

January 6, 2012

Mr. Joseph L. Ernst  
Executive Vice President  
Fabrication and Manufacturing Group  
Shaw Modular Solutions  
3191 W. Lincoln Road  
Lake Charles, LA 70605

SUBJECT: NRC INSPECTION REPORT NO. 99901401/2011-202 AND NOTICE OF  
NONCONFORMANCE

Dear Mr. Ernst:

On November 14, 2011, through November 18, 2011, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an inspection at Shaw Modular Solutions (SMS) facility in Lake Charles, LA. The purpose of this limited scope inspection was to assess SMS compliance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," and selected portions of Appendix B, "Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." This was a follow-up inspection to the inspection in January 2011 that was terminated early as described in the letter dated January 24, 2011 (ML110190676). The enclosed report presents the results of the November 2011 inspection. This inspection report does not constitute an NRC endorsement of your overall quality assurance or 10 CFR Part 21 programs.

During this inspection, the NRC inspection team found that the implementation of your quality assurance program failed to meet certain NRC requirements which were contractually imposed on you by your customers or NRC licensees. Specifically, the NRC inspection team determined that SMS was not fully implementing its quality assurance program in the areas of training, design control, procurement document control, control of special processes, control of measuring and test equipment, control of nonconforming items, and corrective actions consistent with regulatory and contractual requirements, and applicable implementing procedures. These nonconformances are cited in the enclosed Notice of Nonconformance (NON), and the enclosed inspection report describes in detail the circumstances surrounding them.

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.

It is important to note that the NRC inspection team performed a limited scope inspection. Even though the NRC inspection did not identify issues in all areas that were reviewed, the number of deficiencies identified is not indicative of a mature quality assurance program. In your response to the NON, SMS should document the results of the extent of condition and determine if there are any impacts on the sub-modules that had previously been shipped.

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 enclosure(s), and 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, accessible from the NRC Web site 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, 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 from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Sincerely,

**/RA/**

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

Docket No. 99901401

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901401/2011-202 and Attachment

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 enclosure(s), and 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, accessible from the NRC Web site 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.

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Sincerely,

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

Docket No. 99901401

Enclosures:

1. Notice of Nonconformance
2. Inspection Report No. 99901401/2011-202 and Attachment

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<b>DATE</b>	01/06/12	01/06/12	01/06/12

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## NOTICE OF NONCONFORMANCE

Shaw Modular Solutions  
3191 West Lincoln Road  
Lake Charles, LA 70605

Docket No. 99901401  
Report No. 2011-202

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Shaw Modular Solutions (SMS) facility in Lake Charles, LA, on November 14, 2011 through November 18, 2011, it appears that certain activities were not conducted in accordance with NRC requirements which were contractually imposed upon SMS by your customers or by NRC licensees:

- A. Criterion II, "Quality Assurance Program," 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 "The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety. The program shall take into account the need for special controls, processes, test equipment, tools, and skills to attain the required quality, and the need for verification of quality by inspection and test. The applicant shall regularly review the status and adequacy of the quality assurance program. Management of other organizations participating in the quality assurance program shall regularly review the status and adequacy of that part of the quality assurance program which they are executing."

Section 2.4.1 of the SMS Quality Assurance Manual (QAM), Revision 3, dated January 4, 2011, states, in part, that "The QAM is the top-tier program document at SMS, and defines the regulatory and industry standards to which SMS is committed. It serves as a high level description of the controls that will be established in procedures and implemented in order to ensure that the items and services produced by SMS are of the required quality."

Contrary to the above, as of November 18, 2011, SMS failed to provide control over activities affecting quality in the SMS QAM and failed to define the regulatory and industry standards to which SMS is committed in the QAM. Specifically, the QAM does not contain the following:

1. a description of the codes, procedures, regulations, standards, or other specific documents used to qualify personnel (e.g., audit personnel, inspectors, welders) performing activities affecting quality
2. the description of the alternative to use the accreditation provided by one of the domestic accrediting bodies instead of performing a commercial-grade survey
3. a comprehensive list of the specific special processes performed at SMS
4. a description of the process for the preparation, issuance, distribution, and implementation of shop travelers for manufacturing operations

5. the general welding process requirements and limitations; and
6. the controls for performing non-destructive examination (NDE) activities and for qualification and certification of NDE personnel

This issue has been identified as Nonconformance 99901401/2011-202-01.

- B. Criterion II of Appendix B to 10 CFR Part 50 states, in part, that “the program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained.”

Section 6.1.1 of the SMS Quality Procedure QP-G-02, “Training,” Revision 7, dated October 20, 2011, states, in part, that “SMS personnel who manage or perform activities affecting quality shall receive, prior to performing said activities Quality Assurance Indoctrination and specific training on the SMS procedures and requirements that they will be responsible for managing and/or implementing.”

Section 6.3.3 of QP-QA-01, “Qualification of Auditors,” Revision 5, dated September 29, 2011, states, in part, that “Lead Auditors who fail to maintain their proficiency for a period of two years or more shall require requalification. Requalification shall include re-training in accordance with Paragraph 6.2.2, participation as an Auditor in at least one nuclear QA audit, and reexamination in accordance with Step 6.2.4.” Section 6.1.7 states, in part, that “for non-Lead Auditor personnel, orientation/training shall be documented on the QA Auditor Training Record.”

Contrary to the above, as of November 18, 2011, SMS failed to provide indoctrination and training to personnel who (1) manage or implement activities affecting quality, and (2) adequately document the training of auditors and to appropriately requalify a lead auditor in accordance with SMS procedures. Specifically, SMS failed to: 1) provide indoctrination and training to the SMS Senior Vice President on SMS Procedure QP-G-15A, “10 CFR Part 21 and 10 CFR 50.55(e) Compliance,” Revision 3, dated January 4, 2011, and the Corrective Action Manager on QP-G-15, “Control of Nonconforming Items,” Revision 4, dated September 21, 2011; 2) re-qualify an employee as a lead auditor in 2009 consistent with all of the requirements for requalification as stated in QP-QA-01; and 3) document the training records for two auditors as required by QP-QA-01.

This issue has been identified as Nonconformance 99901401/2011-202-02.

- C. Criterion III, “Design 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...are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled.

Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design unless the applicant designates another responsible organization.”

Section 6.4.2.1 of QP-G-05a-00, "Detailed Drawings," Revision 0, dated January 11, 2011, states, in part, that "the Product Manager may red line detailed drawings in order to correct and/or incorporate design criteria. Product Manager shall confirm with the Detailer Manager that the red line change is in accordance with the approved design document prior to change."

Westinghouse Specification APP-GA-G1-001 states, in part, that "Temporary bracing must be color coded and identified as such to alert fabricators that removal is required after installation in the plant."

Contrary to the above, as of November 18, 2011, SMS failed to ensure that design changes were subject to the design control measures commensurate with those applied to the original design, SMS procedure QP-G-05a-00, and Westinghouse Specification APP-GA-G1-001. Specifically, the SMS Product Manager redlined detailed drawing APP-CA20-S5-02-000-0201, Revision 0, dated April 11, 2011, to add supports to module CA20-02; however, the Product Manager failed to confirm with the Detailer Manager that the redline changes were in accordance with the approved drawings prior to change. In addition, the redlined drawings did not in any way indicate that the subject angle iron supports were to be considered temporary.

This issue has been identified as Nonconformance 99901401/2011-202-03.

- D. 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, 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 purchased by the applicant or by its contractors or subcontractors."

Contrary to the above, as of November 18, 2011, SMS failed to include the applicable technical requirements in procurement documents which are necessary to assure that adequate quality is suitably included or referenced. Specifically, SMS included the alternative to use laboratories accredited by the National Voluntary Laboratory Accreditation Program, the American Association for Laboratory Accreditation, and other domestic accrediting bodies for commercial calibration services in safety-related purchase orders without requiring the dedication of the calibration service.

This issue has been identified as Nonconformance 99901401/2011-202-04.

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

Section 9 of the SMS QAM states, in part, that "special processes, including welding, shall be performed by qualified personnel using qualified written procedures in accordance with applicable industry codes." Step 6.2 of QP-PC-04, "Welder/Operator Qualification-AWS," Revision 6, dated October 19, 2011, states, in part, that "if a welder successfully completes the required qualification tests, the welding engineer will initiate and update the welder qualification test record."

Step 6.6 of QP-PC-04 states, in part, that “the Welder Qualification History Log shall be used to update and maintain the welder qualifications by the welding engineer, and used to track the welder qualifications and ensure that welders employed at SMS remain qualified.” QP-PC-04 also states, in part, that “upon successful completion of qualification testing, a unique welder symbol stamp shall be provided to the welder.”

Contrary to the above, as of November 18, 2011, the SMS American Welding Society (AWS) welder qualification program, including the welder qualification records and Welder Qualification History Log, did not provide adequate records to demonstrate that welding was accomplished by qualified personnel. Specifically SMS failed to provide adequate records to demonstrate that 1) a welder listed in the Welder Qualification History Log was qualified in accordance with QP-PC-04, even though the welder failed the qualification test, 2) records contains evidence of welders maintaining their qualifications consistent with QP-PC-04 and, (3) welder qualifications for different stainless steel materials met the requirements of AWS D1.6, “Structural Welding Code-Stainless Steel,” 1999 Edition.

This issue has been identified as Nonconformance 99901401/2011-202-05.

- F. Criterion XII, “Control of Measuring and Test Equipment,” of Appendix B to 10 CFR Part 50 states that “Measures shall be established to assure that tools, gages, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits.”

QP-G-12, “Control of Measuring and Test Equipment,” Revision 3, dated September 13, 2011, states, in part, that “measuring and testing equipment (M&TE) requiring control and calibration include instruments or equipment used for testing, inspection, and calibration of other instruments, process verification, or data collection, for the purpose of determining compliance with established requirements. M&TE shall be labeled, tagged, or otherwise suitably marked, and documented on FRM-000120, “M&TE Inventory and Calibration Log,” to indicate the item’s unique identification, manufacturer’s identification, serial numbers, frequency of calibration, its calibration date, and its next calibration due date.”

Contrary to the above, as of November 18, 2011, SMS failed to properly control and calibrate safety-related M&TE. Specifically, SMS used a commercial laboratory to calibrate some safety-related M&TE without dedicating the calibration service. In addition, a hardness tester used to perform portions of SMS Procedure QP-PC-31, “Distortion Correction Improvement Technique,” Revision 0, dated August 18, 2011, did not have a calibration label and was not documented on the SMS M&TE Inventory and Calibration Log.

This issue has been identified as Nonconformance 99901401/2011-202-06.

- G. Criterion XV, “Nonconforming Materials, Parts, or Components,” of Appendix B to 10 CFR Part 50 states that “Measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation.

These measures shall include, as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations. Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures.”

Section 15 of the SMS QAM states, in part, that “items that do not conform to specified requirements shall be controlled to prevent inadvertent installation or use, and further processing beyond a point where the non-conforming condition can no longer be corrected. Controls shall provide for identification, documentation, segregation (when practical), evaluation, disposition of nonconforming items, and notification to affected organizations.”

Step 6.1.6 of QP-G-15 states, in part, that “Further processing of work on the nonconforming item shall cease until such time as the item or material is released for further work.” In addition, Step 6.1.14 of QP-G-15 states, in part, that “Work shall not progress beyond the point specified in the Conditional Release.”

Contrary to the above, as of November 18, 2011, SMS failed to control a sub-module that had open nonconformances identified on it. Specifically, SMS failed to identify all open nonconformance packages related to a sub-module in the work package at the sub-module (i.e., no identification at the sub-module that work could continue). In addition, for nonconformances with a conditional release, SMS failed to identify in the work package the point that work may continue at the sub-module.

This issue has been identified as Nonconformance 99901401/2011-202-07.

