

September 20, 2011

Mr. David Barry, President
Nuclear Division, Shaw Power Group
128 South Tryon Street
Suite 400
Charlotte, NC 28202

SUBJECT: NRC INSPECTION REPORT NO. 99901387/2011-202 AND NOTICE OF
NONCONFORMANCE

Dear Mr. Barry:

From August 1-4, 2011, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at the Shaw Nuclear Services (SNS) facility in Charlotte, North Carolina. The purpose of this limited scope inspection was to assess SNS's compliance with 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." The enclosed report presents the results of this inspection. This NRC inspection report does not constitute NRC endorsement of SNS's overall quality assurance (QA) program.

During this inspection, the NRC inspection team found that the implementation of your QA program failed to meet certain NRC requirements imposed on you by your customers or NRC license applicants. Specifically, the NRC inspection team determined that SNS failed to audit the Gerdau Ameristeel Charlotte Steel Mill in order to verify the implementation of the Mill Group Quality Assurance Manual as required by various purchase orders, and also failed to provide adequate oversight of Gerdau Ameristeel's procurement process to ensure that other necessary quality requirements were suitably included or referenced in the procurement documents. This nonconformance is cited in the enclosed Notice of Nonconformance (NON), and the circumstances surrounding them are described in detail in the enclosed inspection report.

Please provide a written statement or explanation within 30 days from the date 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," a copy of this letter, its enclosures, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Document Access and Management System, which is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, 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, as well as a redacted copy of your response that deletes such information. If you request that such material be

D. Barry

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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/

Juan D. Peralta, Chief
Quality and Vendor Branch 1
Division of Construction Inspection
& Operational Programs
Office of New Reactors

Docket No. 99901387

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901387/2011-202 and Attachments

D. Barry

- 2 -

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NRO-002

OFFICE	NRO/DCIP/CQVB	NRO/DCIP/CQVA	NRO/DCIP/CQVA
NAME	SEdmonds	MVaaler	KKavanagh
DATE	09/19/2011	09/19/2011	09/19/2011
OFFICE	NRO/DCIP/CAEB	NRO/DCIP/CQVA	
NAME	TFrye	JPeralta	
DATE	09/19/2011	09/20/2011	

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NOTICE OF NONCONFORMANCE

Shaw Nuclear Services
Charlotte, North Carolina

Docket Number 99901387
Inspection Report Number 9901387/2011-202

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted from August 1-4, 2011, at the Shaw Nuclear Services (SNS) facility in Charlotte, NC, certain activities were not conducted in accordance with NRC requirements which were contractually imposed upon SNS by NRC applicants or licensees:

- A. Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to Title 10 of the Code of Federal Regulation (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 SNS Standard Nuclear Quality Assurance Program (SWSQAP 1-74A), Section 7, "Control of Purchased Material, Equipment, and Services," Revision B, dated June 1, 2009, requires, in part, that a supplier evaluation shall be documented and include the supplier's technical and quality capability as determined by a direct evaluation via survey/audit of the facilities, personnel, and the implementation of the supplier's quality assurance program.

Contrary to the above, as of August 4, 2011, SNS failed to audit the Gerdau Ameristeel Charlotte Steel Mill and verify the implementation of the Mill Group Quality Assurance Manual as required by the SWSQAP 1-74A, Section 7. Specifically, SNS Purchase Orders 132175-J400A-00 and 132177-J400-00 state that SNS shall perform a post-award implementation audit of Gerdau Ameristeel's quality assurance program(s) and facilities.

This issue has been identified as Nonconformance 99901387/2011-202-01.

- B. Criterion VII 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." Criterion VII continues to state, in part, that "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."

Criterion IV, "Procurement Document Control," of Appendix B to 10 CFR Part 50 states, in part, that "measures shall be established to assure that applicable regulatory requirements and the design basis, 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 purchased by the applicant or by its contractors or subcontractors."

Contrary to the above, as of August 4, 2011, SNS failed to ensure the effectiveness of the control of quality by contractors. Specifically, SNS failed to provide adequate oversight of Gerdau Ameristeel's procurement process to ensure that other requirements, such as the provisions for inspection and test records, which are necessary to ensure adequate quality, were suitably included or referenced in the procurement documents for mechanical couplers.

This issue has been identified as Nonconformance 99901387/2011-202-02.

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Chief, Quality and Vendor Branch 1, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this Notice of Nonconformance. This reply should be clearly marked as a "Reply to a Notice of Nonconformance" and should include for each noncompliance (1) the reason for the noncompliance or, if contested, the basis for disputing the noncompliance, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid noncompliance, and (4) the date when 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 Agencywide Documents Access and Management System, accessible from the NRC website 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, please provide a bracketed copy of your response that identifies the information that should be protected, as well as a redacted copy 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 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 at Rockville, Maryland, this 20th day of September 2011.

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

Docket No.: 99901387

Report No.: 99901387/2011-202

Vendor: Shaw Nuclear Services
128 South Tryon Street
Suite 400
Charlotte, NC 28202

Vendor Contact: Mr. Robert Otis, Manager
Quality Assurance
Telephone: (704) 343-7628
E-mail: robert.otis@shawgrp.com

Nuclear Industry Activities: Shaw Nuclear Services (SNS), located in Charlotte, NC, provides new nuclear plant design and construction services worldwide. SNS is a member of the AP1000 Consortium with Westinghouse Electric Company and others.

Inspection Dates: August 1 - 4, 2011

Inspectors: Kerri Kavanagh NRO/DCIP/CQVA Team Leader
Marlayna Vaaler NRO/DCIP/CQVA
Shavon Edmonds NRO/DCIP/CQVB

Approved by: Juan D. Peralta, Chief
Quality and Vendor Branch 1
Division of Construction Inspection
& Operational Programs
Office of New Reactors

EXECUTIVE SUMMARY

Shaw Nuclear Services
Report Number 99901387/2011-202

The U.S. Nuclear Regulatory Commission (NRC) conducted this inspection to verify that Shaw Nuclear Services (SNS) 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." The NRC inspection team conducted the inspection at the SNS facility in Charlotte, NC, from August 1-4, 2011.

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

- Appendix B to 10 CFR Part 50

The NRC inspection team implemented Inspection Procedure (IP) 43003, "Reactive Inspection of Nuclear Vendors," as supplemented by IP 43002, "Routine Inspections of Nuclear Vendors," during the conduct of this inspection.

The NRC conducted a previous limited-scope inspection of the Shaw Nuclear Services facility in Charlotte, NC, in June 2011. The inspection report for this June 2011 limited-scope inspection had not been issued at the time of this NRC inspection.

The results of the current inspection are summarized below.

Control of Purchased Material, Equipment, and Services

The NRC inspection team identified Nonconformance 99901387/2011-202-01 for SNS's failure to audit the Gerdau Ameristeel Charlotte Steel Mill in order to verify the implementation of the Mill Group Quality Assurance Manual as required by Purchase Orders 132175-J400A-00 and 132177-J400-00. In addition, the NRC inspection team identified Nonconformance 99901387/2011-202-02 for SNS's failure to provide adequate oversight of Gerdau Ameristeel's procurement process to ensure that applicable requirements necessary to assure adequate quality, such as the provisions for inspection and test records, were suitably included or referenced in procurement documents for mechanical couplers.

REPORT DETAILS

1. Control of Purchased Material, Equipment, and Services

a. Inspection Scope

The NRC inspection team reviewed the SNS policies and implementing procedures that govern the control of purchased material, equipment, and services, as well as SNS external audits to verify compliance with the requirements of Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of safety-related purchase orders (POs) and associated external audit reports in order to evaluate compliance with the SNS program requirements and adequate implementation of those requirements. In addition, the NRC inspection team reviewed the disposition of corrective actions to resolve deficiencies identified by audit findings for adequacy and timeliness.

Within the scope of this inspection, the NRC inspection team reviewed the POs and external audits associated with SNS's safety-related subcontractors and suppliers, including National Technical Systems, Shaw Modular Solutions, Exelon PowerLabs, B.F. Shaw, Inc., Mactec, William Lettis & Associates, Gerdau Ameristeel, the Lincoln Electric Company, and Shaw SSS Fabricators, Inc.

