UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

May 9, 2011

Mr. Kelly D. Trice
President and Chief Operating Officer
Shaw AREVA MOX Services
Savannah River Site
P.O. Box 7097
Aiken, SC 29804-7097

SUBJECT: MIXED OXIDE FUEL FABRICATION FACILITY- NRC INSPECTION REPORT NO. 70-3098/2011-001 AND NOTICE OF VIOLATION

Dear Mr. Trice:

During the period of January 31 through March 31, 2011, the US Nuclear Regulatory Commission (NRC) completed inspections of construction activities related to the construction of the Mixed Oxide Fuel Fabrication Facility. The purpose of the inspections was to determine whether activities authorized by the construction authorization were conducted safely and in accordance with NRC requirements. The enclosed inspection report documents the inspection results. At the conclusion of the inspections, the findings were discussed with those members of your staff identified in the enclosed report.

The inspections examined activities conducted under your construction authorization as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your authorization. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of these inspections, two violations of NRC requirements were identified: (1) failure to ensure that quality level 1 equipment and services were controlled to assure conformance with specified technical and quality assurance (QA) requirements and (2) failure to meet the requirements of American Society of Mechanical Engineers (ASME) NQA-1-1994, Quality Assurance Requirements for Nuclear Facility Applications (NQA-1), Subpart 2.5, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items. The violations were evaluated in accordance with the NRC Enforcement Policy available on the NRC's Web site at www.nrc.gov. The violations are cited in the enclosed Notice of Violation (Notice) and are being cited in the Notice because they were identified by the NRC. The circumstances surrounding the violations are described in detail in the subject inspection report.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. For your consideration, NRC Information Notice 96-28, "SUGGESTED GUIDANCE RELATING TO DEVELOPMENT AND IMPEMENTATION OF CORRECTIVE ACTION," is available on the NRC's Web site. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of NRC's "Rules of Practice," a copy of this letter and its enclosures may be accessed through the NRC's public electronic reading room, Agency-Wide. Document Access and Management System (ADAMS) on the Internet 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.

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

Deborah A. Seymour, Chief
Construction Projects Branch 1
Division of Construction Projects

Docket No. 70-3098
Construction Authorization No.: CAMOX-001

Enclosures:
1. Notice of Violation
2. NRC Inspection Report 70-3098/2011-001 w/attachment

cc w/encls: (See next page)

cc w/encl:
Mr. Clay Ramsey, Federal Project Director
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P.O. Box A
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Federal Project Director
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cc w/encls: (See next page)

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ADAMS: ■ Yes ACCESSION NUMBER: ML111290488 ■ SUNSI REVIEW COMPLETE

OFFICE	RII:DCP	RII:DCP	RII:DCP				
SIGNATURE		Via e-mail	Via e-mail				
NAME	W Gloersen	M. Shannon	B. Adkins				
DATE	5/6/2011	5/5/2011	5/5/2011				
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\CCI\INSPECTION REPORTS\FUEL FACILITIES\MOX\2011\MOX IR 2011-001 R1.DOCX

Letter to Kelly Price from Deborah A. Seymour dated May 9, 2011.

SUBJECT: MIXED OXIDE FUEL FABRICATION FACILITY- NRC INSPECTION REPORT NO. 70-3098/2011-001 AND NOTICE OF VIOLATION

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NOTICE OF VIOLATION

Shaw AREVA MOX Services
Aiken, South Carolina

Docket No. 70-3098
Construction Authorization No. CAMOX-001

During Nuclear Regulatory Commission (NRC) inspection activities conducted January 1 through March 31, 2011, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

A. Condition 3.A of NRC Construction Authorization (CA) No. CAMOX-001, Revision (Rev.) 2, dated June 12, 2008, authorizes, in part, the applicant to construct a plutonium processing and mixed oxide fuel fabrication plant, known as the Mixed Oxide Fuel Fabrication Facility (MFFF) located at the Department of Energy's Savannah River Site, in accordance with the statements, representations, and conditions of the MOX Project Quality Assurance Plan (MPQAP) dated March 26, 2002, and supplements thereto (MPQAP, Rev. 9, Change 1, dated June 9, 2010).

MPQAP, Rev. 9, Change 1, Section 7, Control of Purchased Material, Equipment, and Services, Section 7.1, General, states, in part; that Shaw AREVA MOX Services (MOX Services) procurement of Quality Level 1 and Quality Level 2 material, equipment and services is controlled to assure conformance with specified technical and quality assurance (QA) requirements … Source inspections and surveillances, as well as evaluations of received items and services are performed, as necessary, upon delivery or completion to ensure requirements specified in procurement documents are met.

Contrary to the above, prior to March 3, 2011, MOX Services failed to ensure that procurement of Quality Level 1 material, equipment and services was controlled to assure conformance with specified technical and QA requirements. Specifically, source inspections, surveillances or evaluations of received items failed to ensure that requirements specified in procurement documents were met as evidenced by the following five examples:

1. MOX Services failed to identify that the gap spacing between the annular tank and colemanite shield panels for KPA TK9500 exceeded the item relied on for safety (IROFS) criticality dimension identified on DCS01-KPA-CG-PLG-L-06705;

2. MOX Services failed to ensure that the supplier/subcontractor performed design verification for Quality Level 1 systems, structures, and components (SSCs) as required by Basic Requirement 3 of American Society of Mechanical Engineers (ASME) NQA-1-1994, Quality Assurance Requirements for Nuclear Facility Applications (NQA-1).

3. MOX Services failed to identify that dimensions for nozzles P17, P7, and P1 for KCD TK1000 did not meet the required tolerances listed on design drawing 006314-M-1121-3;

4. MOX Services failed to identify that the internal diameter for a colemanite shield panel for KPA TK9500 did not meet the required tolerance listed on design drawing 006314-M-930-2, Rev. 4;

5. MOX Services failed to adequately perform commercial grade dedication of Barsplice connectors including verification of critical characteristics.

This is a Severity Level IV violation (Enforcement Policy 6.5.d) (Violation (VIO) 70-3098/ 2011-001-001)

B. Condition 3.A of NRC Construction Authorization No. CAMOX-001, Rev. 2, dated June 12, 2008, authorizes, in part, the applicant to construct a plutonium processing and mixed oxide fuel fabrication plant, known as the MFFF located at the Department of Energy's Savannah River Site, in accordance with the statements, representations, and conditions of the MPQAP dated March 26, 2002, and supplements thereto (MPQAP, Rev. 9, Change 1, dated June 9, 2010).

MPQAP, Rev. 9, Change 1, Attachment A, Commitment to Quality Assurance Standards, requires MOX Services to meet the requirements of ASME NQA-1, Subpart 2.15, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants. Section 2.2, Classification of Items Handled, requires MOX Services to classify items into three categories (Categories A, B, and C) according to their important physical characteristics. Section 2.2.2, Category B, defines Category B items as those that may be handled with conventional handling equipment but which require detailed procedures because of the susceptibility to damage. Section 7.1.2 (d) requires that work instructions shall be issued for tasks, which, because of their relationship with each other, must be accomplished in a certain sequence. Section 7.1.2 (c) requires MOX Services to follow manufacturer's instructions and conditions of operation for the handling equipment and items to be handled. Section 7.1.3, Variations, states, in part, that variations from the procedures shall be approved and documented.