- H. Criterion XVI, “Corrective Action,” in Appendix B to 10 CFR Part 50, states that “Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to prevent repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management.”

Section 16 of the SMS QAM states, in part, that “Conditions adverse to quality shall be identified promptly and corrected as soon as practicable. In the case of a significant condition adverse to quality, the cause of the condition shall be determined and corrective action taken to preclude recurrence. The identification, cause, and corrective action for significant conditions adverse to quality shall be documented and reported to appropriate levels of management. Completion of corrective actions shall be verified.”

Contrary to the above, as of November 18, 2011, SMS failed to promptly correct conditions adverse to quality. Specifically, SMS had not closed 72 out of 561 corrective action requests CARs by the established due date or establish new due dates for completion of corrective actions.

This issue has been identified as Nonconformance 99901401/2011-202-08.

- I. Criterion XVI in Appendix B to 10 CFR Part 50, states, in part, that “measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.”

Several purchase orders from Shaw Nuclear Services (SNS) to SMS state, in part that “Conditions adverse to quality identified through the individual work processes are to be periodically reviewed to identify the presence of adverse trends.”

QP-G-16, “Corrective Action,” Revision 4, dated August 31, 2010, defines conditions adverse to quality as an all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items and nonconformances. In addition, QP-G-16 states that the Manager QA is responsible for assessing and reporting identified trends.

Contrary to the above, as of November 18, 2011, SMS failed to perform a trend analysis of conditions adverse to quality as required by the SNS purchase orders.

This issue has been identified as Nonconformance 99901401/2011-202-09.

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

Dated at Rockville, MD, this 6th day of January 2012.

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

Docket No.: 99901401

Report No.: 99901401/2011-202

Vendor: Shaw Modular Solutions  
3191 W. Lincoln Road  
Lake Charles, LA 70605

Vendor Contact: Mr. Tim Catchpole,  
Director Quality Assurance

Background: Shaw Modular Solutions is under contract with Shaw Nuclear Services to fabricate structural and limited equipment modules for the AP1000 units to be constructed at Vogtle and V.C. Summer.

Inspection Dates: November 14-18, 2011

Inspection Team: Kerri A. Kavanagh NRO/DCIP/CQAB Team Leader  
Yamir Diaz-Castillo NRO/DCIP/CMVB  
Thomas Kendzia NRO/DCIP/CQAB  
Jeffrey Jacobson NRO/DCIP/CEVB  
John Honcharik NRO/DE/CIB  
Steven Downey NRO/DE/CIB  
Alain Artayet RII/DCI/CIB3

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

## **EXECUTIVE SUMMARY**

Shaw Modular Solutions  
99901401/2011-202

The U.S. Nuclear Regulatory Commission (NRC) conducted this inspection to verify that Shaw Modular Solutions (SMS) had implemented an adequate quality assurance (QA) program for the fabrication of AP1000 structural modules that complied 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 performed the inspection to verify that SMS implemented a program under 10 CFR Part 21, "Reporting of Defects and Noncompliance," that met the agency's regulatory requirements. The NRC carried out the inspection at the SMS facility in Lake Charles, LA, during the period of November 14-18, 2011.

The NRC based its inspection on the following:

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

During this inspection, the NRC inspection team implemented Inspection Procedure (IP) 43003, "Reactive Inspections of Nuclear Vendors," as supplemented by IP 43002, "Routine Inspections of Nuclear Vendors"; IP 43004, "Inspection of Commercial-Grade Dedication Programs"; and IP 36100, "Inspection of 10 CFR Part 21 and 10 CFR 50.55(e) Programs for Reporting Defects and Noncompliance."

The NRC attempted to carry out an inspection of SMS in January 2011. The NRC terminated that inspection early, as explained in a letter dated January 24, 2011 to SMS (Agencywide Documents Access and Management System Accession No. ML110190676). This was a follow-up inspection to the January 2011 inspection.

With the exception of the nonconformances described below, the NRC inspection team concluded that SMS is implementing its QA and 10 CFR Part 21 programs consistent with the regulatory requirements. The results of this inspection are summarized below.

### **10 CFR Part 21 Program**

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

### **Commercial-Grade Dedication Program**

The NRC inspection team concluded that SMS is implementing its commercial-grade dedication program. Based on the limited samples of documents reviewed, the NRC inspection team also determined that SMS is implementing its policies and procedures associated with commercial-grade dedication. No findings of significance were identified.

### Quality Assurance Program

The NRC inspection team issued Nonconformance 99901401/2011-202-01 associated with SMS's failure to implement the regulatory requirements of Criterion II, "Quality Assurance Program," of Appendix B to 10 CFR Part 50. Specifically, Nonconformance 99901401/2011-201-01 cited SMS for failing to include information in the QA Manual (QAM) as it relates to activities performed at SMS. Specifically, the QAM does not contain the following: (1) a description of the codes, procedures, regulations, standards, or other specific documents used to qualify personnel (e.g., audit personnel, inspectors, welders) performing activities affecting quality, (2) the description of the alternative to use the accreditation provided by one of the domestic accrediting bodies instead of performing a commercial-grade survey, (3) a comprehensive list of the specific special processes performed at SMS that are required to be controlled, (4) a description of the process for the preparation, issuance, distribution, and implementation of shop travelers for manufacturing operations, (5) the general welding process requirements and limitations, and (6) the controls for performing nondestructive examination (NDE) activities and for qualification and certification of NDE personnel.

### Training and Qualification of Personnel

The NRC inspection team issued Nonconformance 99901401/2011-202-02 associated with SMS's failure to implement the regulatory requirements of Criterion II of Appendix B to 10 CFR Part 50. Specifically, Nonconformance 99901409/2011-201-02 cited SMS for failing to indoctrinate and train personnel managing or performing activities affecting quality. Specifically, SMS failed to indoctrinate and train personnel who manage or perform activities affecting quality on the procedures that they would be responsible for managing or implementing. In addition, SMS failed to adequately document the training of auditors and to appropriately re-qualify a lead auditor in accordance with SMS procedures.

### Design Control

The NRC inspection team issued Nonconformance 99901401/2011-202-03 associated with SMS's failure to implement the regulatory requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. Specifically, Nonconformance 99901401/2011-202-03 cites SMS for failing to ensure that design changes were subject to the design control measures commensurate with those applied to the original design. As an example, the SMS Product Manager redlined detailed drawing APP-CA20-S5-02-000-0201, Revision 0, dated April 11, 2011, to add supports to sub-module CA20-02; however, the Product Manager failed to confirm with the Detailer Manager that the redline changes were in accordance with the approved drawings. In addition, the redlined drawings did not in any way indicate that the subject angle iron supports were to be considered temporary. Also, the redlined drawing markup incorrectly identified (reversed the 1" and 1/4" dimensions) the welds to be utilized to attach the temporary supports.

### Procurement Document Control

The NRC inspection team issued Nonconformance 99901401/2011-202-04 associated with SMS's failure to implement the regulatory requirements of Criterion IV, "Procurement Document Control," of Appendix B to 10 CFR Part 50.

Specifically, Nonconformance 99901401/2011-202-04 cites SMS for failing to include the applicable technical requirements in the procurement documents. SMS included the alternative to use calibration laboratories accredited by the National Voluntary Laboratory Accreditation Program, the American Association for Laboratory Accreditation, and other domestic accrediting bodies for commercial-grade calibration services in safety-related purchase orders without requiring the dedication of the calibration service.

#### Control of Purchased Material, Equipment and Services

The NRC inspection team concluded that SMS is implementing its control of the purchased material, equipment, and services program consistent with the regulatory requirements of Criterion VII, "Control of Purchased Material, Equipment, and Services" of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that SMS is implementing its policies and procedures associated with the control of purchased material, equipment, and services. No findings of significance were identified.

#### Control of Special Processes

The NRC inspection team issued Nonconformance 99901401/2011-202-05 associated with SMS's failure to implement the regulatory requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50. Specifically, Nonconformance 99901401/2011-202-05 cites SMS for failing to provide adequate records that welding was accomplished by qualified personnel. Specifically, the NRC inspection team found that (1) a welder was listed in the Welder Qualification History Log as qualified but the welder had failed the qualification test, (2) no objective evidence existed of welders maintaining their qualifications, and (3) there was no differentiation among the different stainless steel qualifications as required by American Welding Society (AWS) D1.6, "Structural Welding Code-Stainless Steel," 1999 Edition.

#### Control of Manufacturing Process

The NRC inspection team concluded that SMS is implementing its control of the manufacturing process consistent with the regulatory requirements of Criterion IX of Appendix B to 10 CFR Part 50. Based on the limited samples of documents reviewed, the NRC inspection team also determined that SMS is implementing its policies and procedures. No findings of significance were identified.

#### Control of Measuring and Test Equipment

The NRC inspection team issued Nonconformance 99901401/2011-202-06 associated with SMS's failure to implement the regulatory requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50. Specifically, Nonconformance 99901401/2011-202-06 cited SMS for failing to properly control and calibrate safety-related M&TE. SMS used a commercial laboratory to calibrate some safety-related M&TE without dedicating the commercial calibration service and failed to ensure that all safety-related M&TE were appropriately controlled under its M&TE program.

### Nonconforming Materials, Parts, or Components

The NRC inspection team issued Nonconformance 99901401/2011-202-07 associated with SMS's failure to implement the regulatory requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B to 10 CFR Part 50. Specifically, Nonconformance 99901401/2011-202-07 cited SMS for failing to control a sub-module that had open nonconformances identified on it. SMS failed to identify all open nonconformance packages related to a sub-module in the work package at the sub-module (i.e., no identification at the sub-module that work could continue). In addition, for nonconformances with a conditional release, SMS failed to identify in the work package the point that work may continue at the sub-module.

### Corrective Action

The NRC inspection team issued Nonconformances 99901401/2011-202-08 and 99901401/2011-202-09 associated with SMS's failure to implement with the regulatory requirements of Criterion XVI, "Corrective Action," in Appendix B to 10 CFR Part 50. Specifically, Nonconformance 99901401/2011-202-08 cited SMS for failing to promptly correct several corrective action requests. Nonconformance 99901401/2011-202-09 cited SMS for failing to perform a trend analysis of conditions adverse to quality consistent with the requirements of the SNS purchase orders.

### Internal Audits

The NRC inspection team concluded that SMS is implementing its internal audits program consistent with the regulatory requirements of Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that SMS is implementing its policies and procedures associated with internal audits. No findings of significance were identified.

## REPORT DETAILS

### 1. 10 CFR Part 21 Program

#### a. Inspection Scope

The U.S. Nuclear Regulatory Commission (NRC) reviewed the Shaw Modular Solutions (SMS) policies and implementing procedures that govern the SMS program under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, "Reporting of Defects and Noncompliance," to verify compliance with the regulatory requirements. In addition, the NRC inspection team evaluated the 10 CFR Part 21 postings and a sampling of the SMS purchase orders (POs) for compliance with the requirements of 10 CFR 21.6, "Posting Requirements," and 10 CFR 21.31, "Procurement Documents," respectively. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

#### b. Observations and Findings

##### b.1 Postings

The NRC inspection team verified that SMS had posted notices that included (1) a copy of Section 206 of the Energy Reorganization Act of 1974, (2) a copy of 10 CFR Part 21, and (3) a description of the SMS procedure that implements the regulation.