The SNS policies, procedures, and supporting documentation that were reviewed by the NRC inspection team are listed in Attachment B to this inspection report.

b. Observations and Findings

b.1 Policies and Procedures

The NRC inspection team reviewed Section 7, "Control of Purchased Material, Equipment, and Services," of the Shaw Standard Nuclear Quality Assurance Program (SWSQAP 1-74A) and the implementing procedures that govern the establishment of measures to ensure that the applicable regulatory, design basis, and other requirements, necessary to assure adequate quality of products and services, are suitably included or referenced in the pertinent procurement documents. The NRC inspection team noted that SNS's control of the procurement of items and services consisted of maintenance of a Quality Rating List (QRL), periodic evaluation of qualified suppliers, activities to verify quality, audits, surveillances, and receipt examination of items and services.

SNS Quality Assurance Directive (QAD) 7.17, "Supplier and Contractor QA Program Manual Reviews and Qualification Audits," specifies that qualification audits be performed prior to the award of a PO or contract. The qualification audit is conducted based on the examination and evaluation of objective evidence, and by using the audit checklist; when the evaluation is completed, SNS rates the qualification audit report.

SNS QAD 18.11, "Post Award QA Audits of Suppliers and Site Contractors," provides the means to verify a contractor's / supplier's compliance with the PO or contract requirements, as well as the requirements of their QAP or SNS's QAP when the PO or contract requires the contractor / supplier to perform work in accordance with the SNS QAP. The procedure also requires that elements of the QAP of a supplier listed on the SNS QRL be audited at least once every three years, or once within the life of the

PO/contract, whichever is the shorter period, contingent on sufficient work being in progress to demonstrate implementation of the QAP.

Stone & Webster Nuclear Quality Standard 7.10, "Control of Purchased Material, Equipment, and Offsite Services for Safety Related Applications," requires that QA assess the effectiveness of suppliers' control of quality by auditing the suppliers' QAP implementation related to PO and contract activities, in accordance with SNS QAD 18.11. The procedure also details the purchase requirements for safety-related materials and services under Appendix B to 10 CFR Part 50 and invokes the provisions of 10 CFR Part 21, as required by 10 CFR 21.31.

SNS QAD 18.12, "Quality Assurance Surveillances," establishes provisions for the conduct of surveillance activities to monitor or observe processes, activities, or items in order to assess their adequacy and effectiveness and verify their conformance to specified requirements. Surveillances are not performed in place of audits or required first line inspections. Surveillances are scheduled and performed on a quarterly basis, or more frequently depending on previous surveillance results and when requested to assess areas of interest or concern, complex tasks, emerging issues, or previously identified conditions. The procedure also specifies that internal audits may be recognized as satisfying the quarterly requirement in lieu of surveillance.

The NRC inspection team performed a review of SNS's QA process to verify that programs and procedures were in place for the adequate control of purchased materials, equipment, and services, including the performance of external audits, for quality activities related to design and construction support for AP1000 new reactor applicants. The NRC inspection team reviewed the POs and contracts associated with the safety-related suppliers on the SNS QRL, as discussed below, to verify compliance with the provisions and requirements of the implementing procedures outlined above.

b.2 Shaw Nuclear Services Safety-Related Purchase Orders

The NRC inspection team reviewed the SNS POs to verify that adequate quality and technical requirements were imposed. The NRC inspection team verified that the POs included the applicable regulatory, technical, and testing requirements, as well as specifying the applicability of 10 CFR Part 21 and 50.55(e). SNS did not have a safety-related PO in place with Shaw SSS Fabricators, Inc., at the time of the inspection.

National Technical Systems (NTS)

The NRC inspection team reviewed PO 132177-E-C-00002 679043 and PO 132175-J800.09, as well as the associated change notices (CNs), which establish the quality and technical requirements of the POs for NTS. The NRC inspection team noted that the scope of supply for PO 132177-E-C-00002 679043 and PO 132175-J800.09 encompasses the nuclear island waterproof membrane testing for V.C. Summer Units 2 and 3 and Vogtle Units 3 and 4, and includes an additional option to complete the commercial grade dedication for the waterproof membrane at V.C. Summer Unit 3.

Exelon PowerLabs (EPL)

The NRC inspection team reviewed PO 677650OP, which establishes the quality and technical requirements of the PO for EPL. The NRC inspection team noted that the scope of supply for PO 677650OP encompasses services to provide QA Category 1 (i.e., safety-related, off-site measuring and test equipment (M&TE) calibration, testing services, and commercial grade dedication) activities for the V.C. Summer Units 2 and 3 project. The EPL PO specifies that activities affecting quality must be controlled in accordance with the EPL QA Manual, Revision 20, which was approved by SNS QA.

Shaw Modular Solutions (SMS)

The NRC inspection team reviewed PO 527358, PO 527359, PO 527363, PO 527365, PO 132175-D100.M034, PO 132176-D100.M034, PO 132177-D100.M034, and PO 132178-D100.M034, as well as the associated CNs, which establish the quality and technical requirements of the POs for SMS. The NRC inspection team noted that the scope of supply for PO 527358, PO 527359, PO 527363, and PO 527365 encompasses activities related to the fabrication and assembly of the AP1000 CA type modules, which are steel formwork modules with concrete filled in place. Specifically, these POs address the CA01, CA02, CA03, CA04, CA05, and CA20 modules for V.C. Summer Units 2 and 3 and Vogtle Units 3 and 4.

The NRC inspection team observed that the additional restrictions and requirements identified as a result of the 2010 SNS audit of SMS (Audit V2010-02) were imposed on PO 527358, PO 527359, PO 527363, and PO 527365 in CN 3. In addition, the NRC inspection team verified that the SNS QRL was updated to reflect the new requirements and restrictions imposed on SMS.

The NRC inspection team noted that CN 34 for PO 527358, PO 527359, PO 527363, and PO 527365 implemented a stop work order for SMS until all corrective action reports (CARs) related to numerous internal audit findings were resolved. CN 35, CN 36, CN 37, and CN 39 allowed specific fabrication and assembly activities to continue, subject to ongoing restrictions and requirements. CN 44 provided for the SNS QRL wording to be changed to allow SMS to resume full fabrication and assembly activities for PO 527358, PO 527359, PO 527363, and PO 527365. The NRC inspection team reviewed the disposition of the corrective actions and nonconformances related to the stop work order and verified that SNS had adequately evaluated and approved the remedial actions taken by SMS.

The NRC inspection team reviewed the scope of supply for PO 132175-D100.M034, PO 132176-D100.M034, PO 132177-D100.M034, and PO 132178-D100.M034, which encompass activities related to the fabrication and assembly of the AP1000 CB type structural modules for V.C. Summer Units 2 and 3 and Vogtle Units 3 and 4. AP1000 CB modules are remain in place steel formwork modules with concrete poured around.

The initial issuance of PO 132175-D100.M034, PO 132176-D100.M034, PO 132177-D100.M034, and PO 132178-D100.M034 stated that SMS cannot (1) complete work under Section III, "Rules for Construction of Nuclear Facility Components," of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code); (2) apply safety-related coatings; or (3) perform product testing activities in accordance with 10 CFR Part 50, Appendix B, Criterion 11, "Test

Control,” until further QA program implementation is verified by SNS. This action was taken in response to the need for SMS to address several CARs, significant conditions adverse to quality (SCAQs), and nonconformances before AP1000 CB structural module fabrication activities could commence.

The NRC inspection team observed that CN 3 for PO 132175-D100.M034, PO 132176-D100.M034, PO 132177-D100.M034, and PO 132178-D100.M034 provided for the SNS QRL wording to be changed to allow SMS to return to full fabrication and assembly activities for the AP1000 CB Structural Modules. The NRC inspection team reviewed the disposition of the corrective actions, SCAQs, and nonconformances related to the initial POs and verified that SNS had adequately evaluated and approved the remedial actions taken by SMS.

B.F. Shaw, Inc.

The NRC inspection team reviewed PO J132175-C601.02, as well as the associated CNs, which establish the quality and technical requirements of the PO for B.F. Shaw. The NRC inspection team noted that the scope of supply for PO J132175-C601.02 encompasses the furnishing and fabrication of safety-related ASME Code Class 3 piping. SNS specified that PO J132175-C601.02 was to be performed according to SNS Specification 134948-S-P-00003.

Mactec

The NRC inspection team reviewed SNS Subcontracts 132175-1004-1421 and 132177-1104-1205, which establish the quality and technical requirements for Mactec. The NRC inspection team noted that the scope of supply for Subcontract 132175-1004-1421 encompasses the procurement of safety-related soil and concrete testing services in support of the Vogtle Units 3 and 4 project, and the scope of supply for Subcontract 132177-1104-1205 encompasses the procurement of safety-related concrete testing services in support of the V.C. Summer Units 2 and 3 project.