Contrary to the above, prior to March 14, 2011, MOX Services failed to meet the requirements of ASME NQA-1, Subpart 2.15, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants, resulting in the following:

1. MOX Services Project Procedure (PP) 11-36, Rigging & Lifting – Equipment Inspections, failed to meet Subpart 2.15, Section 2.2, Classification of Items Handled, which requires classification of MOX items requiring lifting into one of three categories (Categories A, B, and C) according to their important physical characteristics. Specifically, the definitions for ordinary and critical lifts as defined in PP 11-36 were not consistent with the definitions and requirements for Category A, B, and C items as defined in Subpart 2.15. PP 11-36 placed an additional weight requirement of 25 tons in addition to the susceptibility for damage criteria contained in Section 2.2.2 of Subpart 2.15 before an item could be classified as Category B. PP 11-36 also failed to define or provide criteria for Category A items and did not provide examples of MOX items that would be classified as either Category A or Category B.

a. As a result of an inadequate procedure (see Item 1 above), MOX Services improperly categorized the lifting and installation of colemanite shield panels for KCB TK1500 and KCB TK3000 as Category C instead of Category B. Specifically, the weight of the shield panels did not meet the minimum weight threshold of 25 tons for classification as Category B (critical lift) as defined in PP 11-36.

b. As a result of improper classification (see Item a above), MOX Services failed to provide written work instructions to cover sequenced tasks associated with the rigging, handling, and lifting of colemanite shield panels for KCB TK1500 and KCB TK3000 as required by Section 2.2.2, Category B.

c. As a result of improper classification (see Item a above), MOX Services failed to follow the manufacturer's instructions and conditions of operation for the rigging and handling of the colemanite shield panel for KCB TK1500. Specifically, MOX Services failed to (1) use a spreader beam and (2) ensure the rigging configuration resulted in a vertical lift of the colemanite panel. Section 7.1.2 (c) of Subpart 2.15, Procedures, states, in part, for Category B lifts, Manufacturer's instructions and conditions of operation shall be followed for the handling equipment and items to be handled.

d. As a result of improper classification (see Item a above), MOX Services failed to obtain and document a variation from the manufacturer's procedure and instructions for rigging and installation of the colemanite shield panel for KCB TK1500 and KCB TK3000. Section 7.1.3, Variations, requires that variations from the procedures be approved and documented.

This is a Severity Level IV violation (Enforcement Policy 6.5.d) (VIO 70-3098/2011-001-002)

Pursuant to the provisions of 10 CFR 2.201, Shaw AREVA MOX Services is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region II, and a copy to the NRC Resident Inspector at the Mixed Oxide Fuel Fabrication Facility construction project, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include: (1) the reason for the violation, or, if contested, the basis for disputing the violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an Order or Demand for Information may be issued as to why the authorization should not be modified, suspended, or revoked, or why such other actions as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room (PDR), or from the NRC's document system (ADAMS), which is accessible from the NRC web site at http://www.nrc.fob/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. In accordance with 10 CRR 19.11, you may be required to post this Notice within two working days.

Dated at Atlanta, Georgia this 9th day of May, 2011.

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	70-3098
Construction Authorization No.:	CAMOX-001
Report No.:	70-3098/2010-001
Applicant:	Shaw AREVA MOX Services
Location:	Savannah River Site Aiken, South Carolina
Inspection Dates:	January 1 – March 31, 2011
Inspectors:	M. Shannon, Senior Resident Inspector, Construction Projects Branch 1 (CPB1), Division of Construction Projects (DCP), Region II (RII) B. Adkins, Resident Inspector, CPB1, DCP, RII J. Lizardi, Construction Inspector, Construction Inspection Branch 2 (CIB2), Division of Construction Inspection (DCI), RII
Approved by:	D. Seymour, Branch Chief, CPB1, DCP

Enclosure 2

EXECUTIVE SUMMARY

Shaw AREVA MOX Services
Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF)
NRC Inspection Report No. 70-3098/2011-001

The scope of the inspections encompassed a review of various MFFF activities related to Quality Level (QL)-1 construction for conformance to NRC regulations, the Construction Authorization Request (CAR), the MOX Project Quality Assurance Plan (MPQAP), and applicable industry standards. This included, as applicable, the following inspection attributes: design control; control of materials, equipment, and services; inspection, test control, and control of measuring equipment; problem identification, resolution, and corrective action; structural concrete; and mechanical components. The inspections also focused on Shaw AREVA MOX Services' (MOX Services') oversight of subcontractor activities.

The principal structures, systems, and components (PSSCs) discussed in this inspection report include: PSSC-009 (Criticality Control); PSSC-010 (Double Walled Pipe); PSSC-024 (Gloveboxes); PSSC-036 (MOX Fuel Fabrication Building Structure (including vent stack)); and PSSC-041 (Process Cells).

The inspections identified the following aspects of the applicant's programs as outlined below.

Resident Inspection Program for On-Site Construction Activities (Inspection Procedure (IP) 88130)

Routine inspections were conducted by the resident inspectors from January 1 – March 31, 2011. The inspections involved the observation and evaluation of the applicant's programs for facility construction of PSSCs and included non-PSSC related activities related to control of design and document control; control of materials, equipment and services; inspection, test control and control of measuring equipment; problem identification, resolution, and corrective action; and mechanical components. Construction activities, as noted in Section 2.a, were performed in a safe and quality related manner and in accordance with procedures and work packages. No findings of significance were identified (Section 2).

PSSC Related Inspections

PSSC-009 (Criticality Control)

MOX Services adequately translated criticality assumptions, dimensions, and design requirements into procurement documents provided to a tank fabricator. No findings of significance were identified (Section 3.a.(1)).

Example 1 of Violation (VIO) 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and Quality Requirements, was identified for failure to identify that the required gap spacing between the annular tank and the exterior colemanite shield panel did not meet the criticality dimension identified on the implementing documents (equipment data sheet (EDS) drawing, Nuclear Criticality Safety Evaluation-Design (NCSE-D), and criticality calculation) (Section 3.a.(2)).

MOX Services provided an adequate technical justification for an accept-as-is justification for Nonconformance Report 08-299, Revision 3. No findings of significance were identified (Section 3.a.(3)).

PSSC-010 (Double Walled Pipe) and PSSC-041 (Process Cells)

Example 2 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and quality assurance (QA) Requirements, was identified for failure to document/perform design verification for design documents produced by the tank fabricator (Section 3.b.(1)).

Example 3 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and Quality Requirements, was identified for failure to identify that dimensions for nozzles P17, P7, and P1 for KCD TK1000 did not meet the required tolerances listed on design drawing (Section 3.b.(3)).

Example 4 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and Quality Requirements, was identified for failure to identify that the internal diameter for a colemanite shield panel for KPA TK9500 did not meet the required tolerance listed on the design drawing (Section 3.b.(3)).