##### b.2 Purchase Orders

The NRC inspection team reviewed a sample of POs to verify that SMS had implemented a program consistent with the requirements described in 10 CFR 21.31, which specify the applicability of 10 CFR Part 21 in POs for safety-related services. The NRC inspection team verified that SMS imposed the requirements of 10 CFR Part 21 on qualified suppliers having programs meeting the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

##### b.3 10 CFR Part 21 Procedures and Implementation

Section 15 of the SMS Quality Assurance Manual (QAM), "Control of Nonconforming Items," Revision 3, dated January 4, 2011, and QP-G-15a, "10 CFR Part 21 and 10 CFR 50.55e Compliance," Revision 3, dated January 4, 2011, establish the requirements for compliance with the regulatory requirements of 10 CFR Part 21. These documents define the process for reporting defects; the posting requirements; and the responsibilities, timelines, and actions for identifying and evaluating deviations and failures to comply. The NRC inspection team also verified that the SMS corrective action program, as described in procedure QP-G-16, "Corrective Action," Revision 4, dated August 31, 2010, connects to the 10 CFR Part 21 program.

The NRC inspection team verified that SMS procedural guidance was adequate to initiate the 10 CFR Part 21 process. The NRC inspection team also verified that the SMS staff is knowledgeable about the conditions that would warrant a 10 CFR Part 21 evaluation.

The NRC inspection team also reviewed a sample of completed 10 CFR Part 21 evaluations and verified that the evaluation and determination, as documented, appeared to be reasonable and consistent with the requirements of 10 CFR Part 21. The NRC inspection team reviewed a sample of recent nonconformance and corrective action reports (CARs), and did not identify any specific issues that would have warranted further evaluation under the SMS 10 CFR Part 21 program.

c. Conclusions

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

2. Commercial-Grade Dedication

a. Inspection Scope

The NRC inspection team reviewed the SMS policies and procedures governing the implementation of its commercial-grade dedication program to ensure that those guidelines adequately described the process as required by 10 CFR Part 21. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

b.1 Policies and Procedures

Section 7.6, "Commercial Grade Items and Services," of the SMS QAM describes controls for dedicating commercial-grade items (CGIs) or services. The QAM states, in part, that "SMS dedication of CGIs shall be accomplished through source verification and/or receipt inspection, or by review and acceptance of supplier/item/service performance records, using criteria established in SMS Level II procedures."

QP-G-07a, "Commercial Grade Dedication," Revision 6, dated October 6, 2011, establishes the requirements for dedicating CGIs at SMS.

b.2 Implementation of the SMS Commercial-Grade Dedication Program

The NRC inspection team reviewed a sample of SMS commercial-grade dedication packages for upgrading commercial material to ensure that appropriate technical evaluations had been performed to identify critical chemical and material characteristics and that appropriate acceptance methods had been specified.

The NRC inspection team reviewed package 11-024 for a 3/4" and 5/8" nelson stud. The NRC inspection team noted that SMS appropriately used a combination of receipt inspection, surveillance tests, and special tests performed by an outside laboratory to confirm the physical and chemical properties of the material. SMS sent a sample of 49 studs from each heat number to be tested for material and chemical properties.

The NRC inspection team found that the combination of verification methods appropriately confirmed that all the critical characteristics of the nelson studs were met.

The NRC inspection team also reviewed package 11-013 for A 240 S32101 Duplex Stainless Steel Plate. SMS performed a commercial-grade survey to verify the ability of the commercial supplier to control material and ensure heat number traceability. SMS also commissioned laboratories with approved QA programs to test one sample from each heat number for appropriate material and chemical properties. The NRC inspection team verified that all critical material and chemical properties were tested for each heat number and that the testing results were satisfactory.

c. Conclusions

The NRC inspection team concluded that SMS is implementing its commercial-grade dedication program consistent with the regulatory requirements. Based on the limited samples of documents reviewed, the NRC inspection team also determined that SMS is implementing its policies and procedures associated with commercial-grade dedication. No findings of significance were identified.

3. Quality Assurance Program

a. Inspection Scope

The NRC inspection team reviewed the SMS policies and procedures governing the implementation of its program to verify compliance with Criterion II, "Quality Assurance Program," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the QA program with SMS management and technical staff. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

Section 2.2, "Qualification, Indoctrination, and Training," of the SMS QAM controls the program for qualification, indoctrination, and training of personnel assigned to perform activities affecting quality. During its review, the NRC inspection team found that the QAM does not specify the Codes, procedures, regulations, standards, or any specific documents used to qualify personnel (i.e., audit personnel, inspectors, welders, etc.) performing activities affecting quality. The NRC inspection team identified this issue as an example of Nonconformance No. 99901401/2011-202-01 for the failure of SMS to include information in the QAM as it relates to activities performed at SMS.

Section 7 of the SMS QAM, "Control of Purchased Items and Services," describes the controls used by SMS to ensure that its suppliers providing items and services conform to the specified requirements of the procurement documents. The NRC staff has concluded that, for procurement of commercial-grade calibration services for safety-related applications, laboratory accreditation programs administered by the National Voluntary Laboratory Accreditation Program (NVLAP) (National Institute of Standards and Technology) and by the American Association for Laboratory Accreditation (A2LA), as recognized through the mutual recognition arrangement of the International Laboratory Accreditation Program are acceptable in place of a commercial-grade survey or in-process surveillance as part of the commercial-grade dedication

process when all of the requirements described in the Arizona Public Service Company safety evaluation report (Agencywide Documents Access and Management System (ADAMS) Accession No. ML052710224) are met. One of these requirements is that this alternative method must be documented in the QA program description. The NRC inspection team noted that the SMS QAM does not describe the alternative to using the accreditation provided by one of the domestic accrediting bodies instead of performing a commercial-grade survey or in-process surveillance. The NRC inspection team identified this issue as another example of Nonconformance 99901401/2011-202-01.

Section 9, "Control of Special Processes," of the SMS QAM describes the control of special processes used for the fabrication of the AP1000 steel sub-modules. During its review, the NRC inspection team found that the QAM does not specify the applicable welding code (i.e., American Welding Society (AWS) D1.1, "Structural Welding Code-Steel," 2000 Edition) that the facility is to use for welding and the qualification of welders. In addition, the SMS welding procedures and welders qualifications to perform welding on stainless steel does not include the applicable requirements of AWS D1.6, "Structural Welding Code-Stainless Steel," 1999 Edition, in the QAM. Furthermore, the QAM does not contain the following information: (1) a comprehensive list of the specific special processes performed at SMS that are required to be controlled; (2) a description of the process for preparation, issuance, distribution, and implementation of shop travelers for manufacturing operations; (3) the general welding process requirements and limitations, and (4) the controls for performance of nondestructive examination (NDE) activities and for the qualification and certification of NDE testing personnel (i.e., American Society for Nondestructive Testing (SNT)-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing"). The NRC inspection team identified this issue as another example of Nonconformance 99901401/2011-202-01.

#### c. Conclusions

The NRC inspection team issued Nonconformance 99901401/2011-202-01 for the failure of SMS to include information in the QAM as it relates to activities performed at SMS. Specifically, the QAM does not contain the following: (1) a description of the codes, procedures, regulations, standards, or other specific documents used to qualify personnel (e.g., audit personnel, inspectors, welders) performing activities affecting quality, (2) the description of the alternative to use the accreditation provided by one of the domestic accrediting bodies instead of performing a commercial-grade survey, (3) a comprehensive list of the specific special processes performed at SMS that are required to be controlled, (4) a description of the process for the preparation, issuance, distribution, and implementation of shop travelers for manufacturing operations, (5) the general welding process requirements and limitations, and (6) the controls for performing NDE activities and for qualification and certification of NDE personnel.

#### 4. Training and Qualification of Personnel

##### a. Inspection Scope

The NRC inspection team reviewed the SMS policies and procedures governing the implementation of its training and qualification process to verify compliance with Criterion II of Appendix B to 10 CFR Part 50.

In addition, the NRC inspection team discussed the training and qualification program with the SMS 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 Policies and Procedures

Section 2.2, "Qualification, Indoctrination, and Training," of the SMS QAM describes the controls used for the qualification, indoctrination, and training of personnel assigned to perform activities affecting quality. The QAM states, in part, that "prior to performing activities affecting quality, personnel shall receive indoctrination regarding the Level II QAM Procedures and SMS Level III Procedures that they will be responsible for implementing."

QP-G-02, "Training," Revision 7, dated October 20, 2011, establishes the requirements for training personnel performing activities affecting the quality of items and services provided by SMS. This procedure states, in part, that "All personnel who manage or perform activities affecting quality shall receive Quality Assurance Indoctrination and specific training on the SMS procedures and requirements they will be responsible for managing or implementing."

QP-QA-01, "Qualification of Auditors," Revision 5, dated September 29, 2011, describes the process for training and qualifying personnel as auditors and lead auditors. This procedure states, in part, that "personnel selected to participate in QA audits for SMS shall have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited." For non-lead auditor personnel, orientation and training shall be documented on FRM-000035, "QA Auditor Training Record." Prospective lead auditors' shall have the appropriate training or experience, pass a written examination, and have verifiable participation in at least five QA audits within three years prior to qualification. Prospective Lead Auditors' qualifications shall be documented on FMR-000036, "SMS Lead Auditor Qualification Record." Each lead auditor's qualifications shall be evaluated annually to ensure adequate maintenance of proficiency and lead auditors who fail to maintain their proficiency for a period of two years or more shall require requalification."

QP-QC-03, "Qualification and Certification of Inspection and Test Personnel," Revision 5, dated September 22, 2011, describes the requirements for the qualification and certification of non-NDE related inspection and test personnel at SMS.

QP-NDE-WP-01, "Certification of NDE Personnel," Revision 5, dated July 12, 2011, establishes the requirements for qualification and certification of NDE personnel. This procedure applies to all personnel conducting NDE that are required to be certified to the provisions of Recommended Practice No. SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing."

QP-WI-01, "Welding Inspection Procedure," Revision 5, dated May 4, 2011, governs the methods and requirements for the examination of welds performed by qualified or certified Level II welding inspectors.

This procedure states, in part, that “the inspector shall be an American Welding Society (AWS) Certified Welding Inspector (CWI) qualified and certified in accordance with the provisions of AWS QC1, “Standard for AWS Certification of Welding Inspectors,” or an inspector shall be an engineer or technician who, by training and experience in metal fabrication, inspection, and testing, is acceptable to SMS.

#### b.2 Implementation of the Training and Qualification Program

The NRC inspection team verified that SMS had established and implemented training programs for the indoctrination and training of personnel who perform activities that affect quality, including senior management, lead auditors and auditors, NDE personnel, engineers, and quality assurance (QA) personnel, to ensure that proficiency is achieved and maintained.

During the review of the SMS training matrix, the NRC inspection team observed that neither the Sr. Vice President nor the Corrective Actions Manager had been indoctrinated or trained on any SMS procedures. Upon further review, the NRC inspection team identified two instances in which SMS had failed to implement the requirements of QP-G-02. Specifically, the NRC inspection team found that the Corrective Action Manager, who is in charge of administering the SMS internal nonconformance process, was not trained on QP-G-15, “Control of Nonconforming Items”, Revision 4, dated September 21, 2011. Furthermore, the NRC inspection team found that the Senior Vice President, who is the responsible authority for providing appropriate notifications and reporting in the event a condition is determined to be reportable was not trained on QP-G-15a. The NRC inspection team identified these instances as an example of Nonconformance 99901401/2011-202-02 for the failure of SMS to indoctrinate and train personnel who manage or perform activities affecting quality on the procedures that they would be responsible for managing or implementing.