William Lettis & Associates

The NRC inspection team reviewed the PO issued to William Lettis & Associates. The NRC inspection team noted that the scope of supply for the PO encompasses the performance of surveys and tests for geological mapping services in support of the Vogtle Units 3 and 4 project. The NRC inspection team noted that William Lettis & Associates began providing a limited number of non safety-related services to SNS in October 2009. However, since then William Lettis & Associates has not performed any safety-related activities for SNS.

Gerdau Ameristeel

The NRC inspection team reviewed PO 132175-J400A-00, PO 132178-J400-00, and PO 132177-J400-00, as well as the associated CNs, which establish the quality and technical requirements of the POs for Gerdau Ameristeel of Tampa, FL. The NRC inspection team noted that the scope of supply for PO 132175-J400A-00 and PO 132177-J400-00 encompasses billet production; billet storage; billet loading and handling; conversion of billets to bar; detailing; fabrication; shipment of fabricated bar to jobsite location; and installation support through the furnishing of placing plans and

personnel visits as mutually agreed upon for Vogtle Units 3 and 4 and V.C. Summer Units 2 and 3, respectively. The scope of supply for PO 132178-J400-00 includes reinforcing steel for the foundations of cooling towers 3A and 3B for V.C. Summer Unit 3.

The NRC inspection team observed that the restrictions and requirements identified as a result of the 2011 SNS audit of Gerdau Ameristeel were imposed on PO 132175-J400A-00 and PO 132177-J400-00 in CN 8 and CN 7, respectively. In addition, the NRC inspection team verified that the SNS QRL contained the applicable restrictions for Gerdau Ameristeel.

During its review of PO 132175-J400A-00, PO 132178-J400-00, and PO 132177-J400-00, the NRC inspection team identified that the revisions of the Gerdau Ameristeel QA manuals imposed in the POs did not reflect the current revisions listed in the QRL. Specifically, section 10 of the POs state that SNS has reviewed and approved Gerdau Ameristeel's Corporate QA Program Manual (CQAM), Revision 24, dated October 14, 2009; Fabricated Products Group QA Manual (FQAM), Revision 15, dated October 14, 2009; and Mill Group QA Manual (MQAM), Revision 24, dated October 24, 2009. However, the 2011 SNS audit of Gerdau Ameristeel was based on CQAM Revision 25 and FQAM Revision 16, while the SNS QRL reflects CQAM Revision 26, FQAM Revision 17, and MQAM Revision 26. SNS provided objective evidence that each revision of the Gerdau Ameristeel QA manuals were reviewed and accepted in accordance with the applicable SNS procedures. SNS issued CAR 2011-0267 to initiate purchase requisitions and resultant revisions to the POs in order to reconcile the quality requirements to address the current Gerdau Ameristeel QA manuals revisions. This failure constitutes a violation of minor significance and is not subject to formal enforcement action.

Lincoln Electric Company

The NRC inspection team reviewed PO 695750-000, PO 711798-000, and Shaw Weld Filler Material Specification TR-5.9-2209, which establish the quality and technical requirements of the POs for the Lincoln Electric Company of Cleveland, OH. The NRC inspection team noted that the scope of supply for PO 695750-000 and PO 711798-000 encompasses spooled weld wire for machine welding for the Vogtle and V.C. Summer sites, respectively. Specification TR-5.9-2209 defines the technical and QA program requirements for purchase of ER2209 bare stainless steel welding wire / rods or electrodes for use in the gas tungsten arc welding (GTAW) or gas metal arc welding (GMAW-P) process for AP1000 reactor plants.

With the exception of the issue noted above regarding the correct Gerdau Ameristeel QA manual revisions being referenced in the applicable POs, the NRC inspection team's review of the SNS safety-related POs identified no issues of significance.

b.3 Shaw Nuclear Services External Audits and Supplier Evaluations

The NRC inspection team reviewed the qualification audits, routine periodic audits, annual evaluations, and surveillances of the SNS safety-related vendors, contractors, and suppliers in order to verify that adequate controls have been established and implemented for contracted activities. The NRC inspection team reviewed the SNS audits to verify that SNS provides adequate oversight of its suppliers for quality activities related to design and construction support for AP10000 new reactor applicants. At the

time of the inspection, SNS had performed an audit of the Lincoln Electric Company, but had not completed the audit report.

The NRC inspection team verified that procedures have been established and implemented to select and qualify suppliers supplying basic components. The NRC inspection team also verified that the SNS procedures describe the scope and purpose of audits to be performed, frequency or schedule of audits (including supplemental audits to provide adequate coverage), applicable audit criteria, basis for re-audit, documentation of audit results, provisions for management review and assessment, corrective action requirements, and follow-up activities.

The NRC inspection team noted that SNS changed their audit checklist in 2010 to make it more consistent with the Nuclear Procurement Issues Committee (NUPIC) checklist. The NUPIC checklist contains a greater level of detail in the objective evidence required while performing the audit, as well as in the questions answered to determine the overall effectiveness of the implementation of a QA program.

The NRC inspection team observed that the SNS audit program has been enhanced through use of the revised checklist and that more observations were documented in the SNS audit reports as a result of the new checklist. While more documented observations can be an indication of ineffective quality assurance program implementation by SNS suppliers, the NRC inspection team noted that SNS weighs the significance of the observations against the overall performance of the suppliers and the safety significance of the activity being performed, as documented in the SNS audit reports, before making a final determination regarding the effectiveness of the supplier's quality assurance program.

National Technical Systems

The NRC inspection team reviewed the SNS audits of NTS conducted in 2010 and 2011. SNS conducted Audit V2010-21 in November 2010 to evaluate the adequacy and implementation of NTS's safety-related QA program for the testing of the nuclear island waterproof membrane, as well as to confirm the establishment of applicable testing procedures and a qualification program. The SNS audit resulted in 2 observations related to the lack of imposing NTS QA requirements on sub-suppliers. NTS responded to these audit observations in a timely fashion and they were subsequently closed by SNS. SNS conducted Audit V2011-08 in April 2011 to evaluate the adequacy and implementation of NTS's commercial grade dedication program. The SNS audit resulted in no observations. The NRC inspection team review identified no issues of significance in this area.

Exelon PowerLabs

The NRC inspection team reviewed the SNS qualification audit of EPL conducted in December 2010. SNS conducted Audit V2010-23 to evaluate the adequacy and implementation of EPL's QA program in relation to off-site M&TE calibration, testing services, and CG dedication activities. The SNS audit resulted in no observations. The NRC inspection team review identified no issues of significance in this area.

Shaw Modular Solutions

The NRC inspection team reviewed the SNS audits of SMS conducted in 2009, 2010, and 2011. SNS conducted Audit V2009-02 in June 2009 to evaluate the adequacy and implementation of SMS's QA program in relation to procurement activities. The SNS audit resulted in 10 observations. SMS responded to these audit observations in a timely fashion and they were subsequently closed by SNS.

SNS conducted Audit V2009-09 in December 2009 to evaluate the overall adequacy and implementation of SMS's QA program (full scope audit). The audit was initially postponed from October 2009 due to equipment problems and a lack of actual safety-related fabrication activities completed by SMS. The SNS audit resulted in 14 audit observations. Five of the observations identified were related to receipt inspections, which led SNS to restrict SMS's ability to perform receipt inspections on safety-related materials until the associated CARs were implemented.

SMS CAR 09-025/0 captured the SCAQ which determined that SMS had not successfully achieved the level of work quality necessary to produce nuclear safety-related products. The NRC inspection team verified that these restrictions were appropriately translated to the SNS QRL.

In January 2010, SNS conducted a pre-audit visit with SMS in order to follow-up and provide final resolution of all remaining open items from Audit V2009-09 prior to performance of the next SNS supplier audit. SMS responded to the remaining audit observations throughout 2010, and the audit was closed by SNS in November 2010.

SNS conducted Audit V2010-02 in February 2010 to evaluate the overall adequacy and implementation of SMS's QA program (full scope audit). The SNS audit resulted in 20 audit observations. The audit determined that SMS was appropriately applying the requirements of 10 CFR Part 21, as necessary, and adequately implementing the corrective actions for the previous audit observations, actions, and commitments. However, the results of Audit V2010-02 led to a continuation of the QRL restrictions placed upon SMS, noting that SMS must appropriately address and implement several additional recommendations and observations before safety-related work could resume.