VIO 70-3098/2011-001-002: Failure to Meet the Requirements of American Society of Mechanical Engineers (ASME) NQA-1-1994, Quality Assurance Requirements for Nuclear Facility Applications (NQA-1), Subpart 2.15, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants, was identified (Section 3.b.(2)).

PSSC-036 (MOX Fuel Fabrication Building Structure (including vent stack))

Example 5 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and Quality Requirements was identified for failure to properly perform commercial grade dedication of Barsplice connectors (Section 3.c.(1)).

Construction activities related to PSSC-036 as described in Table 5.6-1 of the MFFF Construction Authorization Request were adequately performed and included installations of embedded plates and ground cables, heavy lifts of equipment and supplies, verification of equipment placements by surveys, rebar installation, placement of concrete, welding, non-destructive testing, installation of tanks, assembly of gloveboxes and receipt of materials. These construction activities were performed in a safe and quality related manner and in accordance with procedures and work packages. No findings of significance were identified (Section 3.c.(2)).

PSSC-024 (Gloveboxes)

The inspectors reviewed design and procurement documentation to determine if the procurement of QL-1 material, equipment, and services was controlled to assure conformance with specified technical and quality assurance requirements. No findings of significance were identified (Section 3.d).

REPORT DETAILS

1. Summary of Facility Status

During the period, the applicant continued construction activities of principle structures systems, and components (PSSCs). Construction activities continued on multiple inside and outside walls, elevated floors, and roof of the Mixed Oxide (MOX) Process Building (BMP), Aqueous Polishing Building (BAP), and the Shipping Receiving Building (BSR). Shaw AREVA MOX Services (MOX Services) continued installation of Quality Level (QL) QL-1 tanks during this inspection period. Forty nine tanks have been installed to date. Twenty five tanks are presently stored in the Process Assembly Facility. The applicant has also started application of coatings on the walls and ceilings of the BMP and BAP lower level rooms and hallways. Other construction activities included installation of process piping and supports in the BAP and installation of ventilation system ductwork and supports in the BAP and BMP.

2. Resident Inspection Program for On-Site Construction Activities (Inspection Procedure (IP) 88130)

a. Scope and Observations

During the period, the applicant continued construction activities of PSSCs. Construction activities continued related to Release 2, 3A and 3B activities which included multiple inside and outside walls, elevated floors, and roof of the BMP, BAP, and the BSR. The Mixed Oxide Fuel Fabrication Facility (MFFF) project continued installation of QL-1 tanks during this inspection period. The applicant continued the application of coatings on the walls and ceilings of the BMP and BAP lower level rooms and hallways. Other construction activities included installation of process piping and supports in the BAP, installation of ventilation system ductwork and supports in the BAP and BMP, installation of cable trays (temporary supports), and installation of rod storage racks.

The inspectors routinely attended the applicant's construction plan-of-the-day meetings and civil engineering meetings. The inspectors routinely held discussions with MOX Services' design engineers, field engineers, quality control/assurance personnel, batch plant personnel, steel workers, and Alberici Construction personnel in order to maintain current knowledge of construction activities and any problems or concerns.

The inspectors routinely reviewed the status of work packages maintained at various work sites. The inspectors monitored the status of work package completion to verify construction personnel obtained proper authorizations to start work, monitor progress and to ensure work packages were kept up-to-date as tasks were completed.

The inspectors routinely verified that adequate staffing was available for construction activities, changing weather conditions were taken into account for planned construction activities, and construction activities were conducted in a safe manner. The inspectors also observed proper communication in the work areas, observed that the work force was attentive, workers adhered to procedures, observed proper communication between supervisors and workers, noted adequate cleanliness of the construction areas, and noted that hazardous materials were properly stored and/or properly controlled when in the field.

The inspectors routinely reviewed various corrective action documents. The review included non-conformance reports (NCRs), condition reports (CRs), root causes and supplier deficiency reports (SDRs); and reviewed the closure of selected NCRs and CRs. The inspectors concluded that the applicant was appropriately identifying conditions adverse to quality in their corrective action system. The applicant identified these items during routine daily activities, special inspections, audits, and self assessments. The applicant routinely evaluated the significance of the adverse conditions, completed corrective actions in a timely manner, and properly evaluated adverse conditions for applicable reporting requirements. The inspectors noted that the applicant entered issues identified during self assessments into the corrective action system.

b. Conclusions

Construction activities, as noted in Section 2.a, were performed in a safe and quality related manner and in accordance with procedures and work packages. No findings of significance were identified.

3. PSSC Related Inspections

a. PSSC-009 (Criticality Control)

(1) Design Control Attribute (IP 88107, Quality Assurance: Design and Document Control)

(a) Scope and Observations

The inspectors selected KPA TK 9500 as an inspection sample for verification of PSSC-009, Criticality Control. The inspectors reviewed DCS01-KPA-DS-ANS-H-35031-3, to identify the required criticality controls associated with the fabrication of KPA TK9500. The inspectors concluded that the nuclear criticality safety evaluation (NCSE) for the KPA unit credits a single passive engineered control, QL-1a component geometry, to prevent criticality. Specific to geometry control, the NCSE-D credits the (1) annular shape of the tank and associated dimensions including material and annular thicknesses and (2) presence of neutron absorbers around the annular tanks. The inspectors reviewed DCS01-KPA-CG-PLG-L-06705, Equipment Data Sheet Annular Tank KPA TK9500 Assembly and Details (EDS drawing), DCS01-KKJ-DS-SPE-L-16264-4, Procurement Specification for Annular Tanks, and DCS01-KKJ-DS-NTE-L-16284-1, Specification for Neutron Absorption Panels of Annular Tanks, to determine if MOX Services accurately translated the criticality design requirements specified in the NCSE-D and the supporting criticality calculation, DCS01-KPA-CG-CAL-H-06973-0, into design requirements and design inputs provided to the tank fabrication vendor.

(b) Conclusion

MOX Services adequately translated criticality assumptions, dimensions, and design requirements into procurement documents provided to the tank fabricator. No findings of significance were identified.

(2) Test Control Attribute (IP 88109, Quality Assurance: Inspection, Test Control, and Control of Measuring and Test Equipment)

(a) Scope and Observations

The inspectors reviewed completed dimensional inspection records (QC-RIR-08-0254) for KPA TK9500 to determine if MOX Services and the tank fabricator performed the necessary inspections to meet the criticality dimensions specified on the equipment data sheet (EDS) drawing. Examples of criticality dimensions include fissile medium height, tank stainless steel thickness, internal free space, external free space, colemanite shield thickness, and internal radius of shield panels. The inspectors reviewed the fabrication traveler and certified material test reports to confirm that the materials used in the construction of the tank shell and shield panels met the specified values on the EDS drawing. The inspectors reviewed documentation (inspection records and lab test reports) to verify that the boron concentration of the colemanite concrete met the requirements of DCS01-KKJ-DS-NTE-L-16284-1, Specification for Neutron Absorption Panels of Annular Tanks.

The inspectors performed a walkdown of KPA TK9500 and noted that the required spacing between the annular tank and the exterior colemanite shield panel exceeded the external free space (gap) dimension specified on the EDS drawing. Specifically, the EDS drawing specified a maximum gap spacing between the KPA 9500 annular tank outer wall and the inner wall of the exterior colemanite shield panel. The inspectors measured the actual gap spacing in the general area of the P15 tank nozzle, and determined it exceeded the specified acceptance criteria.