#### b.3 Audit Personnel

The NRC inspection team reviewed a sample of the training and qualification records of the SMS lead auditors and auditors to verify that auditing personnel had completed all required training and maintained qualification and certification in accordance with the SMS policies and procedures. During the review of the lead auditors’ training records, the NRC inspection team observed that one SMS employee was re-qualified as a lead auditor in 2009 even though he had only met two of the three requirements for requalification as described in Section 6.3.3 of QP-QA-01. Specifically, the SMS employee did not take a written examination in 2009 because he was the author of the exam. The NRC inspection team found that although his requalification requirements were not met in 2009, the SMS employee’s lead auditor certification was subsequently renewed in 2010 and 2011 based on his performance and participation in audits. The NRC inspection team noted that the SMS employee’s 2011 Annual Lead Auditor Evaluation Letter, dated September 7, 2011, stated that he had completed a new lead auditor examination which replaces the one he had authored previously. The NRC inspection team reviewed a limited number of audits lead by the lead auditor in question and did not identify any issues with the audits. However, the NRC inspection team identified this issue as another example of Nonconformance 99901401/2011-202-02 for the failure of SMS to train personnel who manage or perform activities affecting quality on the procedures that they would be responsible for managing or implementing.

During the review of the auditors' training and qualification records, the NRC inspection team observed that the training records of two auditors, both of whom the NRC inspection team verified had participated in an audit as recently as August 2011, did not have the QA Auditor Training Record required by procedure QP-QA-01. As such, the NRC inspection team could not verify that the two auditors had been appropriately trained to participate as auditors during the August 2011 audit. The NRC inspection team identified this issue as another example of Nonconformance No. 99901401/2011-202-02 for the failure of SMS to train personnel who manage or perform activities affecting quality on the procedures that they would be responsible for managing and/or implementing. SMS initiated corrective action report (CAR) No. 11-455/0 to address this example.

#### b.4 Training and Qualification of Nondestructive Examination and Quality Control Inspectors

The NRC inspection team reviewed a sample of the training and qualification records for the SMS NDE personnel and confirmed that NDE personnel had completed all required training and maintained qualification and certification in accordance with the SMS policies and procedures. The NRC inspection team also verified that all of the welding inspectors were currently certified by the AWS in accordance with the provisions of AWS QC1 and that all NDE inspectors were certified in accordance with the provisions of recommended practice SNT-TC-1A.

#### c. Conclusions

The NRC inspection team issued Nonconformance 99901401/2011-202-02 for the failure of SMS to indoctrinate and train personnel performing activities affecting quality. Specifically, SMS failed to train personnel who manage or perform activities affecting quality on the procedures that they would be responsible for managing or implementing. In addition, SMS failed to adequately document the training of auditors and to appropriately re-qualify a lead auditor in accordance with SMS procedures.

### 5. Design Control

#### a. Inspection Scope

The NRC inspection team reviewed the SMS policies and procedures governing the implementation of its design control process to verify compliance with Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the design control program with SMS 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 Policies and Procedures

Section 3, "Design Control," of the SMS QAM provides a description of the controls used during the design process. The QAM states, in part, that "SMS does no actual design work but will perform detailing activities, procurement document preparation, order entry, and shop traveler preparation in accordance with Level II and Level III implementing procedures."

QP-G-05a, "Detailed Drawings," Revision 0, dated January 11, 2011; QP-PE-08, "Innovative Steel Detailing Detailed Drawing Models," Revision 2, dated January 11, 2011; and QP-PE-09, "Shaw Modular Solutions Detailed Drawing Models," Revision 1, dated January 11, 2011, describe the process for the preparation, review, approval, revision, distribution, and use of detailed drawings or models. QP-G-05a applies to detailed drawings created from information provided by the Design Authority to be used in the fabrication of products at SMS. The Design Authority is the SMS client's organization responsible for the design of an item under contract for fabrication. QP-PE-08 applies to detailed drawings or models prepared by Innovative Steel Detailing (ISD) for SMS while QP-PE-09 applies to detailed drawings or models prepared by SMS.

## b.2 Implementation of Design Control Program

The NRC inspection team reviewed the processes employed by SMS to translate the drawings and specifications provided by Westinghouse Electric Company (WEC) and Shaw Nuclear Services (SNS) into the required detailed fabrication drawings to support manufacturing of the sub-modules. The NRC inspection team reviewed the circumstances surrounding the SMS practice of using a commercial subcontractor, ISD, to create the detailed fabrication drawings, including the practice of ensuring that all drawings received from ISD get a 100 percent review by SMS "checkers." The NRC inspection team reviewed the SMS processes to control design changes to fabrication drawings, including the process used to control field changes.

The NRC inspection team noted that SMS was manufacturing sub-modules for the CA20 module. The CA20 module is the auxiliary building and is composed of 72 sub-modules. The NRC inspection team noted that SMS had installed 2"x2"x1/4" angle iron supports in sub-module CA20-02 to control the distortion caused by welding and to aid in the fitup of sub-modules in the field. The NRC inspection team noted that these supports were not shown on the WEC and SNS supplied drawings for the sub-module and that the installation of these supports was not treated as a design change by SMS. Initially, upon questioning by the NRC inspection team, there appeared to be some confusion among the SMS staff about the exact status of the supports. Specifically, it was not initially clear whether these recently installed supports needed to be removed prior to shipment and whether the sub-modules could be shipped with the supports left in. Furthermore, if the supports were left in, there was no indication as to whether the supports should be considered temporary or permanent and what, if any, specific documentation or markings would be required to alert those in the field as to the status of the supports as either a permanent or temporary modification.

Some of this confusion regarding the status of the supports seems to have stemmed from the fact that SMS had previously received approval from WEC to install similar supports in the duplex stainless steel sub-modules, but this approval did not extend to the carbon steel sub-modules such as CA20-02.

The NRC inspection team noted that the installation of temporary attachments to the sub-modules is allowed by general note 6.8 on WEC drawing APP-CA20-S5Y-00003, Revision 4, dated April 2, 2011; however, this note also specifies that such attachments should be completely removed unless specifically authorized by the purchaser (e.g., WEC). The NRC inspection team noted that in this case, SMS used a redline change process to modify fabrication drawing APP-CA20-S5-02-000-0201, Revision 0, dated April 11, 2011, to add the supports to the subject sub-module.

The Product Manager added the redline changes to the production drawing in accordance with QP-G-05a; however, the NRC inspection team found that, contrary to the procedure, the Product Manager failed to confirm with the Detailer Manager that the redline changes were in accordance with the approved drawings. In addition, the redlined drawings did not in any way indicate that the subject angle iron supports were to be considered temporary. WEC specification APP-GA-G1-001 states, in part, that "Temporary bracing must be color coded and identified as such to alert fabricators that removal is required after installation in the plant." These requirements were not added to the redlined drawings. The NRC inspection team also noted that the redlined drawing markup incorrectly identified (reversed the 1" and 1/4" dimensions) the welds to be used to attach the temporary supports. The NRC inspection team identified these issues as an example of Nonconformance 99901401/2011-202-03 for the failure of SMS to ensure that design changes were subject to the design control measures commensurate with those applied to the original design, SMS procedure QP-G-05a-00, and Westinghouse Specification APP-GA-G1-001. SMS initiated CAR No. 11-450/0 to address this issue. Based on the results of the extent of condition, SMS should also determine if there are any impacts on the sub-modules that had previously been shipped.

c. Conclusions

The NRC inspection team issued Nonconformance 99901401/2011-202-03 for the failure of SMS to ensure that design changes were subject to the design control measures commensurate with those applied to the original design, SMS procedure QP-G-05a-00, and Westinghouse Specification APP-GA-G1-001. Specifically, the Product Manager redlined detailed drawing APP-CA20-S5-02-000-0201, Revision 0, to add supports to sub-module CA20-02; however, the Product Manager failed to confirm with the Detailer Manager that the red line changes were in accordance with the approved drawings. In addition, the redlined drawings did not in any way indicate that the subject angle iron supports were to be considered temporary. Also, the redlined drawing markup incorrectly identified (reversed the 1" and 1/4" dimensions) the welds to be utilized to attach the temporary supports. Based on the results of the extent of condition, SMS should also determine if there are any impacts on the sub-modules that had previously been shipped.

6. Procurement Document Control

a. Inspection Scope

The NRC inspection team reviewed SMS policies and procedures governing the implementation of its procurement document control program to verify compliance with Criterion IV, "Procurement Document Control," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the procurement document control program with the SMS management and technical staff. Furthermore, the NRC inspection team reviewed a sample of POs to verify proper implementation of the SMS procurement document control process. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

## b. Observations and Findings

### b.1 Policies and Procedures

Section 4, "Procurement Document Control," of the SMS QAM establishes the requirements for the control of procurement documents, including POs for nuclear safety-related items and services. Procurement documents specify supplier quality requirements and the elements of the QA program applicable to the items procured and shall identify basic technical requirements, such as drawings, specifications, and codes and industrial standards. Contract provisions include documentation requirements, review of procurement documents and changes to the documents, and access to supplier facilities for the purpose of inspection, surveillance, or audit. Contract provisions also include the extension of contract requirements to lower tier suppliers, right of access to subcontractor facilities, and imposition of 10 CFR Part 21 reporting requirements.

QP-G-04, "Procurement Document Control," Revision 1, dated February 24, 2010, establishes the requirements and responsibilities for the preparation, review, approval, revision, and distribution of procurement documents for material, equipment, and services, while QP-P-04, "Procurement Documents," Revision 0, dated August 5, 2011, describes the requirements for purchase requisitions, bid solicitation, and evaluation of documents used to procure safety-related, commercial-grade and nonsafety related items and services used in production at SMS.

### b.2 Implementation of Procurement Document Control Program

The NRC inspection team reviewed a sample of POs issued by SMS to determine whether the requirements identified in the procedures were imposed on the applicable purchasing documents. The NRC inspection team found that most of the POs adequately documented the procurement requirements as established by the governing SMS 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 sub-tier suppliers, and extension of contractual requirements to subcontractors.

However, during the review of three safety-related POs issued to Consolidated Power Supply, Industrial Testing Laboratory Services, and Lincoln Electric Company, the NRC inspection team noted that the POs included the alternative to use commercial calibration laboratories accredited by NVLAP, A2LA, and other domestic accrediting bodies for commercial calibration services without requiring the dedication of the calibration service. The NRC staff has determined that NVLAP, A2LA or any other accreditation provided by a domestic accrediting body may only be used as the basis for qualifying a commercial calibration laboratory as part of the commercial-grade dedication process when all of the requirements described in the Arizona Public Service Company safety evaluation report (ADAMS Accession No. ML052710224) are met. NVLAP and A2LA accreditation may not be used as the basis for qualifying safety-related calibration services.

During discussions with the SMS staff, the NRC inspection team noted that the suppliers mentioned above chose the alternative described in the POs by using commercial calibration services for the safety-related items being procured by SMS.

The NRC inspection team identified this issue as an example of Nonconformance 99901401/2011-202-04 for the failure of SMS to include the applicable technical requirements in the procurement documents. SMS CAR No. 11-448/0, which addresses this issue, includes an evaluation of the extent of the condition to confirm if the items provided were safety-related or commercial grade. Based on the results of the extent of condition, SMS should also determine if there are any impacts on the sub-modules that had previously been shipped.

c. Conclusions

The NRC inspection team issued Nonconformance 99901401/2011-202-04 for the failure to include the applicable technical requirements in the procurement documents. Specifically, SMS included the alternative to use commercial calibration laboratories accredited by the NVLAP, A2LA, and other domestic accrediting bodies for commercial-grade calibration services in safety related purchase orders without requiring the dedication of the calibration service. SMS CAR No. 11-448/0, which addresses this issue, includes an evaluation of the extent of the condition to confirm if the items provided were safety-related or commercial grade. Based on the results of the extent of condition, SMS should also determine if there are any impacts on the sub-modules that had previously been shipped.