As a follow-up activity to Audit V2010-02, SNS conducted Surveillance S-CH-AP1000-2010-008, in accordance with the applicable SNS procedural requirements for providing supplemental oversight. The surveillance activity resulted in the discovery of multiple issues related to inaccurate weld travelers. This discovery led SNS to implement a stop work order on July 22, 2010, in order to allow SMS to address the programmatic and procedural issues present at the facility. Surveillance S-CH-AP1000-2010-009, conducted in August 2010, reevaluated the issues identified by the previous surveillance and concluded that SMS appropriately addressed corrective actions and implemented the necessary improvements.

SNS conducted Audit V2011-03 in March 2011 to evaluate the overall adequacy and implementation of SMS's QA program (full scope audit). The SNS audit resulted in 14 audit observations and 20 recommendations. While the final review and disposition of the observations related to this audit was still underway as of the date of the NRC inspection, the NRC inspection team observed that, for the observation responses already received from SMS, SNS was appropriately evaluating the responses in

accordance with the appropriate requirements and procedures, including the provision that the auditors provide a justification for the acceptability of each response. In addition, the NRC inspection team noted that for SMS responses that were found to be unacceptable, SNS elevated the issue to the attention of the appropriate management and ensured that the issue was acted upon by SMS in a timely manner.

Based on its review of the SMS audits and associated documentation, the NRC inspection team verified that the SNS audit process has been implemented effectively and performed in accordance with established requirements. The NRC inspection team review identified no issues of significance in this area.

B.F. Shaw, Inc.

The NRC inspection team reviewed the SNS audits of B.F. Shaw conducted in 2010 and 2011. SNS conducted Audit V2010-12 in June 2010 to evaluate the adequacy and implementation of B.F. Shaw's QA program. The SNS audit indicated that B.F. Shaw was effectively implementing its QA program and resulted in B.F. Shaw being placed on the SNS QRL. SNS conducted Audit V2011-15 in June 2011 to verify that the B.F. Shaw QA program and implementing procedures for ASME Code Class 3 piping were effective. The SNS audit resulted in 7 observations and concluded that B.F. Shaw was effectively implementing its nuclear QA program specific to procurement activities. The NRC inspection team review identified no issues of significance in this area.

Mactec

The NRC inspection team reviewed the SNS audits of Mactec conducted in 2009, 2010, and 2011. SNS conducted qualification Audit V2009-13 in December 2009 to evaluate the adequacy and implementation of Mactec's QA program. The SNS audit resulted in 10 observations and concluded that Mactec was effectively implementing its QA program, which resulted in Mactec being placed on the SNS QRL.

SNS conducted limited-scope Audit V2010-10 in May 2010 to evaluate the adequacy and implementation of selected portions of the Mactec QA program. The SNS audit resulted in 2 observations. Mactec responded to these audit observations in a timely fashion and they were subsequently closed by SNS.

SNS conducted Audit V2010-19 in October 2010 to evaluate Mactec's nondestructive evaluation (NDE) program in Charlotte and Greensboro, NC. The SNS audit resulted in 10 observations, with 3 of the observations being characterized as potential SCAQ. Mactec responded to these audit observations in a timely fashion and they were subsequently closed by SNS.

SNS conducted an Audit V2011-07 in April 2011 to verify the implementation of Mactec's QA program for concrete testing services at its Charlotte, NC, facilities in support of Westinghouse design specification APP-CC01-Z0-027 and the V.C. Summer project. The SNS audit resulted in 2 observations. Mactec responded to these audit observations in a timely fashion and they were subsequently closed by SNS.

SNS conducted audit Audit V2011-01 in May 2011 at the Mactec Charlotte, NC, offices to verify implementation of the quality and technical requirements related to the soil

samples and associated testing supporting the V.C. Summer site. The SNS audit resulted in no observations.

For all of the Mactec audits and supporting documentation, the NRC inspection team reviewed the Mactec responses to the SNS audit observations, as well as SNS's evaluation of those responses, to verify that the appropriate requirements and procedures were being implemented. The NRC inspection team review identified no issues of significance in this area.

William Lettis & Associates

The NRC inspection team reviewed the SNS audits of William Lettis & Associates conducted in 2009 and 2010. SNS conducted Audit V2009-07 in September 2009 to evaluate the adequacy and implementation of William Lettis & Associates' QA program specific to procurement activities. The SNS audit indicated that William Lettis & Associates was effectively implementing its QA program in regard to procurement activities and resulted in William Lettis & Associates being placed on the SNS QRL. SNS conducted Audit V2010-15 in August 2010 to verify that the quality and technical requirements of the William Lettis & Associates geologic mapping services were being effectively implemented. The SNS audit resulted in 2 observations. The NRC inspection team reviewed the William Lettis & Associates responses to the SNS audit observations, as well as SNS's evaluation of those responses, to verify that the appropriate requirements and procedures were being implemented. The NRC inspection team review identified no issues of significance in this area.

Gerdau Ameristeel

The NRC inspection team reviewed the SNS audits of the Gerdau Ameristeel fabrication shop in Charlotte, NC, conducted in 2010 and 2011. SNS completed an audit of the Gerdau Ameristeel fabrication shop in Duluth, GA, in July 2011; however, the audit report was not complete at the time of the NRC inspection.

SNS conducted Audit V2010-07 in May 2010, which resulted in 2 observations and Audit V2011-06 in April 2011, which resulted in 19 observations. The NRC inspection team noted that there was no objective evidence that Gerdau Ameristeel's Part 21 program was evaluated during the 2010 SNS audit. The NRC inspection team also observed that the original 2011 SNS audit report for Gerdau Ameristeel, which concluded that Gerdau Ameristeel was not effectively implementing its QA program, was changed by SNS corporate to indicate that Gerdau Ameristeel had an effective QA program. The change in terminology from Revision 0 to Revision 1 of the SNS V2011-06 audit report, which were issued within two days of each other, documents the significance of the 19 audit observations and their effect on the overall performance of the supplier.

SNS initiated CAR 2011-0057 on May 6, 2011, to document the issue of only identifying that the supplier is not effectively following their QA program, without providing additional detail or observations. CAR 2011-0057 stated that this would give the reader of the audit report the impression that nothing is being implemented correctly and that a stop work order should be issued. The NRC inspection team noted that SNS was evaluating the proper corrective actions for CAR 2011-0057, such as providing additional guidance

to lead auditors for procedures related to reporting the overall effectiveness of the supplier's QA program implementation.

As noted previously, there are three different QA manuals for Gerdau Ameristeel (i.e., corporate (CQAM), fabricated products (FQAM), and mill group (MQAM)) that were reviewed and approved by SNS and listed on the SNS QRL. During both audits of the Charlotte fabrication shop, SNS audited the implementation of the Gerdau Ameristeel CQAM and FQAM. The NRC inspection team observed that an implementation audit of the Gerdau Ameristeel MQAM had not been conducted at the Charlotte steel mill where billet production and storage had occurred consistent with PO 132175-J400A-00 and PO 132177-J400-00. The NRC inspection team noted that Section 7 of the SWSQAP 1-74A requires that a supplier evaluation shall be documented and shall include the supplier's technical and quality capability as determined by a direct evaluation via survey/audit of the facilities, personnel, and the implementation of the supplier's quality assurance program.

In addition, Section 10 of PO 132175-J400A-00 and PO 132177-J400-00 states that Shaw "shall perform a post-award (implementation) audit of Gerdau Ameristeel's quality assurance program(s) and facilities." During discussions between the NRC inspection team and SNS management it was stated that SNS was taking credit for internal audits conducted by the Gerdau Ameristeel Charlotte fabrication shop of the Charlotte steel mill. The NRC inspection team observed objective evidence in Audit V2010-07 and Audit V2011-06 that alludes to the reliance of SNS on the Gerdau Ameristeel fabrication shop to audit the steel mills which are owned by the same company. SNS also provided a copy of surveillance report S-CH-AP100-V-2011-001, which documents the verification of SNS owned material traceability from Gerdau Ameristeel inventory through finished product at the Charlotte steel mill, consistent with Article 8 of the MQAM.

Based on its review, the NRC inspection team concluded that the SNS surveillance was not comparable to an implementation audit of the Gerdau Ameristeel Charlotte steel mill, and would therefore be inconsistent with the requirements of SNS QAD 18.12. In addition, SNS Audit V2010-07 and Audit V2011-06 both recommend that an audit of the steel mill be performed. The NRC inspection team determined that SNS's failure to conduct an implementation audit at the Gerdau Ameristeel Charlotte steel mill is inconsistent with the SWSQAP 1-74A, as well as PO 132175-J400A-00 and PO 132177-J400-00, and is identified as Nonconformance 99901387/2011-202-01.