MOX Project Quality Assurance Plan (MPQAP), Revision (Rev.) 9, Change 1, Section 7, Control of Purchased Material, Equipment, and Services, Section 7.1, General, states, in part, that MOX Services procurement of QL-1 and QL- 2 material, equipment and services is controlled to assure conformance with specified technical and quality assurance (QA) requirements … Source inspections and surveillances, as well evaluations of received items and services are performed, as necessary, upon delivery or completion to ensure requirements specified in procurement documents are met.

Contrary to the above, prior to March 3, 2011, MOX Services failed to ensure that procurement of QL-1 equipment was controlled to assure conformance with specified technical and QA requirements. Specifically, MOX Services failed to perform the necessary source inspections, surveillances, and evaluation of received items to ensure that the gap spacing between the annular tank and colemanite shield panels for KPA TK 9500 met the IROFS criticality dimension identified on DCS01-KPA-CG-PLG-L-06705, Equipment Data Sheet Annular Tank KPA TK9500 Assembly and Details (EDS drawing). The inspectors noted that the actual gap was greater than the required IROFS maximum dimension specified on DCS01-KPA-CG-PLG-L-06705. The failure to assure conformance with specified technical and QA requirements for Quality Level 1 equipment is considered to be a violation of NRC requirements and is identified as Example 1 of Violation (VIO) 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and Quality Requirements. This issue was entered into MOX Services corrective action program as NCR QC-11-2953.

(b) Conclusion

Example 1 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and Quality Requirements, was identified for failure to identify that the required gap spacing between the annular tank and the exterior colemanite shield panel did not meet the criticality dimension identified on the implementing documents (EDS drawing, NCSE-D, and criticality calculation). No other findings of significance were identified.

(3) Corrective Action Program Attribute (IP 88135, Pipe Supports and Restraints; IP 88110, Quality Assurance: Problem Identification, Resolution, and Corrective Action)

(a) Scope and Observations

The inspectors reviewed Premiere Technology Inc. (PTI), NCR 08-299, Rev. 3, MOX Neutronic Absorption Panels for KPA-TK-9500. This nonconformance report documented potential damage to the panels as a result of dropping the panels during off-load of the shipping containers from France. The inspectors reviewed the disposition provided by PTI to determine if PTI provided an adequate technical justification for a "use as is" or "repair" disposition.

(b) Conclusion

Based on the documents reviewed, the inspectors concluded that MOX Services provided an adequate technical justification for an accept-as-is justification for NCR 08-299, Rev. 3. No findings of significance were identified.

b. PSSC-010 (Double Walled Pipe) and PSSC-041 (Process Cells)

(1) Design Control Attribute (IP 88107, Quality Assurance: Design and Document Control)

(a) Scope and Observations

The inspectors reviewed DCS01-KKJ-DS-SPE-L-16263-3, Procurement Specification for Slab Tanks, including requirements for quality assurance, design, materials, fabrication, inspection, testing, and delivery. The inspectors also reviewed design specification DCS01-KCD-CG-PLG-L-06613 to determine the design requirements for pressure, temperature, materials, dimensions, configuration, fluid transport system (FTS) category, American Society of Mechanical Engineers (ASME) code requirements, and system interfaces. The inspectors reviewed the detailed design drawings developed by the supplier/subcontractor showing the KCD TK4000 vessel assembly and details to determine if supplier's design process adequately translated the design inputs into plant design, fabrication, testing, inspection, and examination requirements. The inspectors reviewed engineering change request (ECR) ECR-07763, EDS Update for KCD TK 4000 Temperatures, and ECR-002221, Modifications to Tanks KCD TK4000, KCD TK4100, and KCD TK4200, to confirm that (1) design control measures were commensurate with those applied to the original design and (2) design changes were adequately incorporated into the final design developed by the supplier/subcontractor. The inspectors reviewed the supplier/subcontractor's design control procedure for compliance with ASME NQA-1-1994, Quality Assurance Requirements for Nuclear Facility Applications (NQA-1) requirements. The inspectors reviewed a sampling of

design deliverables to ensure that the supplier followed design control process requirements including the drawing approval process. The inspectors noted that the required design verifications had not been performed and documented.

MPQAP, Rev. 9, Change 1, Section 7, Control of Purchased Material, Equipment, and Services, Section 7.1, General, states, in part, that MOX Services procurement of Quality Level 1 and Quality Level 2 material, equipment and services is controlled to assure conformance with specified technical and QA requirements… Source inspections and surveillances, as well evaluations of received items and services are performed, as necessary, upon delivery or completion to ensure requirements specified in procurement documents are met.

MPQAP Section 3.1, General, states, in part, that QL-1 design is verified by one or more of the following verification methods: design reviews, alternate calculations, or qualification tests. The method of design verification and results are documented.

Contrary to these requirements, prior to March 1, 2011, MOX Services failed to ensure that QL-1 design services were controlled to assure conformance with specified technical and QA requirements. Specifically, MOX Services failed to ensure that the design was verified and documented by one or more of the design verification methods defined in Section 3.2.4, Design Verification, of the MPQAP. The following examples provide the basis for the Notice of Violation:

1. The supplier/subcontractor failed to perform and document design verification of Premier Technology, Inc. drawing 006315-M-2520-1.

2. The supplier/subcontractor failed to perform and document design verification of Project File Number PF 0534 PR 17 Rev. C, MOX Slab Tank Colemanite Panel Lifting Analysis.

Failure to ensure that QL-1 services were controlled to assure conformance with specified technical and QA requirements is considered to be a violation of NRC requirements and is identified as Example 2 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and QA Requirements. This issue was entered into MOX Services corrective action program as CR-11-118, Vendor Design Verification Issues.

(b) Conclusion

Example 2 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and Quality Requirements, was identified.

(2) Installation Attribute (IP 88108, Quality Assurance: Control of Materials, Equipment and Services; IP 88136, Mechanical Components)

(a) Scope and Observations

The inspectors observed installation of KCD TK4000 and installation of the colemanite shield panels for KDB TK1500 and KDB TK3000. The inspectors reviewed work packages, vendor handling procedures, vendor design drawings (showing approved lifting arrangements), calculations, ECRs, and MOX Project Procedure 11-36, Rigging

and Lifting – Equipment Inspections, to verify that MOX Services was installing the tanks and shield panels in accordance with vendor design requirements and ASME NQA-1-1994 Edition, Subpart 2.15, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants. The inspectors concluded that MOX Services failed to meet various requirements of ASME NQA-1-1994 Edition, Subpart 2.15, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants.