7. Control of Purchased Material, Equipment and Services

a. Inspection Scope

The NRC inspection team reviewed SMS policies and procedures governing the implementation of SMS control of the purchased material, equipment, and services program to verify compliance with Criterion VII, "Control of Purchased Material, Equipment, and Services," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the control of the purchased material, equipment, and services program with SMS management and technical staff. Furthermore, the NRC inspection team reviewed a sample of external audit and receipt inspection reports. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

b.1 Policies and Procedures for Vendor Qualification

Section 7, "Control of Purchased Items and Services," of the SMS QAM establishes the measures and governing procedures to control the procurement of items and services to ensure conformance with specified requirements. It also describes the process for supplier evaluation and selection, bid evaluation, control of supplier generated documents, and the methods of acceptance.

QP-G-07, "Control of Purchased Items and Services," Revision 1, dated February 24, 2010, establishes the requirements and responsibilities for the control of purchased items and services.

QP-G-18, "Quality Assurance Audits," Revision 3, dated October 6, 2011, supplements the requirements of Section 18 of the SMS QAM by providing specific guidance for scheduling audits, the use of an audit plan, performance of the audits, writing the audit report, and the process to follow for when there are audit findings.

QP-QA-03, "Supplier Evaluation/Approved Supplier List," Revision 5, dated October 13, 2001, describes the methods for the initial and ongoing evaluations of SMS suppliers and the preparation and maintenance of the SMS Approved Supplier List (ASL).

QP-QC-02, "Receiving Inspection," Revision 8, dated October 19, 2011, describes the process for the receipt inspection of items and materials.

QP-G-18a, "Quality Assurance Surveillances," Revision 2, dated April 21, 2011, describes the process for performing surveillances to verify compliance with the SMS QAM.

#### b.2 Maintenance of the Approved Supplier List

The NRC inspection team reviewed the ASL to ensure that it listed qualified and approved suppliers; that authorized personnel, distributed, and periodically updated the ASL; and that SMS implemented any revisions to the ASL following the applicable procedures. The NRC inspection team confirmed that the ASL appropriately listed the suppliers performing work for SMS. In addition, the NRC inspection team confirmed that the scope of supply was documented and consistent for the activities contracted.

#### b.3 External Audits

The NRC inspection team reviewed a sample of external audits, annual vendor evaluations, and QA surveillances to verify the implementation of SMS audit program. The NRC inspection team verified that SMS had prepared and approved plans identifying the audit scope, focus, and applicable checklist criteria before the initiation of the audit activity. The NRC inspection team confirmed that the audit, annual evaluation, and QA surveillance reports contained a review of the relevant QA criteria in Appendix B to 10 CFR Part 50 for the activities performed by the individual suppliers as well as documentation of pertinent supplier guidance associated with each criterion. For audits, evaluations and surveillances resulting in findings, the NRC inspection team verified that the supplier had established a plan for corrective action and that SMS had reviewed and approved the corrective action and verified its satisfactory completion and proper documentation.

#### b.4 Receiving Inspection

The NRC inspection team witnessed a receipt inspection of two metal plates. The NRC inspection team observed the SMS receipt inspector verify dimensional aspects of the plates, identify item heat number and part number, and verify existence of a certificate of test and certificate material test report (CMTR) for chemical and physical analyses for each plate. The NRC inspection team observed that the SMS receipt inspector had all procedures readily available and actively referred to them.

### c. Conclusions

The NRC inspection team concluded that SMS is implementing its control of the purchased equipment, materials and services program consistent with the regulatory requirements of Criterion VII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined that SMS is implementing its policies and procedures associated with the control of purchased equipment, materials, and services. No findings of significance were identified.

## 8. Control of Special Processes

### a. Inspection Scope

The NRC inspection team reviewed the SMS policies and procedures governing the implementation of its control of special processes (including welding, NDE, and straightening) to verify compliance with the requirements of Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the control of special processes with SMS management and technical staff. Furthermore, the NRC inspection team reviewed a sample of shop travelers, weld procedure specifications (WPS), supporting procedure qualification records, welder qualifications, the calibration certificates of the welding equipment, visual inspection (VT) procedures, VT Level II and III qualifications, magnetic particle testing (MT) procedures, MT reports, MT Level II and III qualifications, ultrasonic Testing (UT) procedures, UT Level II and III qualifications, and the calibration of the examination equipment. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

### b. Observations and Findings

#### b.1 Policies and Procedures

Section 9, "Control of Special Processes," of the SMS QAM discusses the control of special processes used for the fabrication of the AP1000 steel sub-modules. The QAM also states, in part, that "special processes, including welding, shall be performed by qualified personnel using qualified written procedures in accordance with applicable industry codes."

QP-DC-05, "Shop Traveler Control," Revision 2, dated August 9, 2011, and QP-PC-06, "Implementation of Shop Traveler," Revision 6, dated August 18, 2011, provide the details for preparing, controlling, and implementing the shop traveler packages for the various fabrication operations performed at SMS. Section 6.6.4 of QP-PC-06 specifies that the welding supervisors shall identify actual fitup gap size, weld procedure used, weld filler material heat and lot number, and welding machine used. QP-PC-06 also requires documentation of every reweld made, along with the welder signoff sheet and the appropriate quality control (QC) inspector signoff and hold points

QP-PC-01, "Weld Filler Metal Control," Revision 5, dated August 5, 2011, provides the requirements for controlling weld filler material by SMS including identifying the weld filler metal with the appropriate heat, lot, batch and serial number, and the use of the Weld Consumables/Material Withdrawal Move Ticket.

The NRC inspection team reviewed the SMS process for controlling filler metal access and issuance, interviewed personnel at the Material Department storage, and reviewed applicable records used for material control process implementation, including the weld material control log and Weld Consumables/Material Withdrawal Move Ticket, and found that SMS controlled filler metal in accordance with the applicable procedure.

QP-NDE-WP-01, Revision 5, dated July 12, 2011, provides the methods for qualification and certification of NDE inspection personnel at SMS in accordance with SNT-TC-1A. The procedure provides the qualification requirements for Levels I, II and III personnel, including the specific training and experience requirements. The examination requirements include a vision test, and written and practical tests for each NDE process used at SMS. The procedure also lists recertification requirements.

QP-PC-04, "Welder/Operator Qualification—AWS," Revision 6, dated October 19, 2011, provides the guidelines to ensure that all welders and welding operators qualify and maintain their qualifications as required by the AWS code.

QP-PC-02, "Weld Procedure Specification Development and Qualification – AWS," Revision 7, dated February 26, 2011, describes the requirements, methods and responsibilities for preparing and issuing WPSs used at SMS for welding in accordance with AWS codes.

QP-PC-29, "Welding Fabrication Procedure—AWS," Revision 0, dated August 18, 2011, provides the general welding details performed on AWS D1.1 and D1.6 structural welding codes. This includes the requirements for cleaning, fitup, tack welds, and joint preparation.

QP-WI-01, Revision 5, provides detailed methods for performing weld examinations at SMS for AWS D1.1 and D1.6 structural welding. This includes fitup verification and increasing the fillet weld size based on the root gap dimension measured at fitup.

## b.2 Welding

The NRC inspection team observed production welding, including Gas Metal Arc Welding – Pulse (GMAW-pulse) and stud welding on various AP1000 CA20 sub-modules for both Vogtle and V.C. Summer nuclear plants.

The NRC inspection team observed GMAW-pulse welding using WPS 1.1-43 on sub-module CA20-11 for Vogtle. The NRC inspection team verified that the Lincoln S350 power wave weld machine had a current calibration label in accordance with weld machine calibration procedure QP-PC-34, "Lincoln Power Wave S350 Calibration Procedure," Revision 0, dated September 15, 2011. The NRC inspection team verified that the filler material heat/lot number used in the welding machine was listed on the shop traveler. The NRC inspection team also witnessed fitup inspection to verify root gap as required by QP-WI-01, so that any root gap would be added to the corresponding weld size as required by AWS D1.1.

The NRC inspection team observed stud welding on sub-module CA20-01 using WPS 1-1-39. The NRC inspection team found welding to comply with the applicable WPS. The preproduction tests were performed as described in QP-PC-29.

The NRC inspection team noted that welding is primarily performed with the GMAW-pulse welding process and automatically timed stud welds in accordance with AWS D1.1 and AWS D1.6. The GMAW-pulse welding allows a higher weld deposition rate than other processes, and is more productive and effective on large welds. SMS uses GMAW-pulse welding for both large and small fillet welds and complete joint penetration welds, including small recessed welds joining rebar material to the carbon steel plate. Although this welding process is qualified in accordance with AWS D1.1, it may be difficult to use it to weld small production welds such as the rebar weld joint that was observed on sub-module CA20-02, where numerous welds were rejected due to lack of fusion.

The NRC inspection team confirmed that SMS used shop traveler packages in accordance with QP-DC-05 and QP-PC-06 to control fabrication activities. The shop traveler packages incorporated witness and hold points for the welders, QC inspectors, and the customer. The shop traveler packages also identified the applicable drawings, material specifications, and procedures applicable to the fabrication being performed. The NRC inspection team noted that the shop traveler packages did not reference the applicable NDE procedure to be used for a particular method since currently there is only one procedure for each NDE method. The NRC inspection team found that the shop traveler packages ensured that SMS conducted the fabrication activities, including welding, in accordance with specified requirements and in the correct sequence.

### b.3 Welder Qualification

Section 9 of the QAM states, in part, that special processes, including welding, shall be performed by qualified personnel using qualified written procedures in accordance with applicable industry codes. Section 6.2 of QP-PC-04, states that if a welder successfully completes the required qualification tests, the welding engineer will initiate and update the welder qualification test record. In addition, Section 6.6 states that the Welder Qualification History Log shall be used to update and maintain the welder qualifications by the welding engineer, as well as to track the welder qualifications and ensure that welders employed at SMS remain qualified. QP-PC-04 also states that upon successful completion of qualification testing, a unique welder symbol stamp shall be provided to the welder.

The NRC inspection team reviewed the Welder Qualification Test Records and found that, on June 8, 2011, a welder failed the qualification tests required for WPS 1-1-1 for Welder Stamp Number F8. However, the Welder Qualification History Log for Welder Stamp Number F8 listed the welder as qualified on June 8, 2011, and provided a Welder Stamp Number F8. The Welder Qualification History Log is used to update and track the welder qualifications as stated in QP-PC-04. Therefore, Welder Stamp Number F8 did not pass the required qualification tests, and should not have been put into the Welder Qualification History Log as qualified for this WPS and issued a welder stamp number. In addition, contrary to Section 6.2 of QP-PC-04, SMS should not have issued a Welder Identification Card showing the welder as qualified for this WPS.

During the review of the Welder Qualification History Log in a Microsoft EXCEL spreadsheet, the NRC inspection team noted that this log is updated by the welding engineer based only on his/her observation of the welder performing production welding to maintain the welder qualification. AWS D1.1 and D1.6 require the maintenance of a welder's qualifications for a given welding process within a 6-month period.

However, the current history log only records the last date the welder maintained, and therefore there is no history of the welder's initial qualification, requalification or maintenance on the Welder Qualification History Log. Also, there is no objective evidence that the welder used the welding process for AWS welding (e.g., a reference to a weld joint number, weld record) to show that the welder used the welding process on that date in accordance with a qualified AWS WPS as required by AWS D1.1 and D1.6. The NRC inspection team also noted that the Welder Qualification History Log shows stainless steel as one qualification category. Currently, SMS has welders qualified for 304L stainless steel and Duplex stainless steel in accordance with AWS D1.6. However, as required by AWS D1.6, Duplex stainless steel qualifications do not qualify welding for 304L stainless steel. Therefore, the Welder Qualification History Log should show these as separate qualifications as required by AWS D1.6.