CN 9 to PO 132177-J400-00 released Gerdau Ameristeel to procure rebar mechanical couplers on behalf of SNS. The NRC inspection team reviewed the SNS audits of Gerdau Ameristeel to verify that SNS performed adequate oversight of procurement activities conducted on behalf of SNS. The NRC inspection team noted that SNS Audit V2010-07 and Audit V2011-06 determined that Gerdau Ameristeel was effectively implementing their procurement document control process even though the Gerdau Ameristeel Charlotte fabrication shop had not undertaken any safety-related procurements. In addition, the NRC inspection team observed that SNS Audit V2011-06 did not provide objective evidence to support the satisfactory result documented in Section 4 and Table C of the audit report.

During the same period as the inspection at SNS, the NRC conducted an inspection at the Gerdau Ameristeel Charlotte fabrication shop. The NRC inspection team at Gerdau Ameristeel identified that Gerdau Ameristeel did not have a procedure for the creation of

procurement documents. Specifically, the NRC inspection team at Gerdau Ameristeel identified that the procurement document issued to Erico Products for mechanical couplers failed to specify the applicable inspection and testing records needed for subsequent review by Gerdau Ameristeel. The NRC inspection team at SNS observed that SNS Audit V2011-06 documents that Gerdau Ameristeel was “actively initiating a quotation to Shaw for rebar mechanical couplers that will eventually be purchased from Erico Products for nuclear applications.” Based on the above, the NRC inspection team determined that SNS failed to provide adequate oversight of Gerdau Ameristeel’s procurement process to ensure that other requirements, such as the provisions for inspection and test records, which are necessary to assure adequate quality, were suitably included or referenced in the procurement documents for mechanical couplers. This issue is identified as Nonconformance 99901387/2011-202-02.

Shaw SSS Fabricators, Inc. (SSS)

The NRC inspection team reviewed the SNS audits of SSS conducted in 2010 and 2011. SNS conducted Audit V2010-08 in May 2010 to evaluate the adequacy and implementation of SSS’s safety-related and non safety-related QA programs for the fabrication of structural steel items for domestic nuclear power plant applications. The SNS audit resulted in 18 observations and concluded that SSS was not effectively implementing its QA program for either safety-related or non safety-related activities. As a result of the SNS audit, SSS decided to develop and implement a new QA program.

SNS conducted limited-scope Audit V2010-16 in August 2010 to evaluate SSS’s revised QA program for compliance with the applicable requirements of Appendix B to 10 CFR Part 50 and ASME NQA-1-1994, “Quality Assurance Requirements for Nuclear Facility Applications,” as well as to assess QA program implementation relative to the procurement prebuy process for structural steel to be provided to SNS for work associated with V.C. Summer Units 2 and 3 and Vogtle Units 3 and 4. The NRC inspection team observed that the SSS QA manual verified during Audit V2010-16 was Revision 0, dated August 16, 2010. The SNS QRL listed Revision 0 as the approved SSS QA manual and restricts QA Category I work to procurement only. The QRL also stated that a full qualification audit will need to be conducted prior to extending this qualification or removing the restriction.

The NRC inspection team observed that SNS attempted an additional audit of SSS during the week of May 16, 2011, which was halted after 1 day. The NRC inspection team noted that the SSS QA manual presented to the SNS audit team was Revision 2. However, the nuclear QA procedures in use at SSS at the time of the SNS audit were still written to implement Revision 0 of the SSS QA manual (i.e., the implementing procedures did not match the SSS QA manual, Revision 2). The NRC inspection team reviewed the available documentation associated with the SNS audit of SSS, which was still open at the time of the NRC inspection. SNS initiated CAR 2011-0266, dated August 4, 2011, to document the attempted audit and to restrict SSS on the SNS QRL to QA Category II and III work only (i.e., non safety-related activities).

The NRC inspection team review identified no issues of significance in this area.

b.4 Qualification of Shaw Nuclear Auditors

Section 2 of the SWSQAP 1-74A requires that personnel performing quality assurance and quality control functions be qualified, certified, and recertified as required by applicable codes and standards. SNS QAD 2.13 establishes the requirements for the qualification and certification of lead auditors. The NRC inspection team reviewed a sample of five lead auditor qualification records and six auditor qualification records and confirmed that auditing personnel had completed all required training and maintained qualification and certification in accordance with the applicable SNS policies and procedures. No issues of significance were identified.

c. Conclusions

The NRC inspection team identified Nonconformance 99901387/2011-202-01 for SNS's failure to audit the Gerdau Ameristeel Charlotte Steel Mill in order to verify the implementation of the Mill Group Quality Assurance Manual as required by Purchase Orders 132175-J400A-00 and 132177-J400-00. In addition, the NRC inspection team identified Nonconformance 99901387/2011-202-02 for SNS's failure to provide adequate oversight of Gerdau Ameristeel's procurement process to ensure that applicable requirements necessary to assure adequate quality, such as the provisions for inspection and test records, were suitably included or referenced in procurement documents for mechanical couplers.

2. Entrance and Exit Meetings

On August 1, 2011, the NRC inspection team discussed the scope of the inspection with Mr. Robert Otis, SNS Quality Assurance Manager, and other members of the SNS management and staff. On August 4, 2011, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Robert Otis and other SNS staff. Attachment A to this report lists the entrance and exit meeting attendees, as well as those individuals interviewed by the NRC inspection team.

ATTACHMENT A

1. ENTRANCE / EXIT MEETING ATTENDEES

Name	Title	Affiliation	Entrance	Exit	Interviewed
Kerri Kavanagh	Inspection Team Leader	NRC/NRO/DCIP	X	X	
Marlayna Vaaler	Inspector	NRC/NRO/DCIP	X	X	
Shavon Edmonds	Inspector	NRC/NRO/DCIP	X	X	
Bill Curtis	Audits Manager	Shaw Nuclear			X
Bill Fox	V.C. Summer Project Director	Shaw Nuclear		X*	
Curt Castell	Lead Licensing Engineer	Shaw Power	X	X	
David Jantosik	Director, Quality Operations Management	Shaw Power	X	X	X
Dennis Dreyfus	Vice President, Quality Assurance	Shaw Nuclear	X	X*	X
Geoffrey Grant	Vice President, Licensing and Regulatory Affairs	Shaw Power	X	X	X
John Oddo	Licensing Manager	Shaw Nuclear		X*	
Kerry David	Chief Comp Officer	Shaw Nuclear		X*	
Mark McKain	Vice President and General Counsel	Shaw Power		X*	
Matthew Maradeo	Lead Auditor	Shaw Nuclear			X
Mike Huss	Lead Auditor	Shaw Nuclear			X
Richard Fay	Director, Quality Assurance Operations	Shaw Power		X	
Robert Otis	Quality Assurance Manager	Shaw Nuclear	X	X	X
Virgil Barton	Senior Vice President, Quality	Shaw Power		X	

* by conference call

2. INSPECTION PROCEDURES USED

IP 43003, "Reactive Inspections of Nuclear Vendors"

IP 43002, "Routine Inspections of Nuclear Vendors"

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

The NRC conducted its previous limited-scope inspection of the Shaw Nuclear Services facility in Charlotte, NC, in June 2011. The inspection report for the June 2011 limited-scope inspection was not issued at the time of this NRC inspection.

