10-005, “Level One Root Cause Analysis: Incorrect Weld Consumable Utilized,” dated June 17, 2010

- Nonconformance Report Nos. 1054, 1064, 1355, 2298, 2996, 4370, 4747, 6568, 7083, 7985, 8517, 8548, 8590, 8839, 8977, 9000, 9062, 10921, 32695, 33148, 34367, 34390, and 34551

- Corrective Action Request Nos. 147, 148, 149, 150, 151, 739, 1408, 2082, 2411, 4074, 4482, 5160, 6692, 7501, 8539, 8591, 9076, 9077, and 9099