In summary, the NRC inspection team identified the following: (1) a welder was listed in the Welder Qualification History Log as qualified but had failed a qualification test (in this case the Welder Identification Card based on Welder Qualification History Log identifies the welder as qualified), (2) there is no records of welders maintaining their qualifications, and (3) there is no differentiation among the different stainless steel qualifications as required by AWS D1.6. The NRC inspection team identified these issues as an example of Nonconformance 99901401/2011-202-05 for the failure of SMS to provide to ensure that welding was performed by qualified personnel. SMS initiated CAR No. 11-439 to address these issues. As part of the extent of condition associated with CAR No. 11-439, SMS needs to determine if the welder that was listed as qualified but failed the qualification performed any safety-related welding and if so, whether that welding was performed on sub-modules that have been previously shipped.

The NRC inspection team observed that the testing facility had a dedicated QC inspector, dedicated QA oversight personnel, and a dedicated Weld Test Administrator whose role was to ensure that the facility met the requirements of QP-PC-04. The NRC inspection team determined that the welder qualification testing facilities were in accordance with QP-PC-04.

#### b.4 Inspection

The NRC inspection team witnessed several MT, UT, and visual examinations in accordance with the following SMS procedures: QP-NDE-MT-01, "Magnetic Particle Examination," Revision 7, dated July 13, 2011; QP-NDE-UT-01, "Ultrasonic Inspection of AWS D.1 Groove Welds," Revision 3, dated September 13, 2011; QP-NDE-VT-01, "Visual Examination Procedure," Revision 4, dated October 12, 2011; and QP-WI-01.

The NRC inspection team observed the performance of MT examinations on several weld joints on sub-module CA20-03 in accordance with SMS procedure QP-NDE-MT-01. The MT yoke calibration was performed as required by the procedure, and all other parameters, such as yoke orientation, were verified through observation and discussions with the Level II QC inspector to be in compliance with the QP-NDE-MT-01.

The NRC inspection team also witnessed a UT examination of complete joint penetrations on sub-module CA20-13. The UT equipment calibration was performed as required by SMS procedure QP-NDE-UT-01, and the NRC inspection team verified that the examination was performed in accordance with the procedure and the appropriate acceptance criteria through observation and discussions with the Level I and Level III QC inspectors.

The NRC inspection team also witnessed a visual examination of welds on sub-module CA20-13 using SMS procedures QP-NDE-VT-01 and QP-WI-01.

The NRC inspection team reviewed a sample of qualification records for Level III nondestructive examiners and Level II NDE inspectors and confirmed that they were qualified in accordance with the requirements in SNT-TC-1A. The NRC inspection team noted that most non-destructive inspectors had previous experience and training in their respective non-destructive test methods.

c. Conclusions

The NRC inspection team issued Nonconformance 99901401/2011-202-05 for the failure of SMS to ensure that welding was accomplished by qualified personnel. Specifically, the NRC inspection team found that (1) a welder was listed in the Welder Qualification History Log as qualified but the welder had failed the qualification test, (2) no objective evidence existed of welders maintaining their qualifications, and (3) there was no differentiation among the different stainless steel qualifications as required by American Welding Society (AWS) D1.6, "Structural Welding Code-Stainless Steel," 1999 Edition. As part of the extent of condition associated with CAR No. 11-439, SMS needs to determine if the welder that was listed as qualified but failed the qualification performed any safety-related welding and if so, whether that welding was performed on sub-modules that have been previously shipped.

9. Control of Manufacturing Process

a. Inspection Scope

The NRC inspection team reviewed SMS control of manufacturing processes to verify compliance with the requirements of Criterion III, "Design Control," and Criterion IX, "Control of Special Processes," of Appendix B to 10 CFR Part 50. The NRC inspection team observed in-process fabrication activities for a sample of CA-20 carbon steel structural sub-modules, conducted interviews with responsible SMS personnel, and reviewed fabrication documents to determine whether SMS performed fabrication activities in accordance with the applicable design, quality, and technical requirements imposed in SNS POs. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

b. Observations and Findings

The NRC inspection team reviewed shop drawings, travelers, WPSs, and CMTRs related to current manufacturing activities being performed at SMS. The NRC inspection team determined that the shop travelers, WPSs, and CMTRs were in accordance with WEC specifications and the appropriate AWS standards. The NRC inspection team also verified that the CMTRs contained all the required information.

The NRC inspection team reviewed a Nelson Stud Welding CMTR for Heat No. 10065030 of 3/4" diameter S3L studs and Heat Nos. 10062220 and 10083670 of 5/8" diameter H4L studs to determine whether these studs are in accordance with the requirements of American Society for Testing and Materials (ASTM) A108 Grade 1015 mil steel and WEC material specification APP-VW01-ZO-001, "Structural Module Shear Stud Welding Specification," Revision 2, and commercial-grade dedication package No. 11-024 associated with SMS QA Surveillance Report S-SVRV-11-002 and an independent CMTR from Stork Herron Testing Laboratory.

The NRC inspection team observed mechanical straightening of carbon steel WT section weldments for CA-20 wall subassemblies and determined that the control of transverse welding distortion associated with fillet welds was in accordance with the requirements of Section 5.26.2 of AWS D1.1-2000 and QP-PC-31.

During a walkdown on the shop floor, the NRC inspection team noted that a weld bevel edge contained some degree of bending. Discussions with SMS staff indicated that the bending occurred during rigging and lifting activities and was still within design specifications. SMS initiated CAR No. 11-442 to determine whether bending that occurred on a weld bevel edge of a CA20-02 sub-module during rigging and lifting activities required revision of SMS specifications to better address more stringent fitup tolerances for full penetration weld joint edges in the field.

#### c. Conclusions

The NRC inspection team concluded that SMS is implementing its control of the manufacturing processes program consistent with the requirements of Criterion III and Criterion IX of Appendix B to 10 CFR Part 50. Based on the limited samples of documents reviewed, the NRC inspection team also determined that SMS is implementing its policies and procedures. No findings of significance were identified.

### 10. Control of Measuring and Test Equipment

#### a. Inspection Scope

The NRC inspection team reviewed the SMS QAM policies and procedures governing the implementation of its 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. In addition, the NRC inspection team discussed the control of M&TE program with SMS management and technical staff. Furthermore, the NRC inspection team reviewed the calibration records for a sample of M&TE. The attachment to this inspection report lists the documents reviewed by the NRC inspection team.

#### b. Observations and Findings

##### b.1 Policies and Procedures

Section 12, "Control of Measuring and Test Equipment," of the SMS QAM describes the requirements for the control and calibration of M&TE and the process for documenting and evaluating the effect of nonconforming M&TE. The QAM provides controls to ensure that calibrations are conducted against known reference standards traceable to national or industrial standards.

Section 12.1 states, in part, that “M&TE shall be suitably marked, tagged, labeled, or otherwise identified to indicate calibration status and establish traceability to calibration records.”

QP-G-12, “Control of Measuring and Test Equipment,” Revision 3, dated September 15, 2011, provides the requirements for control, use, and calibration of M&TE. The procedure states, in part, that “M&TE requiring control and calibration include instruments or equipment used for testing, inspection, and calibration of other instruments, process verification, or data collection, for the purpose of determining compliance with established requirements. The QC Manager, or designee, manages the control, use, and calibration of M&TE; and the approval of completed calibration records. The QC Manager, or designee, also maintains the M&TE Inventory and Calibration Log which indicates the unique identification number, manufacturer model number, serial number, frequency of calibration, calibration date, and next calibration due date for all M&TE controlled under the program.”

#### b.2 Implementation of Control of Measuring and Test Equipment Program

The NRC inspection team verified that the M&TE had appropriate calibration stickers and current calibration dates, including calibration due dates, and that the associated calibration records were current and available for review. During discussions with the SMS staff, the NRC inspection team was informed that outside vendors calibrate all M&TE used at SMS.

The NRC inspection team reviewed a sample of calibration records and verified that they included information on as-found or as-left conditions, calibration results, the reference standards used, the calibration date, and the due date for recalibration. The NRC inspection team also verified that the selected M&TE was calibrated using procedures traceable to known industry standards and traceable to certified equipment that has known valid relationships to nationally recognized standards. During the review of the calibration records, the NRC inspection team noted that some of the M&TE used in safety-related applications were calibrated by a commercial laboratory that did not have a QA program in accordance with Appendix B to 10 CFR Part 50. The NRC inspection team also verified that SMS had failed to dedicate the calibration services of the commercial laboratory. The NRC inspection team identified this issue as an example of Nonconformance 99901401/2011-202-06 for the failure of SMS to properly control and calibrate safety related M&TE. SMS issued CAR No.11-456/0 to address this issue. Based on the results of the extent of condition, SMS should also determine if there are any impacts on the sub-modules that had previously been shipped.

The NRC inspection team observed that a hardness tester used to perform portions of SMS Procedure QP-PC-31, “Distortion Correction Stress Improvement,” Revision 0, dated August 18, 2011, was not included in the M&TE Inventory and Calibration Log and did not have calibration labels as required by the procedure. During discussions with the SMS staff, the NRC inspection team verified that the hardness tester was currently calibrated; however, it was not currently being controlled under the SMS M&TE Program. The NRC inspection team identified this issue as another example of Nonconformance 99901401/2011-202-06 for the failure of SMS to properly control and calibrate safety related M&TE.

#### c. Conclusions

The NRC inspection team issued Nonconformance 99901401/2011-202-06 for the failure of SMS to properly control and calibrate safety-related M&TE.

Specifically, SMS used a commercial laboratory to calibrate some safety-related M&TE without commercially dedicating the service and failed to ensure that all safety-related M&TE were appropriately controlled under its M&TE program. Based on the results of the extent of condition of these issues, SMS should also determine if there are any impacts on the sub-modules that had previously been shipped.

## 11. Nonconforming Materials, Parts, or Components

### a. Inspection Scope

The NRC inspection team reviewed SMS policies and procedures governing the implementation of its nonconforming materials, parts, or components program to verify compliance with Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the nonconforming materials, parts, or components program with SMS management and technical staff. Furthermore, the NRC inspection team reviewed how corrective actions, root cause analyses, requests for information (from SNS and WEC), and employee concerns to ensure the issues that involved nonconformances are properly included in the nonconformance process.

In addition, the NRC inspection team attended an SMS daily production meeting, a daily call with SNS and WEC on RFIs, and a daily call with SNS on NCR status. The NRC inspection teams performed walkdowns of material storage areas, work areas, and the facility to inspect the segregation of nonconforming materials, the control of NCRs on ongoing work, and the material conditions that could contribute to quality issues. The NRC inspection team observed ongoing craft work and inspection activities for the identification and control of NCRs. The attachment to this inspection report lists the documents reviewed and the personnel interviewed by the NRC inspection team.

### b. Observations and Findings

#### b.1 Policies and Procedures

Section 15, "Control of Nonconforming Items," of the SMS QAM establishes the measures to control nonconforming items or activities.

QP-G-15 describes the requirements for implementing the SMS nonconforming items program while QP-G-16, "Corrective Action", Revision 4, dated August 31, 2010, describes the requirements for implementing the SMS corrective actions program.

QP-G-06a, "Request for Information (RFI)," Revision 5, dated August 30, 2010, details how SMS would get clarification or further information from WEC or SNS related to the fabrication of the AP1000 modules. The procedure references both the SMS nonconformance report (NCR) and CAR procedures and is not a substitute for either of those procedures. The RFI procedure also does not authorize or issue changes to the design.

QP-PC-06, "Implementation of Shop Travelers," Revision 6, dated August 18, 2011, details how work on modules under construction is controlled and documented.

The procedure provides for logging nonconforming conditions in the shop traveler package, with documentation and control under the nonconforming items procedure.

## b.2 Implementation of the Nonconforming Items Program

The SMS process for nonconforming items applies to nonconformances identified at SMS suppliers' facilities, supplier-requested deviations from requirements, and all material receipt issues at SMS. The process also applies to all items at the SMS facility that does not conform to a requirement, unless it is in-process rework, or work is incomplete and not at a quality control inspection or acceptance point. The NRC inspection team verified that the SMS processes and procedures for nonconforming items provide for identification, documentation, segregation, evaluation, and disposition of these items. This process also applies the principles of accepted, rework, scrap, on-hold, or use-as-is, and provides for the applicable justifications to be adequately supported and properly documented. The NRC inspection team verified through interviews with SMS staff that all personnel were aware that they could submit a NCR or CAR and they should notify their supervisor or submit a NCR for any nonconforming items identified.