The following issues were identified during this inspection:

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
99901387/2011-202-01	Open	NON	Criterion VII
99901387/2011-202-02	Open	NON	Criterion VII and Criterion IV

ATTACHMENT B

LIST OF DOCUMENTS REVIEWED:

Policy and Procedure Related Documents

- Shaw Standard Nuclear Quality Assurance Program (SWSQAP 1-74A) Revision B, June 1, 2009
- Shaw Nuclear Quality Rating List, as of July 29, 2011
- Nuclear Quality Assurance Directive (QAD) 2.13, "Qualification and Certification of Personnel Performing Quality Assurance Audits," Revision F, September 21, 2006
- Shaw Nuclear QAD 7.1, "Inspection Report System for Procurement Quality Assurance Source Inspection," Revision A, December 22, 2010
- Shaw Nuclear QAD 7.3, "Procurement Quality Assurance Supplier Oversight Program," Revision O, February 8, 2010
- Shaw Nuclear QAD 7.8, "Supplier's Documentation Review," Revision F, May 19, 2011
- Shaw Nuclear QAD 7.14, "Receiving Inspection," Revision B, April 28, 2010
- Shaw Nuclear QAD 7.17, "Supplier and Contractor QA Program Manual Reviews and Qualification Audits," Revision L, October 4, 2010
- Shaw Nuclear QAD 7.19, "Shaw Nuclear Use of Nuclear Industry Assessment Committee (NIAC) Member Audits," Revision O, November 5, 2007
- Shaw Nuclear QAD 7.20, "Shaw Nuclear Responsibilities When Performing Audits as a Member of NIAC," Revision O, November 5, 2007
- Shaw Nuclear QAD 7.21, "Shaw Nuclear Use of Third Party Audits," Revision O, August 24, 2010
- Shaw Nuclear QAD 10.68, "Inspection Planning," Revision O, January 25, 2010
- Shaw Stone and Webster Nuclear Services Nuclear QAD 18.2, "Quality Audit Plans," Revision H, March 1, 2005
- Shaw Nuclear QAD 18.11, "Post Award QA Audits of Suppliers and Site Contractors," Revision T, September 29, 2010
- Shaw Nuclear QAD 18.11, "Post Award QA Audits of Sellers and Site Contractors," Revision S, April 27, 2010
- Shaw Nuclear QAD 18.11, "Post Award QA Audits of Sellers and Site Contractors," Revision R, August 14, 2009
- Shaw Nuclear QAD 18.12, "Quality Assurance Surveillances," Revision C, October 25, 2010
- Shaw Nuclear Quality Standard 4.1, "Site Procurement and Subcontracts," Revision D, July 14, 2000
- Shaw Nuclear Quality Standard 7.1, "Receiving Process" Revision F, June 30, 2009
- Stone and Webster Nuclear Quality Standard 7.10, "Control of Purchased Material, Equipment, and Offsite Services for Safety Related Applications," Revision E, July 14, 2000
- Shaw Nuclear Quality Standard 10.67, "Inspection Planning System," Revision O, March 1, 2010
- Shaw Nuclear Quality Standard 10.67, "Quality Audit Program," Revision K, April 18, 2011
- Nuclear Worldwide Procurement Procedure, WPP 9.0, "Nuclear Procurement," Revision 2, June 10, 2009

- Engineering & Design Coordination Report (E&DCR) SV3-CR01-GEF-000006, "NI Basemat Rebar Shop Drawings," Revision 0, March 31, 2011
- Nuclear Quality Standard (QS) 4.3, "Office Procurement and Subcontracting and Selection of Suppliers," Revision H, August 13, 2010
- Bidder Quality Assurance Manual Questionnaire QA Category I, "Gerdau Ameristeel," October 22, 2009
- Memorandum to Vendor File, "Review of Gerdau Ameristeel Fabricated Products Group Quality Assurance Manual Revision 16 dated October 18, 2010," December 7, 2010
- Memorandum to Vendor File, "Review of Gerdau Ameristeel Corporate Quality Assurance Manual Revision 25 dated June 4, 2010," March 3, 2011
- Memorandum to Vendor File, "Review of Gerdau Ameristeel Steel Mill Group Quality Assurance Manual Revision 25 dated June 4, 2010," March 3, 2011
- Memorandum to Vendor File, "Review of Gerdau Corporate Quality Assurance Manual, Revision 26, dated 7/15/11," July 15, 2011
- Memorandum to Vendor File, "Review of Gerdau Quality Assurance Manual – Fabricated Products Group, Revision 17, dated 7/15/11," July 15, 2011
- Memorandum to Vendor File, "Review of Gerdau Quality Assurance Manual – Steel Mill Group, Revision 26, dated 7/15/11," July 15, 2011

Audit Reports and Related Documentation

- Letter to Exelon PowerLabs: Shaw Nuclear Services Quality Assurance Audit of Exelon PowerLabs, Audit No. V2010-23, dated November 2, 2010
- Audit Plan No. V2010-23 and Completed Checklist – Audit of Exelon PowerLabs, dated December 10, 2010
- Letter to Exelon PowerLabs: Shaw Nuclear Services Quality Assurance Audit of Exelon PowerLabs, Audit No. V2010-23, dated December 13, 2010
- Letters to National Technical Systems: Shaw Nuclear Services, Inc. Quality Assurance Audit of National Technical Systems, Acton, MA, dated September 22, 2010 and September 30, 2010
- Letter to National Technical Systems: Shaw Nuclear Services, Inc., Quality Assurance Audit of NTS, Acton, MA, Audit No. V2010-21, dated November 9, 2010
- Shaw Nuclear Services Quality Assurance Audit Observation Response Evaluations for the National Technical Systems Quality Assurance Audit
- Letter to National Technical Systems: Shaw Nuclear Services Quality Assurance Audit of National Technical Systems (NTS), Audit No. V2011-08, dated March 29, 2011
- Audit Plan No. V2011-08 and Completed Checklist – Audit of National Technical Systems, dated April 29, 2011
- Letter to National Technical Systems: Shaw Nuclear Services, Inc., Quality Assurance Audit of National Technical Systems (NTS), Audit No. V2011-08, dated April 29, 2011
- Letter to Outokumpu Stainless: Supplier Qualification of Outokumpu Stainless, Degerfors, Sweden, Audit V2009-01, dated April 6, 2009
- Letter to Outokumpu Stainless: Audit V2009-01, Shaw Nuclear Services Quality Assurance Supplier Audit of Outokumpu, Degerfors Sweden April 14-17, 2009, dated May 1, 2009
- Audit Plan No. V2009-01 and Completed Checklist – Audit of Outokumpu - Degerfors Sweden, dated April 30, 2009
- Letter to Outokumpu Stainless: Supplier Qualification of Outokumpu Stainless Inc., New Castle, Indiana, Audit V2009-03, dated May 5, 2009

- Letter to Outokumpu Stainless: Shaw Nuclear Services, Inc. Audit of Outokumpu Stainless, Inc., New Castle, Indiana, Audit V2009-03, dated June 23, 2009
- Audit Plan No. V2009-03 and Completed Checklist – Audit of Outokumpu Stainless Inc. - New Castle, Indiana, dated June 30, 2009
- Letter to Shaw Modular Solutions: Audit No. V2009-02 – Supplier Qualification Audit SMS Modular Solutions LLC, Lake Charles, Louisiana, dated May 4, 2009
- Audit Plan No. V2009-02 and Completed Checklist – Audit of Shaw Modular Solutions LLC, dated June 2, 2009
- Letter to Shaw Modular Solutions: Audit No. V2009-02, Shaw Nuclear Services Audit of Shaw Modular Solutions (SMS), LLC May 12-14, 2009, dated May 21, 2009
- Letter to Shaw Nuclear Services: Shaw Modular Solutions, LLC response to Shaw Nuclear Services audit V2009-02, dated June 2, 2009
- Shaw Stone and Webster, Inc. Quality Assurance Observation Response Evaluations for the Shaw Modular Solutions Quality Assurance Audit
- Letters to Shaw Modular Solutions: Shaw Nuclear Services, Inc. Audit No. V2009-09 – Audit of Shaw Modular Solutions (SMS), LLC, Lake Charles, Louisiana, dated October 15, 2009 and November 2, 2009
- Audit Plan No. V2009-09 and Completed Checklist – Audit of Shaw Modular Solutions LLC, dated December 16, 2009
- Letter to Shaw Modular Solutions: Audit No. V2009-09 – Shaw Nuclear Services (SNS) Audit of Shaw Modular Solutions (SMS), LLC, December 1-3, 2009, dated December 16, 2009
- Letter to Shaw Nuclear Services: Shaw Modular Solutions (SMS) Responses to Shaw Nuclear Services (SNS) Observations from Audit V2009-09, dated December 24, 2009
- Letter to Shaw Modular Solutions: Shaw Nuclear Services, Inc.: Pre-audit Visit – January 25-27, 2010, dated January 18, 2010
- Letter to Shaw Modular Solutions: Shaw Nuclear Services, Inc. Audit No. V2009-09 – Audit of Shaw Modular Solutions (SMS), LLC Has Been Closed, dated November 8, 2010
- Letter to Shaw Modular Solutions: Shaw Nuclear Services, Inc. Audit of Shaw Modular Solutions. LLC – Audit No. V2010-02 – February 8-12, 2010, dated February 2, 2010
- Audit Plan No. V2010-02 and Completed Checklist – Audit of Shaw Modular Solutions, LLC, dated March 17, 2010
- Letter to Shaw Modular Solutions: Shaw Nuclear Services (SNS) Audit No. V2010-02 – Audit of Shaw Modular Solutions (SMS), LLC, February 8-March 11, 2010, dated March 18, 2010
- Shaw Nuclear Services Quality Assurance Audit Observation Response Evaluations for the Shaw Modular Solutions Quality Assurance Audit
- Letter to Shaw Modular Solutions: Shaw Nuclear Services, Inc. Audit of Shaw Modular Solutions, LLC – Audit No. V2011-03 – March 7-11, 2011, dated February 16, 2011
- Audit Plan No. V2011-03 and Completed Checklist – Audit of Shaw Modular Solutions, LLC, dated April 6, 2011
- Letter to Shaw Modular Solutions: Shaw Nuclear Services, Inc. Audit of Shaw Modular Solutions, LLC – Audit No. V2011-03 – March 7-10, 2011, dated April 8, 2011
- Shaw Nuclear Surveillance S-CH-AP1000-2010-008 on Job Number 1321750001 and 1321770001
- Shaw Nuclear Surveillance S-CH-AP1000-2010-009 on Job Number 1321750001 and 1321770001