MPQAP, Rev. 9, Change 1, Attachment A, Commitment to Quality Assurance Standards, requires MOX Services to meet the requirements of ASME NQA-1, Subpart 2.15, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants. Section 2.2, Classification of Items Handled requires MOX Services to classify items into three categories (Category A, B, and C) according to their important physical characteristics. Section 2.2.2, Category B, defines Category B items as those that may be handled with conventional handling equipment but which require detailed procedures because of the susceptibility to damage. Section 7.1.2 (d) requires that work instructions be issued for tasks, which, because of their relationship with each other, must be accomplished in a certain sequence. Section 7.1.2 (c) requires MOX Services to follow manufacturer's instructions and conditions of operation for the handling equipment and items to be handled. Section 7.1.3, Variations, states, in part, that variations from the procedures shall be approved and documented.

Contrary to the above, prior to March 1, 2011, MOX Services failed to meet the requirements of ASME NQA-1, Subpart 2.15, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants as evidenced by the following:

1. MOX Services Project Procedure (PP) 11-36, Rigging & Lifting – Equipment Inspections, failed to meet Subpart 2.15, Section 2.2, Classification of Items Handled, which requires classification of MOX items requiring lifting into one of three categories (Category A, B, and C) according to their important physical characteristics. Specifically, the definitions for ordinary and critical lifts as defined in PP 11-36 were not consistent with the definitions and requirements for Category A, B, and C items as defined in Subpart 2.15. PP 11-36 placed an additional weight requirement of 25 tons in addition to the susceptibility for damage criteria contained in Section 2.2.2 of Subpart 2.15 before an item could be classified as Category B. PP 11-36 also failed to define or provide criteria for Category A items and did not provide examples of MOX items that would be classified as either Category A or Category B.

2. As a result of an inadequate procedure (see Item 1 above), MOX Services improperly categorized the lifting and installation of colemanite shield panels for KCB TK1500 and KCB TK3000 as Category C instead of Category B. Specifically, the weight of the shield panels did not meet the 25 ton weight threshold for classification as a critical lift (Category B). The inspectors concluded that a classification of Category B was required given the susceptibility for damage that could occur during lifting and installation of the colemanite shield panels. This conclusion was based on the small margin between colemanite concrete tensile strength and allowable tensile strength documented in PF 0534 PR 17 (MOX Services Document No. 08716-10888-S-00001414-0643-F), Slab Tank Colemanite Panel Lifting Calculations.

3. As a result of improper classification (see Item 2 above), MOX Services failed to provide written work instructions to cover sequenced tasks associated with the rigging, handling, and lifting of colemanite shield panels for KCB TK1500 and KCB TK3000 as required by Section 2.2.2, Category B.

4. As a result of improper classification (see Item 2 above), MOX Services failed to follow the manufacturer's instructions and conditions of operation for the rigging and handling of the colemanite shield panel for KCB TK1500. Specifically, MOX Services failed to (1) use a spreader beam and (2) ensure the rigging configuration resulted in a vertical lift of the colemanite panel. Section 7.1.2 (c) of Subpart 2.15, Procedures, states, in part, for Category B lifts, Manufacturer's instructions and conditions of operation shall be followed for the handling equipment and items to be handled. PF 0534 PR 17 (MOX Services Document No. 08716-10888-S-00001414-0643-F), Slab Tank Colemanite Panel Lifting Calculations, requires that a spreader beam be used to lift the panels to ensure a vertical lift configuration on the eyebolts. Section 3.2.7 of PHS-6315-001 Rev. 2, Packaging, Handling, Storage, Installation Procedure: Slab Tanks, states, in part, the Colemanite Panel Lift Analysis requires colemanite panels to be lifted vertically and use of a spreader beam.

5. As a result of improper classification (see Item 2 above), MOX Services failed to obtain and document a variation from the manufacturer's procedure and instructions for rigging and installation of the colemanite shield panels for KCB TK1500 and KCB TK3000. Section 7.2, Handling of Category B Items, Sub-Section 7.2.3, Variations, states that variations from the procedure shall be in accordance with paragraph 7.1.3. Section 7.1.3, Variations, requires that variations from the procedures shall be approved and documented.

Failure to meet the requirements of ASME NQA-1, Subpart 2.15, Quality Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants, is considered to be a violation of NRC requirements and is identified as VIO 70-3098/2011-001-002. This issue was entered into MOX Services corrective action program as CR-11-175, Engineered Items Not Classified by (see Item a above) Lift Category.

In addition, during tank installation, the inspectors observed torquing of anchor bolts to 30% of the final torque value for KPA TK9500. The inspectors reviewed the work package and confirmed that the 30% torque value specified in the work package was consistent with the requirements of DCS01-ZMJ-DS-CAL-M-20639-0, Standard Allowable Loads and Installation Torque Values for Process Equipment Fasteners. The inspectors verified that the range of the torque wrench was correct for the specified 30% torque value. The inspectors verified that the selected torque wrench was calibrated and controlled per MOX Services M&TE Program PP 3-15. The inspectors verified that MOX Services used an alternating torque sequence pattern as specified in the work package.

(b) Conclusion

VIO 70-3098/2011-001-002: Failure to Meet the Requirements of ASME NQA-1 1994, Subpart 2.15, was identified for (1) failure to classify items for which handling activities are covered by Subpart 2.15 into one of three categories according to their physical characteristics, (2) failure to properly categorize the lifting and installation of colemanite shield panels for KCB TK1500 and KCB TK3000 as Category B instead of Category C,

(3) failure to provide a detailed procedure or work instructions for the lifting and handling of the colemanite shield panels, (3) failure to follow manufacturer's instructions and conditions of operation for the handling equipment and items to be handled, and (4) failure to obtain and document a variation from the manufacturer's recommended handling and installation procedure.

(3) Control of Materials, Equipment and Services Attribute (IP 88108, Quality Assurance: Control of Materials, Equipment, and Services)

(a) Scope and Observations

The inspectors reviewed dimensional inspection reports for KCD TK1000 (QC-RIR-10-9343) and KPA TK9500 (QC-RIR-08-0254). The inspectors concluded that the tank supplier/ subcontractor failed to adequately perform dimensional inspections as required by DCS01-KKJ-DS-SPE-L-16264-4, Procurement Specification for Annular Tanks.

MPQAP, Rev. 9, Change 1, Section 7, Control of Purchased Material, Equipment, and Services, Section 7.1, General, states, in part, that MOX Services procurement of QL-1 and QL-2 material, equipment and services is controlled to assure conformance with specified technical and QA requirements… Source inspections and surveillances, as well evaluations of received items and services are performed, as necessary, upon delivery or completion to ensure requirements specified in procurement documents are met.

Contrary to this requirement, prior to March 3, 2011, MOX Services failed to ensure that procurement of QL-1 equipment was controlled to assure conformance with specified technical and QA requirements. Specifically, MOX Services failed to perform the necessary source inspections, surveillances, and evaluations of received items and services to ensure that requirements specified in procurement documents were met as evidenced by the following examples:

1. MOX Services failed to identify that dimensions for nozzles P17, P7, and P1 for KCD TK1000 did not meet the required tolerances listed on design drawing, 006314-M-1121-3. NDE Report Number 10-1074 (Page 835 of 1467 in QC-RIR-10-9343) lists the required dimension between the tank sump and nozzle opening. Design drawing 006314-M-1121-3 also showed the required dimension between the tank sump and nozzle opening. The actual dimensions measured in the field were greater than the specified tolerances. Failure to ensure that QL-1 equipment and services were controlled to assure conformance with specified technical and QA requirements is considered to be a violation of NRC requirements and is identified as Example 3 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and QA Requirements. This issue was entered into MOX Services nonconformance reporting program as QC-11-3037.