The NRC inspection team confirmed that nonconforming materials were on hold and segregated. The NRC inspection team reviewed sub-modules in production to verify that NCRs identified in the shop traveler package were appropriately physically tagged as required by the procedure. However, the NRC inspection team observed that one tag could not be found on a sub-module being actively worked, out of over 20 tags reviewed on several sub-modules. SMS replaced the NCR tag and submitted CAR No. 11-444/0.

The NRC inspection team noted that Step 6.1.6 of QP-G-15 requires processing of work on the item to cease until the item or material is released for further work. The NRC inspection team identified a sample of open NCRs from the SMS NCR log to verify that SMS identifying, dispositioning, documenting and segregating nonconforming items consistent with SMS procedures. During a walkdown of the SMS facility, the NRC inspection team observed that work on several sub-modules was allowed to continue even though these sub-modules had identified nonconformances which were not dispositioned. Specifically, these open nonconformance packages related to a sub-module were not contained in the in the work package at the sub-module (i.e., no identification at the sub-module that work could continue). The NRC inspection team identified this issue as an example of Nonconformance 99901401/2011-202-07 for the failure of SMS to cease work on a module that had open nonconformances identified on it. SMS initiated CAR No. 11-452/0 to address this issue.

The NRC inspection team noted that sub-module CA20-06 contained some indications that additional grinding was performed on some large round cutouts in the plate steel where the pipe sleeves were to be installed. During discussions about the ongoing work on the sub-module, the SMS staff stated that the pipe sleeves had been installed during the prior dayshift and subsequently the welds were ground out and the pipe sleeves were removed during the nightshift. The SMS staff believed this was due to the nightshift believing work had proceeded past the point allowed by the NCR conditional release that existed for this sub-module. The NRC inspection team noted that no documentation existed for the removal of the pipe sleeves in the shop traveler, as well as no NCR for production work proceeding past the conditional release. The NRC inspection team discussed this issue with the Production Manager and Process Engineer responsible for the sub-module, and they were unaware of the event.

The NRC inspection team also observed that a conditional release NCR was identified in the shop traveler package for sub-module CA20-06, but there was no clear indication where work was to stop. The SMS nonconforming items program provides for a “conditional release” that releases a specific nonconforming condition for further processing, provided work does not progress beyond a point where the nonconforming condition can no longer be identified or corrected. Step 6.1.14.b of QP-G-15 requires that a conditional release be clearly documented in the work document (shop traveler package) and that work shall not progress beyond the point specified in the conditional release. The NRC identified this issue as another example of Nonconformance 99901401/2011-202-07. SMS initiated CAR Nos. 11-440/0 and 11-446/0 to address this issue.

### c. Conclusions

The NRC inspection team issued Nonconformance 99901401/2011-202-07 for the failure of SMS to control a sub-module that had open nonconformances identified on it. SMS failed to identify all open nonconformance packages related to a sub-module in the work package at the sub-module (i.e., no identification at the sub-module that work could continue). In addition, for nonconformances with a conditional release, SMS failed to identify in the work package the point that work may continue at the sub-module.

## 12. Corrective Action

### a. Inspection Scope

The NRC inspection team reviewed the SMS QAM and implementing procedures that govern the corrective action program to verify compliance with Criterion XVI, “Corrective Action,” of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the corrective action program with SMS management and technical staff. The NRC inspection team also reviewed how corrective action, root cause analysis, requests for information (from SNS and WEC), and employee concerns, ensure the issues that involved conditions adverse to quality (e.g., CARs) were properly put into the corrective action program. The attachment to this inspection report lists the documents reviewed and the personnel interviewed by the NRC inspection team.

### b. Observations and Findings

#### b.1 Policies and Procedures

Section 16, “Corrective Action,” of the SMS QAM defines the processes for identifying and documenting corrective actions.

QP-G-16, “Corrective Action,” Revision 4, dated August 31, 2010, describes the requirements for implementing the corrective action program. The SMS corrective action program is used for all conditions that are conditions adverse to quality, including failures, malfunctions, deficiencies, defective items, and nonconformances (that are not covered under the nonconforming condition process). CARs are documented on the CAR form (QAM Form CAR-000014-00).

## b.2 Implementation of the Corrective Actions Program

The NRC inspection team verified through interviews that SMS personnel knew that they could submit an NCR or CAR and knew that they needed to notify their supervisor or submit a CAR for conditions adverse to quality. The NRC inspection team verified that the SMS process and procedures for corrective action define conditions adverse to quality and significant conditions adverse to quality (SCAQ), determine the cause and corrective action require a root cause analysis and action to prevent the recurrence of SCAQ, and require verification of actions taken.

The corrective action program requires a reportability review (e.g., Part 21 review), and documents the various approvals required and final CAR closure. The NRC inspection team verified that the SMS CAR procedure provides for a Stop Work Order which requires the Director QA/QC to initiate with the appropriate criteria.

The NRC inspection team noted that the corrective action program has no specific requirements for prompt correction of a condition adverse to quality and has no actions for CARs that are still open past the established due date. The NRC inspection team reviewed the 2010 and 2011 CAR logs and observed that out of 561 CARs, 207 were still open; with 76 past the established due date. Additionally, the NRC inspection team noted that 11 of the 207 CARs that were still open were categorized as SCAQ and that 2 SCAQ CARs were past a required due date. Since there are no established requirements for prompt corrective actions or actions for CARs open past the established due date in the SMS QAM or implementing procedures, SMS does not have the process in place to promptly correct conditions adverse to quality. The NRC inspection team identified this issue as Nonconformance 99901401/2011-202-08 for the failure of SMS to promptly correct several CARs. SMS initiated CAR No. 11-451/0 to address this issue. Based on the results of the extent of condition of these issues, SMS should also determine if there are any impacts on the sub-modules that had previously been shipped.

The NRC inspection team observed that SMS has not performed a trending analysis for conditions adverse to quality. POs from SNS for the sub-modules at Vogtle and V.C. Summer require, in part, that "Conditions adverse to quality identified through the individual work processes are to be periodically reviewed to identify the presence of adverse trends." QP-G-16, "Corrective Action," Revision 4, dated August 31, 2010, defines conditions adverse to quality as an all-inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items and nonconformances. Additionally, QP-G-16 states that the Manager QA is responsible for assessing and reporting identified trends. The NRC inspection team noted that QP-G-16 does not have a step in the procedure to implement this requirement. The NRC inspection team was informed that SMS has not performed a trend analysis of the 561 CARs that had been open in 2010 and 2011 prior to the NRC inspection. The NRC inspection team identified this issue as Nonconformance 99901401/2011-202-09 for the failure of SMS to perform a trend analysis of conditions adverse to quality as required by the SNS POs. SMS initiated CAR No. 11-445/0 to address this issue.

### c. Conclusions

The NRC inspection team issued Nonconformance 99901401/2011-202-08 for the failure of SMS to promptly correct several corrective action requests and Nonconformance 99901401/2011-202-09 for the failure of SMS to perform a trend analysis of conditions adverse to quality consistent with the requirements of the SNS purchase orders. For SMS CAR No 11-451/0 opened to address Nonconformance 99901401/2011-202-08, SMS should also determine if there are any impacts on the sub-modules that had previously been shipped.

## 13. Internal Audits

### a. Inspection Scope

The NRC inspection team reviewed SMS policies and procedures governing the implementation of its audits program to verify compliance with Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team discussed the audit program with SMS 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 Policies and Procedures

Section 18, "Audits," of the SMS QAM establishes the requirements for the scheduling, preparation, performance and reporting of audits.

QP-G-18 supplements the requirements of Section 18 of the SMS QAM by providing specific guidance for scheduling audits, the use of an audit plan, performance of the audits, and writing the audit report, as well as the process to follow for when there are audit findings.

#### b.2 Internal Audits

The NRC inspection team verified that internal audits of QA program activities had been scheduled at least annually and had been conducted using a checklist to ensure that SMS evaluated all applicable regulatory and quality requirements and criteria. The checklists contained an adequate level of objective evidence to support the classification of checklist criteria as satisfactory or unsatisfactory, and SMS opened CARs for all findings and recommendations identified in audit reports. The NRC inspection team noted that SMS took prompt corrective actions for the audit findings reviewed and that the reports included adequate objective evidence to support closing the audit finding. The NRC inspection team also verified that SMS had prepared and approved audit plans identifying the scope, focus, and applicable checklist criteria before the initiation of the audit activity.

### c. Conclusions

The NRC inspection team concluded that SMS is implementing its internal audits program consistent with the regulatory requirements of Criterion XVIII of Appendix B to 10 CFR Part 50. Based on the limited sample of documents reviewed, the NRC inspection team also determined

that SMS is implementing its policies and procedures associated with internal audits. No findings of significance were identified.

#### 14. Entrance and Exit Meetings

On November 14, 2011, the NRC inspection team discussed the inspection scope during an entrance meeting with Mr. Joseph L. Ernst, Executive Vice President, and other SMS personnel. On November 18, 2011, the NRC inspection team presented the inspection results during an exit meeting with Mr. Ernst and other SMS personnel.

## ATTACHMENT

### 1. PERSONS CONTACTED & NRC STAFF INVOLVED

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>	<b>Interviewed</b>
Joseph L. Ernst	Executive VP	SMS	X	X	X
Ryan L. Whitford	QA Manager	SMS	X	X	X
Sachin Singh	Materials Manager	SMS	X	X	
Roy Rehkugler	Production Manager	SMS	X	X	X
Tim Catchpole	Director of Quality	SMS	X	X	
Troye Caraccioli	Manager of Projects	SMS	X	X	
Rick Sutter	Consultant – Supplier QA	PAC/SMS	X		
John Graham	QC Manager	SMS	X	X	
Daniel Adams	QA Supervisor	SMS	X	X	
Dale Krider	Product Manager	SMS	X	X	X
Michael Moser	General Manager	SMS	X	X	
Secilia Anderson	QA Specialist	SMS	X	X	X
Brandi Hernandez	QA Specialist	SMS	X	X	X
Kima Burkman	QA Specialist	SMS			X
Lee Gros	Asst. General Manager	SMS	X	X	X
Steve Bell	Detailing Manager	SMS			X
Charles Besselman	Engineering Manager	SMS	X	X	X
Scotty L. Matthews	Production Manager	SMS	X	X	
Cornelius Brown	DC/RM Manager	SMS	X		
Richard McGuire	Process Engineer	SMS	X	X	
David Portus	Process Engineer	SMS	X	X	
Matt Mroz	Modules Engineer	WEC	X	X	
Joe Torres	Corrective Action Manager	SMS		X	

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>	<b>Interviewed</b>
David Slade	Sr. Procurement Specialist	SMS		X	
Jeff Bonkosky	NCR Coordinator	SMS		X	
Roosevelt Word	SCANA Manager	SCANA-Summer		X	
Ronnie Andrews	Southern Nuclear Manager	SNC – Vogtle		X	
Jack Gallagher	ECP Manager	SMS		X	X
Janet Gray	Record Compliance	SMS		X	
Gabby Sonnier	Action Items Coordinator	SMS		X	
Patrick Snyder	Welder	SMS		X	
Nicola Barry	Executive Assistant	SMS		X	
John Youngblood	Purchasing	SMS		X	
Dickey Monceaux*		SMS		X	
Scott Ortego*		SMS		X	
Dennis Dreyfus*		SNS		X	
Keyes Neimer*		SNS		X	
Virgil Barton*		SNS		X	
Curtis Castell*		SNS		X	
Daniel Terrell*		SNS		X	
Ron Stevens*		SNS		X	
Randy Harrison*		SNS		X	
John Donofrio*		SNS		X	
David Jones*		SNC-Vogtle		X	
Brian Whitley*		SNC-Vogtle		X	
Ron Clary*		SCANA – Summer		X	
Alan Torres*		SCANA-Summer		X	