- Commercial Grade Survey Report CGS-11-002 – Survey Number CGS-11-002 – Metals USA – Waggaman, LA, dated April 26-27, 2011
- Audit No. V2010-07, “Audit of Gerdau Ameristeel,” dated July 6, 2010
- Audit No. V2010-08, “Shaw Nuclear Services, Inc. Audit of Shaw SSS Fabricators, Inc., Addis, LA,” dated June 3, 2010
- Audit No. V2010-16, “Limited Scope Audit Report – Audit No. V2010-16 – Shaw Nuclear Services Quality Assurance Audit of Shaw SSS Fabricators, Inc.,” dated August 30, 2010
- Audit No. V2011-01, “Audit of Mactec,” May 4, 2011
- Audit No. V2009-13, “Audit of Mactec,” December 28, 2009, and January 5, 2010
- Audit No. V2010-10, “Audit of Mactec,” May 4-5, 2011
- Audit No. V2010-19, “Audit of Mactec,” October 18, 2010
- Audit No. V2011-07, “Audit of Mactec,” April 5-7, 2011
- Audit No. V2011-15, “Audit of BF Shaw,” June 13-17, 2011
- Audit No. V2010-12, “Audit of BF Shaw,” June 21, 2010
- Audit No. V2009-07, “Audit of William & Lettis,” September 1, 2009
- Audit No. V2010-15, “Audit of William & Lettis,” August 9-11, 2010

Purchase Orders and Associated Design Specifications

- Purchase Order (PO) 132175-J400A-00, Gerdau Ameristeel US, Inc., dated December 24, 2009
- Westinghouse Design Specification APP-CR01-Z0-001, “Furnishing of Safety Related Reinforcing Steel,” Revision 2, dated December 21, 2009
- PO 132175-J400A-00, Revision 1, dated February 26, 2010
- PO 132175-J400A-00, Revision 2, dated March 25, 2010
- PO 132175-J400A-00, Revision 3, dated July 29, 2010
- PO 132175-J400A-00, Revision 4, dated March 31, 2011
- PO 132175-J400A-00, Revision 5, dated March 31, 2011
- PO 132175-J400A-00, Revision 6, dated April 1, 2011
- PO 132175-J400A-00, Revision 7, dated April 15, 2011
- PO 132175-J400A-00, Revision 8, dated April 21, 2011
- PO 132175-J400A-00, Revision 9, dated April 28, 2011
- PO 132175-J400A-00, Revision 10, dated May 11, 2011
- PO 132175-J400A-00, Revision 11, dated May 27, 2011
- PO 132175-J400A-00, Revision 12, dated June 6, 2011
- PO 132175-J400A-00, Revision 13, dated June 9, 2011
- E&DCR SV0-CR01-GEF-000007, “NI Basemat Layer 2 Rebar Lengths,” Revision 0, dated June 2, 2011
- PO 132175-J400A-00, Revision 14, dated June 20, 2011
- PO 132175-J400A-00, Revision 15, dated July 5, 2011
- PO 132175-J400A-00, Revision 16, dated July 5, 2011
- PO 695750-000, Lincoln Electric Company, May 25, 2011
- Shaw Nuclear Weld Filler Material Specification, TR-5.9-309L, “ER309L Stainless Steel Bare Wire/Rods or Electrodes,” Revision 0, dated November 22, 2010
- PO 711798-000, Lincoln Electric Company, dated July 25, 2011
- Shaw Nuclear Weld Filler Material Specification, TR-5.9-2209, “ER2209 Duplex Stainless Steel Bare Wire/Rods or Electrodes,” Revision 3, dated May 12, 2011
- PO 132178-J400.00, Gerdau Ameristeel US Inc., dated May 25, 2011

- PO 132178-J400.00, Revision 1, dated July 13, 2011
- PO 132177-J400-00, Gerdau Ameristeel US Inc., dated December 24, 2009
- PO 132177-J400-00, Revision 1, dated March 25, 2010
- PO 132177-J400-00, Revision 2, dated June 8, 2010
- PO 132177-J400-00, Revision 3, dated December 9, 2010
- PO 132177-J400-00, Revision 4, dated March 28, 2011
- PO 132177-J400-00, Revision 5, dated April 7, 2011
- PO 132177-J400-00, Revision 6, dated April 8, 2011
- PO 132177-J400-00, Revision 7, dated April 21, 2011
- E&DCR VS2-Cr01-GEF-000004, "Safety Related Rebar Criteria," Revision 0, dated April 7, 2011.
- PO 132177-J400-00, Revision 8, dated May 11, 2011
- PO 132177-J400-00, Revision 10, dated June 17, 2011
- PO 132177-J400-00, Revision 11, dated June 29, 2011
- PO 132177-J400-00, Revision 12, dated July 5, 2011
- Training Records for M. Goyda, R. Stevenson, P. Edwards, D. Lanham, D. McCorkle, D. Capouellez, M. Huss, T. Dukes, M. Maradeo, R. Avrich, and F. Cello.
- Purchase Order 677650OP, dated March 21, 2011
- Noncompetitive Procurement Justification – Scope of Work for Off-Site M&TE Calibration Services, dated March 21, 2011
- Purchase Order 132177-E-C-00002 679043, Revision 0 – Engineering Scope of Work for Nuclear Island Waterproof Membrane Testing (VC Summer Units 2 and 3), dated March 23, 2011
- Engineering Services Scope of Work for Nuclear Island Waterproofing Membrane Testing, dated February 23, 2011
- Domestic AP1000 Project Specification VSG-AT01-Z0-001 – Nuclear Island Waterproofing Membrane, Revision 2, dated May 26, 2010
- Project Technical Report VSG-AT01-A0R-001 – Analysis of Critical Characteristics for VC Summer Units 2 and 3 Waterproof Membrane Material, Revision 0, dated September 23, 2010
- Purchase Order 132175-J800.09, Revision 0 – Nuclear Island Waterproofing Membrane Testing (Vogtle Unit 3 and Site), dated August 4, 2010
- Purchase Order 132175-J800.09, Revision 1 – Nuclear Island Waterproofing Membrane Testing (Vogtle Unit 3 and Site), dated November 9, 2010
- Purchase Order 132175-J800.09, Revision 2 – Nuclear Island Waterproofing Membrane Testing (Vogtle Unit 3 and Site), dated December 2, 2010
- Purchase Order 132175-J800.09, Revision 3 – Nuclear Island Waterproofing Membrane Testing (Vogtle Unit 3 and Site), dated December 2, 2010
- Purchase Order 132175-J800.09, Revision 4 – Nuclear Island Waterproofing Membrane Testing (Vogtle Unit 3 and Site), dated January 11, 2011
- Purchase Order 132175-J800.09, Revision 5 – Nuclear Island Waterproofing Membrane Testing (Vogtle Unit 3 and Site), dated February 4, 2011
- Purchase Order 132175-J800.09, Revision 6 – Nuclear Island Waterproofing Membrane Testing (Vogtle Unit 3 and Site), dated February 10, 2011
- Purchase Order 132175-J800.09, Revision 7 – Nuclear Island Waterproofing Membrane Testing (Vogtle Unit 3 and Site), dated March 16, 2011
- Purchase Order 132175-J800.09, Revision 8 – Nuclear Island Waterproofing Membrane Testing (Vogtle Unit 3 and Site), dated May 5, 2011

