



**The Shaw Group Inc F&M SMS FRE
Shaw Modular Solutions**

February 22, 2011

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United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Shaw Modular Solutions (SMS) response to NRC letter to SMS dated January 24, 2011;
regarding NRC Vendor Inspection of SMS conducted from January 10 to 12, 2011

Reference: Docket number 99901-401

This letter and its Enclosure provide the SMS response to the subject letter. As requested, information is provided regarding the technical and programmatic challenges that SMS has identified, plus the proposed corrective actions that SMS plans on implementing to address those challenges.

The technical and programmatic challenges that SMS has identified since initiation of fabrication activities in May 2010 are in the areas of:

- Quality Assurance
- Training
- Corrective Action
- Management Oversight
- Welding
- Material and Nonconforming Material Control

Actions have been taken to assemble and trend the challenges that have been identified, plus the feedback received from Shaw Nuclear Services (SNS) and their AP1000 clients. Analysis of the feedback identified a commonality of issues which facilitated the development of an action plan to address the challenges. The actions are related to the following general topics:

- Nuclear Safety Culture
- Quality Assurance
- Nuclear Fundamentals
 - Corrective Action Program
 - Procedure Quality, Use and Adherence
 - Human Performance
 - Training
 - Management Oversight

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- Process Improvement
 - General
 - Welding
 - Work Control
 - Material Control

SMS is committed to enhancing and maintaining a sustainable nuclear safety culture and regulatory compliance program that demonstrates our understanding of regulatory compliance and meets or exceeds the appropriate regulations.

In addition to the above-requested information, the subject letter requested that SMS provide dates regarding when SMS expects to be in full production of structural and mechanical AP1000 sub-modules, and the expected date of the first shipment of AP1000 modules.

SMS expects to be at a high level of production of structural modules in early June 2011. SMS expects that shipment of the first structural sub-module will occur the end of June 2011. Fabrication of mechanical modules will follow the structural modules. SMS will provide an update when the schedule for the mechanical modules is finalized. If schedule changes are necessary, SMS will promptly notify the NRC.

Several challenge areas have been identified as a result of recent assessments, audits and program implementation. SMS is committed to the establishment and maintenance of a nuclear safety culture and regulatory compliance program that demonstrates our understanding of regulatory compliance and meets or exceeds the appropriate regulations.

SMS appreciates the resources necessary to establish, and the efforts required to implement, a regulatory compliance program that demonstrates the level of effectiveness expected for the scope of supply we are providing to the nuclear industry. We recognize the importance of having a management team that possesses nuclear industry experience, and/or is supplemented by other experienced individuals until such time as that experience is acquired internally. We are taking, and will continue to take, actions in that area. We recognize and embrace an environment of continuously rising standards and process improvement. We have taken, are taking and will continue to take those actions needed to elevate our program implementation to the level of effectiveness appropriate to the fabrication of AP1000 modules.

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SMS regrets that the status of activities at the time of the NRC inspection did not facilitate completion of the inspection as planned. We trust that the information provided in this letter and its Enclosure is satisfactory. If any further information or clarification is needed, please do not hesitate to contact me.

Very truly yours,

Joseph L. Ernst
Executive Vice President
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Enclosure

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Enclosure to SMS response to NRC letter dated January 24, 2011

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This Enclosure provides the Shaw Modular Solutions (SMS) reply to items 1 and 2 of the United States Nuclear Regulatory Commission (NRC) letter dated January 24, 2011. NRC Request items 3 and 4 are addressed in the letter transmitting this enclosure.

NRC REQUEST

1. (Provide) a description of the technical and programmatic challenges that SMS has identified during its self-assessment conducted in December 2010.

SMS RESPONSE

In addition to the self-assessments conducted in December 2010, multiple audits and assessments were performed in 2010, pertinent conclusions of which are included in this response for completeness. SMS identified one issue related to welding capabilities as a technical challenge area. All other challenge areas are considered to be programmatic in nature. The corresponding corrective actions for each issue are addressed in the response to NRC Request item 2.

A) Quality Assurance

Through various self-assessments and external reviews, SMS has determined that the Quality Assurance (QA) organization was not sufficiently independent from the execution of program activities. Members of the QA organization were frequently relied on to develop and implement processes and procedures. The skills and knowledge level of some members of the QA organization require improvement.

B) Training

Assessments, Corrective Action Reports (CAR) and other sources of input identified weaknesses in the SMS training program. Effectiveness improvement in several areas, including QA, Quality Control (QC), welding and material control, are needed.

C) Corrective Action Program (CAP)

The CAP had not been effectively implemented with regard to timely issue identification and resolution, resolution adequacy, and determination of the cause(s) for significant conditions adverse to quality.