<b>Name</b>	<b>Title</b>	<b>Affiliation</b>	<b>Entrance</b>	<b>Exit</b>	<b>Interviewed</b>
Alfred (Al) Paglia*		SCANA-Summer		X	
Daryl Shapiro*		Pillsbury Law		X	
Kimberly Harshaw*		Pillsbury Law		X	
Kerri Kavanagh	Team Lead	NRC	X	X	
Yamir Diaz-Castillo	Operations Engineer	NRC	X	X	
Thomas Kendzia	Operations Engineer	NRC	X	X	
Alain Artayet	Senior Construction Inspector	NRC	X	X	
Jeffrey Jacobson	Senior Operations Engineer	NRC	X	X	
Steven Downey	Operations Engineer	NRC	X	X	
John Honcharik	Senior Materials Engineer	NRC	X	X	
Laura Dudes	Director, Division of Construction Inspection and Operational Programs (DCIP)/NRO	NRC		X	
Juan Peralta*	Branch Chief, CQVA, DCIP	NRC		X	
John Tappert*	Deputy Division Director, DCIP	NRC		X	
Rick Rasmussen*	Branch Chief, CQVB, DCIP	NRC		X	
Rich McIntyre*	Sr. Reactor Engineer	NRC		X	

\*Attended via conference call

## 2. INSPECTION PROCEDURES USED

Inspection Procedure 36100, "Inspection of 10 CFR Part 21 and 10 CFR 50.55(e) Programs for Reporting Defects and Noncompliance," dated April 25, 2011.

Inspection Procedure 43002, "Routine Inspections of Nuclear Vendors," dated April 25, 2011.

Inspection Procedure 43003, "Reactive Inspections of Nuclear Vendors, dated April 25, 2011.

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

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

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
99901401/2011-202-01	Open	NON	Criterion II
99901401/2011-202-02	Open	NON	Criterion II
99901401/2011-202-03	Open	NON	Criterion III
99901401/2011-202-04	Open	NON	Criterion IV
99901401/2011-202-05	Open	NON	Criterion IX
99901401/2011-202-06	Open	NON	Criterion XII
99901401/2011-202-07	Open	NON	Criterion XV
99901401/2011-202-08	Open	NON	Criterion XVI
99901401/2011-202-09	Open	NON	Criterion XVI

### 4. DOCUMENTS REVIEWED

- Shaw Modular Solutions Quality Assurance Manual (QAM), Revision 3, dated January 4, 2011
- QP-DC-05, "Shop Traveler Control," Revision 2, dated August 9, 2011
- QP-DC-20, "The Measurement of Ferrite in Stainless Steel Weldments," Revision 2, dated September 21, 2011
- QP-G-02, "Training," Revision 7, dated October 20, 2011
- QP-G-04, "Procurement Document Control," Revision 1, dated February 24, 2010
- QP-G-05a, "Detailed Drawings," Revision 0, dated January 11, 2011
- QP-G-06a, Requests for Information (RFI), Revision 5, dated August 30, 2010
- QP-G-07, "Control of Purchased Items and Services," Revision 1, dated February, 24, 2010
- QP-G-07a, "Commercial Grade Dedication," Revision 6, dated October 6, 2011
- QP-G-12, "Control of Measuring and Test Equipment", Revision 3, September 15, 2011
- QP-G-15, Control of Nonconforming Items, Revision 4, dated September 21, 2011
- QP G-15a, "10 CFR Part 21 and 10 CFR 50.55e Compliance," Revision 3, dated January 4, 2011
- QP-G-16, "Corrective Action," Revision 4, dated August 31, 2010
- QP-G-18, "Quality Assurance Audits," Revision 3, dated October 6, 2011
- QP-G-18a, "Quality Assurance Surveillances," Revision 2, dated April 21, 2011

- QP-NDE-MT-01, "Magnetic Particle Examination," Revision 7, dated July 13, 2011
- QP-NDE-UT-01, "Ultrasonic Inspection of AWS D.1 Groove Welds," Revision 3, dated September 13, 2011
- QP-NDE-VT-01, "Visual Examination Procedure," Revision 4, dated October 12, 2011
- QP-NDE-WP-01, "Certification of NDE Personnel", Revision 5, dated July 12, 2011
- QP-P-04, "Procurement Documents," Revision 0, dated August 5, 2011
- QP-PC-01, "Weld Filler Metal Control," Revision 5, dated April 5, 2011
- QP-PC-02, "Weld Procedure Specification Development and Qualification-AWS," Revision 7, dated February 26, 2011
- QP-PC-04, "Welder/Operator Qualification-AWS," Revision 6, dated October 19, 2011
- QP-PC-06, "Implementation of Shop Traveler," Revision 6, dated August 18, 2011
- QP-PC-09, "Standard Repair of Welds and Base Materials," Revision 1, dated November 10, 2011
- QP-PC-29, "Welding Fabrication Procedure-AWS," Revision 0, dated August 18, 2011
- QP-PC-31, "Distortion Correction Stress Improvement Technique," Revision 0, dated August 18, 2011
- QP-PC-34, "Lincoln Power Wave S350 Calibration Procedure," Revision 0, dated September 15, 2011
- QP-PE-08, "Innovative Steel Detailing Detailed Drawing Models," Revision 2, dated January 11, 2011
- QP-PE-09, "Shaw Modular Solutions Detailed Drawing Models," Revision 1, dated January 11, 2011
- QP-QA-01, "Qualification of Auditors", Revision 5, dated September 29, 2011
- QP-QA-03, "Supplier Evaluation/Approved Supplier List," Revision 5, dated October 13, 2011
- QP-QA-06, Root Cause Analysis, Revision 4, dated February 22, 2011
- QP-QC-02, "Receiving Inspection," Revision 8, dated October 19, 2011

- QP-QC-03, “Qualification and Certification of Inspection and Test Personnel”, Revision 5, dated September 22, 2011
- QP-WI-01, “Welding Inspection Procedure”, Revision 5, dated May 4, 2011
- APP-VL52-Z0-023, Material Specification for ASTM A240, UNS S32101, Duplex Stainless Steel Plate, Revision 1
- Calibration Records of MTE-002b, 5.10 mil Foil Set, Calibration Date: April 14, 2011, Due Date: April 14, 2012
- Calibration Records of MTE-004, Parker 10lb. Test Bar, Calibration Date: February 26, 2010, Due Date: February 26, 2015
- Calibration Records of MTE-007, Survey Meter, Calibration Date: October 10, 2011, Due Date: April 10, 2012
- Calibration Records of MTE-011, Laser Tachometer, Calibration Date: December 23, 2010, Due Date: December 23, 2011
- Calibration Records of MTE-020, Starrett Electronic Micrometer, Calibration Date: February 17, 2011, Due Date: February 17, 2012
- Calibration Records of MTE-028, Fluke Digital Thermometer, Calibration Date: April 1, 2011, Due Date: April 1, 2012
- Calibration Records of MTE-041, EXTECH White Light Meter, Calibration Date: May 11, 2011, Due Date: May 11, 2012
- Calibration Records of MTE-044-1, Set Plug, Calibration Date: July 21, 2011, Due Date: July 21, 2012
- Calibration Records of MTE-047, Starrett 6 inch Digital Caliper, Calibration Date: September 29, 2011, Due Date: September 29, 2012
- Calibration Records of MTE-048, Starrett 6 inch Digital Caliper, Calibration Date: September 29, 2011, Due Date September 29, 2012
- Calibration Records of MTE-056, Empro Shunt, Calibration Date: October 25, 2011, Due Date: October 25, 2012
- Calibration Records of MTE-057, Empro Shunt, Calibration Date: October 25, 2011, Due Date: October 25, 2012
- Calibration Records of MTE-067, Glastonbury Southern Gage (Go), Calibration Date: September 28, 2011, Due Date: September 28, 2012

- Calibration Records of MTE-068, Glastonbury Southern Gage (No-Go), Calibration Date: September 28, 2011, Due Date: September 28, 2012
- Calibration Records of MTE-070, Glastonbury Southern Gage (Go), Calibration Date: Out for calibration
- Calibration Records of MTE-071, Glastonbury Southern Gage (No-Go), Calibration Date: Out for calibration
- Calibration Records of MTE-119 , SC Test Block, Calibration Date: January 28, 2011, Due Date: January 28, 2016
- Calibration Records of MTE-140c, 5.12 mil Plastic Shim, Calibration Date: May 16, 2011, Due Date: May 16, 2012
- Calibration Records of MTE-177, Testex Thickness Gage, Calibration Date: August 31, 2011, Due Date: August 31, 2012
- Commercial Grade Dedication Package 11-024 for 3/4” and 5/8” nelson studs, dated November 2, 2011
- Commercial Grade Dedication Package 11-013 for A 240 S32101 Duplex Stainless Steel Plate, dated October 26, 2011
- FRM-000035, “QA Auditor Training Record”
- Westinghouse design drawing, APP-CA20-S5B-02001, “CA20-02,” Revision 5
- Westinghouse drawing, APP-CA20-S5Y-00003, “CA20 Submodules,” Revision 3
- Welding Procedure Specifications (WPS) 1-1-1, Revision 5, WPS 1-1-39, Revision 1, WPS 1-1-41, Revision 1, WPS 10-10-146, Revision 0
- Westinghouse material specification – impact testing, “APP-VW20-Z0-023, Welding Specification for ASTM A240 UNS S32101 Duplex Stainless Steel Plate”
- CARs: 10-022/0, 10-033/0, 10-038/0, 10-081/0, 10-016/0, 10-105/0, 10-113/0, 10-117/0, 10-117/1, 10-124/0, 10-138/0, 10-138/1, 10-138/2, 10-153/0, 11-025/0, 11-046/0, 11-047/0, 11-064/0, 11-087/0, 11-087/1, 11-091/1, 11-096/0, 11-111/1, 11-136/0, 11-157/0, 11-162/0, 11-188/0, 11-212/0, 11-213/0, 11-214/0, 11-251/0, 11-251/2, 11-251/3, 11-251/4, 11-245/0, 11-315/0, 11-316/0, 11-366/0, 11-380/0, 11-382/0, 11-439/0, 11-440/0, 11-442/0, 11-444/0, 11-445/0, 11-446/0, 11-450/0, 11-451/0, 11-452/0, 11-456/0, 11-457/0, and 11-458/0
- NCRs: 10-007/0, 10-058/0, 10-125/0, 10-188/0, 10-221/1, 10-288/0, 10-317/0, 11-005/0, 11-009/0, 11-190/1, 11-193/2, 11-241/3, 11-242/3, 11-243/0, 11-248/1, 11-249/1, 11-304/2, 11-305/2, 11-306/2, 11-307/2, 11-308/0, 11-311/2, 11-326/3, 11-334/0, 11-335/0, 11-338/0, 11-

339/0, 11-341/1, 11-344/1, 11-490/0, 11-507/0, 11-351/0, 11-357/0, 11-361/0, 11-367/1, 11-382/1, 11-384/1, 11-388/0, 11-392/0, 11/444/0, 11-452/0, 11-491/0, 11-514/0, and 11-523/0

- Quality Assurance Surveillance Reports: 11-003, 11-008, 11-009, 11-012, 11-013, 11-014, 11-015, 11-016, 11-032, 11-040, 11-041, 11-045, 11-067, 11-078, and 11-080