- Engineering Services Scope of Work for Nuclear Island Waterproofing Membrane Testing, dated April 5, 2011
- APP-PL02-ZO-001 – Piping Class Sheets and Standard Details, Revision 6, dated March 31, 2011
- Design Specification APP-PY30-ZO-001 – Single Stage Orifice Plates, Revision 3, dated September 28, 2010
- Design Specification APP-PY25-ZO-001 – Single Stage, ASME Boiler and Pressure Vessel Code, Section III, Class 1, 2, and 3 Orifices, Revision 3, dated August 27, 2010
- APP-PY10-ZO-001 – Functional Requirements for Inline Piping Component Gaskets, Revision 0, dated March 12, 2010
- Design Specification APP-G1-PX-003 – Protective Coatings for Piping, Revision 3, dated April 8, 2011
- APP-GW-GEX-003 – Module Equipment Listing, Revision 2, dated June 14, 2011
- APP-CR01-ZO-010 – Specification for Supply and Installation of Mechanical Splices for Reinforcing Steel, Revision 6, dated April 19, 2011
- Design Specification APP-CR01-ZO-011 – Furnishing of Safety Related Reinforcing Steel, Revision 2, dated December 21, 2009
- Design Specification APP-GI-MX-001 – AP1000 Painting of OEM Mechanical Components, Revision 4, dated April 8, 2011
- APP-GW-VH-002 – AP1000 Packing and Packaging Components and Spare Parts for Shipment, Revision 1, dated February 24, 2009
- Design Specification APP-PO02-ZO-102 – AP1000 Class 2, 3 Piping and B31.1 Extensions Design Specification, Revision 1, dated August 25, 2010
- Design Specification APP-GI-AX-001 – Field Coating and Lining for Concrete and Metal Surfaces, Revision 3, dated April 8, 2011
- Design Specification APP-GI-SX-001 – AP1000 Painting of Shop Fabricated Steel, Revision 4, dated April 8, 2011
- Design Specification APP-GI-PX-003 – Protective Coatings for Piping, Revision 3, dated April 8, 2011
- Design Specification APP-GW-XO-604 – Application of Protective Coatings to Systems, Structures, and Components for the AP1000 Reactor Plant, Revision 4, dated August 1, 2010
- APP-GW-ZO-200 – Material Specification for ASTM B861 Titanium Pipe Grade 2, Revision 0, dated May 11, 2009
- Design Specification APP-SS01-ZO-001 – Shop Fabrication of Structural Steel, Revision 2, dated February 25, 2011
- APP-GW-VLR-002 – Technical Requirements of Stainless Steels, Nickel-Base Alloys, Carbon and Low Alloy Steels, and Welding Materials for the AP1000, Revision 1, dated February 27, 2009
- APP-PH03-ZO-002 – AP1000 ASME B31.1 Pipe Supports/Tubing Supports Fabrication and Installation Specification, Revision 2, dated December 13, 2010
- APP-GW-ZO-602 – AP1000 Cleaning and Cleanliness Requirements of Equipment for Use in Nuclear Supply and Associated Systems, Revision 2, dated September 16, 2010
- APP-VW20-ZO-023 – Welding Specification for ASTM A240 UNS S32101 Duplex Stainless Steel Plate, Revision 3, dated February 11, 2011
- APP-VW10-ZO-001 – Structural Module Shear Stud Welding Specification, Revision 2, dated April 20, 2011
- APP-VL52-ZO-040 – Material Specification for ASTM B265 Grade 2, Titanium Plate, Revision 0, dated April 11, 2009

- APP-VL52-ZO-023 – Material Specification for ASTM A240 UNS S32101 Duplex Stainless Steel Plate, Revision 1, dated April 16, 2008
- Design Specification APP-SS01-ZO-003 – Embedded and Miscellaneous Steel, Westinghouse Safety Class C, Revision 3, dated March 3, 2011
- APP-GW-ZO-620 – AP1000 Requirements for Marking of Reactor Plant Components and Piping, Revision 1, dated February 24, 2009
- APP-GW-ZO-610 – Supplementary Manufacturing Information, Revision 0, dated September 26, 2006
- APP-GW-ZO-607 – Determination of Surface Chloride and Fluoride Contamination of Stainless Steel Materials, Revision 0, dated August 4, 2006
- APP-GW-ZO-606 – Requirements for Pressure Sensitive Tapes for use on Unheated Austenitic Stainless Steel Reactor Components and Systems, Revision 1, dated August 24, 2010
- Design Specification APP-PH02-ZO-001 – AP1000 ASME Section III Class 1, 2, and 3 and Seismic Category II Pipe Supports/Tubing Supports, Revision 0, dated March 18, 2011
- Release Purchase Order 527358, dated August 28, 2009 – Vogtle Unit 3 Project – CA01, CA02, CA03, CA04, CA05, and CA20 Modules – Fabrication and Assembly
- Release Purchase Order 527359, dated August 28, 2009 – Vogtle Unit 4 Project – CA01, CA02, CA03, CA04, CA05, and CA20 Modules – Fabrication and Assembly
- Release Purchase Order 527363, dated August 28, 2009 – VC Summer Unit 2 Project – CA01, CA02, CA03, CA04, CA05, and CA20 Modules – Fabrication and Assembly
- Release Purchase Order 527365, dated August 28, 2009 – VC Summer Unit 3 Project – CA01, CA02, CA03, CA04, CA05, and CA20 Modules – Fabrication and Assembly
- Change Order No. 1-80 for PO No. 527358, dated November 24, 2009 – Vogtle Unit 3 Project
- Change Order No. 1-80 for PO No. 527359, dated November 24, 2009 – Vogtle Unit 4 Project
- Change Order No. 1-80 for PO No. 527363, dated November 24, 2009 – VC Summer Unit 2 Project
- Change Order No. 1-80 for PO No. 527365, dated November 24, 2009 – VC Summer Unit 3 Project
- Purchase Order Number 132175-D100.M034, Revision 0, dated March 9, 2011 – Vogtle EPC-Unit 3 and Site – CB Structural Modules
- Purchase Order Number 132175-D100.M034, Revision 1, dated June 22, 2011 – Vogtle EPC-Unit 3 and Site – CB Structural Modules
- Purchase Order Number 132175-D100.M034, Revision 2, dated July 21, 2011 – Vogtle EPC-Unit 3 and Site – CB Structural Modules
- Purchase Order Number 132176-D100.M034, Revision 0, dated March 9, 2011 – Vogtle EPC-Unit 4 – CB Structural Modules
- Purchase Order Number 132176-D100.M034, Revision 1, dated June 22, 2011 – Vogtle EPC-Unit 4 – CB Structural Modules
- Purchase Order Number 132176-D100.M034, Revision 2, dated July 21, 2011 – Vogtle EPC-Unit 4 – CB Structural Modules
- Purchase Order Number 132177-D100.M034, Revision 0, dated March 9, 2011 – VC Summer EPC Unit 2 – CB Structural Modules
- Purchase Order Number 132177-D100.M034, Revision 1, dated June 22, 2011 – VC Summer EPC Unit 2 – CB Structural Modules

- Purchase Order Number 132177-D100.M034, Revision 2, dated July 21, 2011 – VC Summer EPC Unit 2 – CB Structural Modules
- Purchase Order Number 132178-D100.M034, Revision 0, dated March 9, 2011 – VC Summer EPC Unit 3 – CB Structural Modules
- Purchase Order Number 132178-D100.M034, Revision 1, dated June 22, 2011 – VC Summer EPC Unit 3 – CB Structural Modules
- Purchase Order Number 132178-D100.M034, Revision 2, dated July 21, 2011 – VC Summer EPC Unit 3 – CB Structural Modules
- Mactec Subcontract 1321771104-1205, Revision 0, dated June 14, 2010
- Mactec Subcontract 1321751004-1421 and Change Orders 1 - 40, Revision 0, dated February 15, 2010
- William and Lettis PO1321771104-1166, Revision 0, dated September 29, 2009
- BF Shaw PO J132175-C601.02 Revision 0, dated September 3, 2010
- BF Shaw Change Order PO J132177-C601.02, Revision 0, dated September 3, 2010
- BF Shaw Change Order PO J132176-C601.02, Revision 0, dated September 3, 2010
- BF Shaw Change Order PO 132175-C601.04, Revision 0, dated September 29, 2010
- BF Shaw Change Order PO 132177-C601.04, Revision 0, dated September 29, 2010