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D) Management Oversight

The level and effectiveness of management oversight of daily activities was determined to be inadequate based on the quality of work, including fabrication and process development activities, performed to date.

E) Welding capabilities

A self-assessment concluded that improvement was needed with regard to the welding skills and technical knowledge of a number of SMS welding personnel.

F) Material and Nonconforming Material Controls

An internal audit identified that material storage areas were not clearly marked, including differentiation of nonconforming materials. Additionally, controls for tracking receipt and use of materials needed improvement.

NRC REQUEST

2. (Provide) the proposed corrective actions that SMS plans on implementing to address the technical and programmatic challenges.

SMS RESPONSE

After the recent NRC inspection at SMS, actions were taken to assemble and trend the challenges that had been self-identified or raised by other entities. These analyses resulted in the development of an action plan to address the challenges. The following topics are the focus of the plan.

- Nuclear Safety Culture
- Quality Assurance
- Nuclear Fundamentals
 - Corrective Action Program
 - Procedure Quality, Use and Adherence
 - Human Performance
 - Training
 - Management Oversight



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- Process Improvement
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The goal of the action plan is to ingrain nuclear industry expectations and high standards into the workforce and processes. The plan is designed to ensure regulatory margin above minimum compliance. The status of this plan is updated routinely, with periodic status reports to SNS and its AP1000 clients.

A comprehensive listing of actions related to each of these categories has been developed and populated with owners and specific due dates. The action items have been prioritized to support the production and shipment dates referenced in this letter. The actions provided below are correlated to the challenge areas identified in the response to NRC Request item 1 above.

A) Quality Assurance

1. Establish independence of the QA and QC organizations by realigning organizational responsibilities.
2. Revise the SMS QA Manual and implementing procedures to reflect organization and process changes.
3. Determine the need for additional resources.

B) Training

1. Establish training standards and expectations for each department.
2. Ensure SMS management is familiar with the relevant lessons learned that are identified in NUREG-1055, "Improving Quality and the Assurance of Quality in the Design and Construction of Nuclear Power Plants", and is committed to avoiding the concerns raised in NUREG-1055.
3. Improve the process and tools in place to ensure ongoing personnel training effectiveness.
4. Enhance SMS personnel understanding of the importance of training and ensure that they are fully capable of and committed to effectively administering the training.
5. Develop performance metrics to assess the effectiveness of SMS training.
6. Improve the technical process/procedural knowledge and welding skills of SMS welding personnel.



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7. Improve the methods by which requisite skills and knowledge are identified, evaluated, imparted and measured for existing and future/incoming welding personnel.
8. Conduct additional training to improve the skills and knowledge of existing and future/incoming QA management and staff personnel.
9. Reinforce and confirm QC personnel understanding of the expectations and standards applicable to working in a nuclear safety related work environment.
10. Train all employees on expectations and use of the CAP.

C) Corrective Action Program (CAP)

1. Transfer "ownership" and administration of the CAP from the Independent Oversight organization to the Operations organization.
2. Deploy new CAP process attributes (e.g., electronic tracking, trending program, Corrective Action Review board, performance metrics) to improve the level of CAP sophistication and effectiveness.
3. Resolve the Significant Conditions Adverse to Quality (SCAQ) that have been previously identified.
4. Perform a common cause evaluation related to current and past SCAQs.
5. Implement the CAP in a manner to ensure that SMS work processes receive ongoing scrutiny to identify and implement identified improvements, contributing to identifying potential problems before they manifest themselves.
6. Revise the CAP process to allow entry of conditions by any employee.

D) Management Oversight

1. Reinforce, on an ongoing basis, the expectations of a nuclear safety related work environment and the need to utilize and adhere to established procedural requirements.
2. Enhance the amount and quality of SMS management/supervisory oversight of daily work activities.
3. Develop, issue and use a procedure for pre-job briefings, including standard criteria, actions, responsibilities, schedule, communication and quality expectations.

E) Welding capabilities

1. Develop, issue, and use a SMS Welding Manual that addresses applicable Code requirements.



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2. Develop, issue, and use a listing of fabrication standards and acceptance criteria for welders, fitters and supervisors.
3. Update the Weld Log portion of the Shop Traveler to include documentation of all weld-related activities.
4. Develop, issue, and use a Standard Repair procedure for welding activities.

F) Material and Nonconforming Material Controls

1. Revise labeling, signage, and access controls in material storage locations to support differentiation of accepted and nonconforming material and revise governing procedures accordingly.
2. Revise marking and tagging requirements of materials comprised of multiple parts to assure effective accountability and traceability.