2. MOX Services failed to identify that the internal diameter for a colemanite shield panel for KPA TK9500 did not meet the required tolerance listed on design drawing, 006314-M-930-2, Rev. 4. Specifically, MOX Services failed to identify the discrepancy during a review of the completed inspection reports performed as part of the receipt inspection process. Failure to ensure that QL-1 equipment and services were controlled to assure conformance with specified technical and QA requirements is considered to be a violation of NRC requirements and is identified as Example 4 of

VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and QA Requirements. This issue was entered into MOX Services corrective action program as QC-11-2918, KPA-TK9500 Panels.

(b) Conclusion

Examples 3 and 4 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and Quality Requirements, were identified for failure to ensure that QL-1 services were controlled to assure conformance with specified technical and QA requirements.

c. PSSC-036, MOX Fuel Fabrication Building Structure (Including Vent Stack)

(1) Control of Materials, Equipment and Services Attribute (IP 88108, Quality Assurance: Control of Materials, Equipment, and Services)

(a) Scope and Observations

The inspectors reviewed DCS01-BKA-DS-CGD-M-65831-3, Commercial Grade Item (CGI) Evaluation for Mechanical Splices, to determine if MOX Services has identified the necessary critical characteristics to ensure that mechanical splices (Barsplices and Lenton couplers) will be capable of performing their intended safety function. A Barsplice is an engineered product which uses screws engaging the reinforcing steel through a coupler to maintain structural integrity. A Lenton coupler is an engineered device that is designed to splice two bars (rebar) together by using a thread/screw connection. The critical characteristics identified by MOX Services were (1) coupler material properties and critical dimensions, (2) configuration of the screw and threads, and (3) thread engagement.

The inspectors reviewed certified material test reports to confirm that the chemical compositions met the requirements of American Society of Testing and Materials (ASTM) A29, Standard Specification for Steel Bars, Carbon and Alloy, Hot-Wrought, General Requirements for Lenton Couplers and ASTM A615, Standard Specification for Deformed and Plan Carbon-Steel Bars for Concrete Reinforcement for Barsplice Couplers. The inspectors confirmed that the physical properties (tensile strength, yield strength, and elongation) met the requirements of ASTM A615 and American Concrete Institute (ACI) 349, Code Requirements for Nuclear Safety-Related Concrete Structures. The inspectors reviewed receipt inspection records to confirm that MOX Services adequately implemented the commercial grade dedication program including the verification of critical characteristics.

MPQAP, Rev. 9, Change 1, Section 7, Control of Purchased Material, Equipment, and Services, Section 7.1, General, states, in part, that MOX Services procurement of QL-1 and QL-2 material, equipment and services is controlled to assure conformance with specified technical and QA requirements.

MPQAP, Rev. 9, Change 1, Section 7, Control of Purchased Material, Equipment, and Services, Subsection 7.2.8, Commercial Grade Dedication, Subsection B, Critical Characteristics, states, in part, that critical characteristics for commercial grade items shall be determined and approved by the manager responsible for the procurement based on the performance requirements for the item including the intended IROFS

safety function. Specific characteristics used for acceptance or dedication of the item are selected based on providing reasonable assurance that the item will meet their catalog or manufacturer specifications and perform the specified functions as intended…Prior to release as a commercial grade item, MOX Services shall determine that inspection and/or testing is accomplished, as required, to assure conformance with critical characteristics… Documentation, as applicable to the item, was received and is acceptable.

Contrary to this requirement, prior to March 17, 2011, MOX Services failed to ensure that procurement of QL-1 equipment was controlled to assure conformance with specified technical and QA requirements. Specifically, MOX Services failed to adequately perform commercial grade dedication including verification of critical characteristics as evidenced by the following:

1. As required by DCS01-BKA-DS-CGD-M-65831-3, CGI Evaluation for Mechanical Splices, Section 2.4, CGI Acceptance Criteria and Methods for Dedication, MOX Services failed to identify that the tensile and yield strength requirements for the Barsplice coupler material, as reported on the material test report, did not meet the physical property requirements of ASTM A615. Section 2.4, CGI Acceptance Criteria and Methods for Dedication, requires Barsplice coupler material to meet ASTM A615 for tensile strength, yield strength, and % elongation. The material must also meet the requirements of ACI-349, Section 12.14.3.4, which requires the yield strength to meet 125% of the specified yield strength of the bar. The material test report contained on Attachment A, CGI Receipt Inspection Dedication Plan (QC-RIR-10-10060, page 18 of 24) listed the ultimate tensile strength. These values for tensile and yield strength were below the strength requirements specified in ASTM A615 and ACI-349.

2. During receipt inspection of Barsplice couplers (QC-RIR-10-10060), MOX Services failed to identify that chemical and physical property testing was not performed by an approved supplier as required by DCS01-BKA-DS-CGD-M-65831-3, CGI Evaluation for Mechanical Splices, Section 2.5, Technical, Quality and Documentation Requirements for Procurement. Specifically, MOX Services used a mill test report from the commercial material supplier in lieu of a certified material test report from a MOX Services approved supplier for verification of critical characteristics (tensile and yield strength).

3. MOX Services failed to perform an audit/survey of Barsplice to verify the ability of the commercial supplier to control material traceability and perform physical and chemical property testing as required by DCS01-BKA-DS-CGD-M-65831-3, CGI Evaluation for Mechanical Splices.

Failure to ensure that QL-1 equipment and services were controlled to assure conformance with specified technical and QA requirements is considered to be a violation of NRC requirements and is identified as Example 5 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and QA Requirements. This issue was entered into MOX Services corrective action program as CR-11-158.

(b) Conclusion

Example 5 of VIO 70-3098/2011-001-001: Failure to Assure Conformance with Specified Technical and Quality Requirements, was identified. No other findings of significance were identified.

(2) Installation Attribute (IP 88132, Structural Concrete)

(a) Scope and Observations

During the inspection period, the inspectors observed the following activities associated with PSSC-036, MOX Fuel Fabrication Building Structure (MFFBS) (including vent stack):

1. Installation of structural reinforcing steel in the BMP, the BAP, and BSR;
2. Installation of embedded piping, embedded support plates, and plant grounding system in all three buildings;
3. Concrete placements in walls and floors of the BSR, BAP, and BMP and placement of the first roof section of the BMP;
4. Operation of the concrete batch plant;
5. Receipt of cement, fly ash, sand and gravel;
6. Concrete testing in the field (slump, air entrainment, and temperature);
7. Installation of building grounding cables in various floors and walls;
8. Surveys (proper positioning/location) of embedded piping and embedded plates;
9. Cleanliness of areas prior to concrete placement, and maintenance of cleanliness during the concrete placements;
10. Installation of coatings in the BAP and BMP;

The inspectors observed routine lifts conducted to position reinforcing steel and embedded plates; installation and removal of concrete retaining walls; and movement of equipment such as generators, pumps, temporary lighting, and toolboxes. The lifts were conducted in accordance with the applicant's procedures. The inspectors reviewed the applicable sections of MPQAP and verified that installations of the structural reinforcing steel, embedded plates, embedded piping, and electrical grounding of the MFFF structures were in accordance with QA programmatic requirements. Specifically, the inspectors verified that installations were in accordance with applicable field drawings and met the general construction notes detailed on the following drawings: (1) MFFF, Concrete and Reinforcing General Notes, DCS01-01352, Rev. 9 (Sheet 1 of 2); and (2) MFFF, Concrete and Reinforcing General Notes and Tolerance Details, DCS-01352, Rev. 6 (Sheet 2 of 3) and Rev. 0 (Sheet 3 of 3).

The inspectors evaluated the adequacy of ongoing concrete activities conducted by Alberici, Soil and Materials Engineers, Inc. (S&ME), and MOX Services. The inspection of these activities focused on reinforcing steel bar installation, formwork preparation, pre-placement testing, and placement procedures associated with QL-1 concrete construction of the MFFBS.

The inspectors observed various activities prior to and during each major concrete placement. Prior to selected placements, the inspectors selectively checked for proper placement of reinforcing steel, including proper lap splices, supports, and bar spacing, alignment, and proper clear cover. The inspectors selectively checked for proper embed

plate placement by observing ongoing surveys, and verified embed plate support structures were properly restrained; observed placement of embedded piping, installation of piping supports, mounting of piping to supports, installation of galvanic sleeves between piping and supports; and verified cleanliness of the placement area.

The inspectors observed the installation of the grounding system for the reinforcing steel including embedded grounding posts for future equipment installation. During the placements, the inspectors observed proper lift heights and observed MOX Services' field engineers and quality control (QC) personnel performing inspections of the reinforcing steel, embed plates, embed piping, cleanliness prior to placements, and detailed observations of the placements.

The inspectors observed that concrete samples were collected at the prescribed frequency and noted that the slump and air content met the acceptance criteria or were appropriately dispositioned with NCRs, and that the concrete test cylinders were collected and temporarily stored per procedure prior to transport to Soils and Materials Engineering Inc. (S&ME) for curing and later testing. Batch plant operators correctly implemented procedural requirements and were in constant communication with the concrete placement crews. The inspectors visited S&ME where they performed direct observation of cylinder break tests.

The following list is a summary of the reviewed concrete placement activities:

January 6, 2011, BMP-W 313.4
January 7, 2011, BMP-W224.1
January 14, 2011, BAP-F110/121
January 19, 2011, BMP-W222.1
January 19, 2011, BMP-W221
January 20, 2011, BMP-R4.1
January 20, 2011, BMP Wall 009/010
January 21, 2011, BAP-F206
January 24, 2011, BMP-W316.3
January 27, 2011, BMP-W225.1
January 27, 2011, BSR-W206.2
February 8, 2011, BAP-W107/108
February 9, 2011, BMP-316.2
February 10, 2011, BMP-W318.1
February 10, 2011, BSR-F105.1
February 11, 2011, BMP-F221
February 11, 2011, BMP- Wall
February 16, 2011, BAP-W204.2/205
February 17, 2011, BMP-F211.4/215.2
February 17, 2011, BMP-W315.2
February 21, 2011, BMP-F219A Curb
February 24, 2011, BMP-F317.2/318
February 24, 2011, BMP Wall
March 3, 2011, BMP Wall
March 4, 2011, BMP-F226
March 4, 2011, BMP-W222.2/220.4
March 7, 2011, BAP-F135/136
March 10, 2011, BMP Wall 1.1.6B

March 15, 2011, BMP-W224.2
March 17, 2011, BMP-W316.4
March 19, 2011, BMP-W225.2/221.5
March 24, 2011, BAP-W211.1

The inspectors performed various reviews for the above placements, which included walk downs with the field engineers, walk downs with QC personnel, verification of reinforcing bar (rebar) by use of field drawings, work package reviews and routinely performed walk downs of the area to verify adequate cleanliness prior to concrete placement.

(b) Conclusions

Construction activities related to PSSC-036 as described in Table 5.6-1 of the MFFF Construction Authorization Request (CAR) were adequately performed and included installations of embedded plates and ground cables, heavy lifts of equipment and supplies, verification of equipment placements by surveys, rebar installation, placement of concrete, welding, non-destructive testing, installation of tanks, assembly of gloveboxes and receipt of materials. These construction activities were performed in a safe and quality related manner and in accordance with procedures and work packages. No findings of significance were identified.

d. PSSC-024, Gloveboxes

(1) Control of Materials, Equipment and Services Attribute (IP 88108, Quality Assurance: Control of Materials, Equipment, and Services)

(a) Scope and Observations

The inspectors selected gloveport assemblies as an inspection sample to determine whether the procurement of QL-1 material, equipment, and services were controlled to assure conformance with specified technical and QA requirements. The inspectors reviewed DCS01-ZMJ-DS-CCT-M-40500-1, Procurement Specification for MFFF Process Glovebox Gloveport Assemblies (Screw and Welded Type) to identify the applicable technical and quality assurance requirements applicable to gloveport assemblies. The inspectors reviewed DCS01-ZMJ-DS-CGD-M-65802-4, Commercial Grade Item Evaluation (CGIE) for MFFF Process Glovebox Gloveport Assemblies (Screw and Welded Type), to determine if MOX Services specified the necessary critical characteristics to ensure that the gloveport assemblies will be capable of performing their intended safety function. The inspectors reviewed receiving inspection report (RIR), QC-RIR-10-15373 to determine if MOX Services adequately implemented the commercial grade dedication of gloveport assemblies as required by the CGIE. The inspectors reviewed positive material identification data to confirm that the gloveports were constructed of the specified grade stainless steel. The inspectors reviewed the Certificate of Conformance (C of C) provided by the manufacturer for compliance with the CGIE and the procurement specification. The inspectors reviewed the MOX Services Approved Commercial Grade Vendors List, Rev. 23, to verify that the manufacturer was an approved commercial grade vendor.

(b) Conclusion

MOX Services adequately implemented the necessary procurement controls including commercial grade dedication and receipt inspection to ensure that the gloveport assemblies will be capable of performing their intended safety function. No findings of significance were identified.

4. Follow-up of Previously Identified Items

a. Closed IFI 70-3098/2008-01-04: Lack of Control by MOX Services Vendor (PTI) on its Suppliers on the Fabrication of the Annular and Slab Tanks

(1) Scope and Observations

This IFI was opened to document the apparent lack of control by MOX Services vendor, PTI, on its suppliers for the fabrication of the annular and slab tanks. Specifically, the inspectors noted that PTI's audit of its subcontractor, Robatel Industries, was performed in accordance with ASME NQA-2000; however, the contractual requirements between MOX Services and PTI specified compliance to ASME NQA-1 1994 and 1995 Addendum. The inspectors noted that Robatel Industries was an approved supplier for the neutron shielding panels for the annular tanks. The inspectors reviewed the audit report of Robatel Industries performed by PTI and concluded that PTI failed to document a written report summarizing the audit results. Additionally, the audit checklist specifically did not address 10 CFR Part 21 reporting of defects and non-compliances. Consequently, it was not clear that Robatel's QA Program contractually complied to ASME NQA-1 1994 and 1995 Addendum, prior to PTI approval and placement of Robatel on their Approved Supplier List.

The inspectors reviewed Supplier Deficiency Report (SDR) PTI-08-VS38-01 and NCR 08-267, Rev. 4 to determine if PTI implemented the necessary corrective actions to address the supplier related issues identified during the NRC inspection. The inspectors reviewed PTI Corrective Action Report 08-07 to determine if PTI implemented corrective actions to (1) change the basis for audit checklists from NQA-1-2000 to ASME NQA-1 1994 and 1995 Addendum, and to (2) verify that the audit checklist contains a step to verify 10 CFR Part 21 reportability. The inspectors reviewed PTI Audit #08-010, which documented results from a second audit performed on Robatel Industries. The audit revealed that the overall implementation of the Robatel Industries QA Program was effective with the exception of control of processes and records. Robatel was placed on the PTI approved suppliers list (ASL) with a restriction that Robatel will not be authorized to ship any components to PTI until the deficiencies noted during the audit were resolved. The inspectors verified that PTI (1) changed the basis for the audit checklist from NQA-1-2000 to NQA-1 1994 and 1995 Addendum, (2) the audit checklist was updated to verify 10 CFR Part 21 reportability, and (3) PTI documented the results of an audit of Robatel Industries in a written report. The inspectors verified that PTI took the necessary steps to ensure the shield panels were fabricated in accordance with quality requirements consistent with ASME NQA-1 1994 and 1995 Addendum.

(2) Conclusions

The inspectors concluded that the necessary corrective actions to address the apparent lack of control by MOX Services vendor, PTI, on its suppliers for the fabrication of

annular and slab tanks, were implemented. The inspectors verified that PTI (1) changed the basis for the audit checklist from NQA-1-2000 to NQA-1 1994 and 1995 Addendum, (2) the audit checklist was updated to verify 10 CFR Part 21 reportability, and (3) PTI documented the results of an audit of Robatel Industries in a written report. The inspectors verified that PTI took the necessary steps to ensure the shield panels were fabricated in accordance with quality requirements consistent with ASME NQA-1 1994 and 1995 Addendum; therefore, IFI 3098/2008-01-04 is closed.

5. Exit Interviews

The inspection scope and results were summarized throughout this reporting period and by the senior resident inspector on April 6, 2011. No dissenting comments were received from the applicant. Although proprietary documents and processes may have been reviewed during this inspection, the proprietary nature of these documents or processes was not included in the report.

1. PARTIAL LIST OF PERSONS CONTACTED

MOX Services

A. Olorunniwo, Civil/Structural Manager
E. Chassard, Executive Vice President and Deputy Project Manager
R. Daniels, Lead Chemical and Mechanical Manager
M. Gober, Vice President Engineering
B. Pemberton, Electrical/I&C Manager
D. Gwyn, Licensing Manager
W. Hennessey, Nuclear Safety Analysis Manager
D. Ivey, Quality Assurance Manager
D. Kehoe, Compliance Manager
L. Lamb, Vice President Facility Design and Construction
E. Najmola, Vice President Construction
F. Maranda, Manager Construction Procurement
J. Peregory, Quality Control Manager
J. O'Dell, Engineering Assurance
R. Whitley, (Acting) Vice President Project Assurance
N. Simpson, Compliance
K. Trice, President and COO
R. Whitley, Quality Assurance/Control Manager

2. INSPECTION PROCEDURES (IP) USED

IP 88107	Quality Assurance: Design and Documentation Control
IP 88108	Quality Assurance: Control of Materials, Equipment and Services
IP 88109	Quality Assurance: Inspection, Test Control, and Control of Measuring and Test Equipment
IP 88110	Quality Assurance: Problem Identification, Resolution, and Corrective Action
IP 88130	Resident Inspection Program For On-Site Construction Activities at the Mixed-Oxide Fuel Fabrication Facility
IP 88132	Structural Concrete Activities
IP 88135	Pipe Supports and Restraints
IP 88136	Mechanical Components

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Status	Description
70-3098/2011-001-001	Opened	Violation (VIO): Failure to Ensure that Quality Level 1 Equipment and Services Were Controlled to Assure Conformance with Specified Technical and QA requirements (five examples) (Sections 3.a.(2), 3.b.(1), 3.b.(3), 3.c.(1))
70-3098/2011-001-002	Opened	VIO: Failure to Meet the Requirements of ASME NQA-1, Subpart 2.15, Quality

		Assurance Requirements for Hoisting, Rigging, and Transporting of Items for Nuclear Power Plants (Section 3.b.(2))
70-3098/2008-01-04	Closed	Inspector Followup Item: Lack of Control by MOX Services Vendor (PTI) on its Suppliers on the Fabrication of Annular and Slab Tanks (Section 4)

4. LIST OF ACRONYMS USED

ACI	American Concrete Institute
ADAMS	Agency-Wide Document Access and Management System
ASL	Authorized Supplier List
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
BAP	Aqueous Polishing Building
BMP	MOX Processing Building
BSR	Shipping and Receiving Building
CA	Construction Authorization
CAR	Construction Authorization Request
CFR	Code of Federal Regulations
CGI	Commercial Grade Item
CGIE	Commercial Grade Item Evaluation
CIB2	Construction Inspection Branch 2
C of C	Certificate of Conformance
CPB1	Construction Projects Branch 1
CR	Condition Report
DCI	Division of Construction Inspection
DCP	Division of Construction Projects
DCS	Duke, Cogema, Stone & Webster
ECR	Engineering Change Request
EDS	Equipment Data Sheet
FTS	Fluid Transport System
IPs	Inspection Procedures
IROFS	Item Relied on for Safety
MFFF	MOX Fuel Fabrication Facility
MOX	Mixed Oxide
MOX Services	Shaw AREVA MOX Services
MPQAP	MOX Project Quality Assurance Plan
M&TE	Measuring and Test Equipment
NCR	Non-conformance Report
NCSE-D	Nuclear Criticality Safety Evaluation-Design
NQA-1	NQA-1-1994, Quality Assurance Requirements for Nuclear Facility Applications
NRC	Nuclear Regulatory Commission
NOV	Notice of Violation
PP	Project Procedure
psi	pounds per square inch
PSSC	Principal System, Structure, and Component

PTI	Premiere Technology, Inc.
QA	Quality Assurance
QC	Quality Control
QL	Quality Level
QL-1	Quality Level 1
QL-2	Quality Level 2
Rebar	Reinforcing bar
RII	Region II
Rev.	Revision
RIR	Receiving Inspection Report
S&ME	Soils and Materials Engineering Inc.
SDR	Supplier Deficiency Report
SSCs	Systems, Structures, and Components
VIO	Violation

5. LIST OF PSSCs REVIEWED

PSSC-009	Criticality Control
PSSC-010	Double Walled Pipe
PSSC-024	Gloveboxes
PSSC-036	MOX Fuel Fabrication Building Structure (including vent stack)
PSSC-041	Process Cells