



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

November 4, 2013

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. 70-3098/2013-03**

Dear Mr. Trice:

During the period from July 1 through September 30, 2013, the U. S. Nuclear Regulatory Commission (NRC) completed inspections pertaining to the construction of the Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF). The purpose of the inspections was to determine whether activities authorized by the construction authorization and license application 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 and license application 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 this inspection, the enclosed report documents two findings which were determined to involve violations of NRC requirements. However, because these findings were Severity Level IV violations and were entered into your corrective action program, the NRC is treating them as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. These NCVs are described in the subject inspection report. If you contest the NCVs or the significance of the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTENTION: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at the MFFF.

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

Enclosure:
NRC Inspection Report No. 70-3098/2013-03
w/attachment: Supplemental Information

cc w/encl: (See next page)

K. Trice

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K. Trice

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/RA/

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Enclosure:

NRC Inspection Report 70-3098/2013-03
w/attachment: Supplemental Information

cc w/encl: (See next page)

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OFFICE	RII: DCP	RII: DCP					
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DATE	10/31/2013	10/31/2013					
E-MAIL COPY?	YES	YES	YES				

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Letter to Kelly Trice from Deborah Seymour dated November 4, 2013.

SUBJECT: MIXED OXIDE FUEL FABRICATION FACILITY- NRC INSPECTION REPORT
NO. 70-3098/2013-03

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-3098

Construction
Authorization No.: CAMOX-001

Report No.: 70-3098/2013-03

Applicant: Shaw AREVA MOX Services

Location: Savannah River Site
Aiken, South Carolina

Inspection Dates: July 1- September 30, 2013

Inspectors: M. Shannon, Senior Resident Inspector, Construction Projects Branch
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Accompanying
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Approved by: D. Seymour, Branch Chief, CPB1, DCP, RII

Enclosure

EXECUTIVE SUMMARY

Shaw AREVA MOX Services (MOX Services)
Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF)
NRC Inspection Report (IR) Number (No.) 70-3098/2013-03

The scope of the inspections encompassed a review of various MFFF activities related to Quality Level (QL)-1 construction for conformance to U.S. Nuclear Regulatory Commission (NRC) regulations, the Construction Authorization Request (CAR), the MOX Project Quality Assurance Plan (MPQAP), applicable sections of the license application (LA) and applicable industry standards. This inspection included, as applicable, the following inspection attributes: corrective action program, installation, test control, design control and quality assurance.

The principle systems, structures and components (PSSCs) discussed in this inspection report included: PSSC-021, Fire Barriers; PSSC-023, Fluid Transport Systems; and PSSC-036, MFFF Building Structure.

Routine Resident Inspections

The inspectors routinely attended the applicant's construction plan-of-the-day meetings, reviewed the status of work packages maintained at various work sites, conducted daily tours of work and material storage areas; observed installation of mechanical equipment; and reviewed various corrective action documents to assess the adequacy of the MOX Services' corrective action program. Construction activities were performed in a safe and quality-related manner. No findings of significance were identified. (Section 2)

PSSC Inspections

PSSC-023, Fluid Transport System

The inspectors observed construction activities related to PSSC-023, Fluid Transport Systems. The inspection attribute observed was test control. The associated item relied on for safety (IROFS) component was Oxalic Mother Liquors Recovery (KCD) piping. Specifically, the inspectors observed installation and documentation of process piping installation. The detailed inspection activities identified one violation associated with work package (WP) 13-CP27-TK6000-CONN-P-M-001. Non-cited violation (NCV) 70-3098/2013-03-01 was identified for failure to perform required hydrostatic testing of Aqueous Polishing Building (BAP) process piping. (Section 3.a)

PSSC-023, Fluid Transport System

The inspectors observed construction activities related to PSSC-023, Fluid Transport Systems. The inspection attribute observed was installation. The associated IROFS component was KCD piping. Specifically, the inspectors observed installation and documentation of process piping installation. The detailed inspection activities identified one violation associated with WP 13-CP27-C110-KCD-Flush-P-M-0001. NCV 70-3098/2013-03-02 was identified for failure to maintain cleanliness control barriers and establish access controls on BAP process piping. (Section 3.b)

PSSC-021, Fire Barriers

The inspectors observed construction activities related to PSSC-021, Fire Barriers, as described in Table 5.6-1 of the MFFF CAR. The inspection attribute observed was procedures and the associated SSCs were fire dampers located in the BAP. Unresolved Item 70-3098/2013-03-03, Potentially Inadequate Corrective Actions Regarding Quality of Work Package Guidance, was identified. (Section 3.c)

PSSC-036, MOX Fuel Fabrication Building Structure

The inspectors reviewed construction activities related to PSSC-036, MOX Fuel Fabrication Building Structure (Including Vent Stack), as described in Table 5.6-1 of the MFFF CAR. The inspection attribute observed was design control. The associated IROFS component was the MOX Processing Building (BMP) T.1 line shear wall. The inspectors reviewed the adequacy of redesign of BMP T.1 line shear wall W317 and floor slab F305, hydro demolition of floor slab F305, and construction of the shear wall and the floor slab, and found them adequate and acceptable. MOX Services implemented adequate oversight of design control activities consistent with the regulatory requirements of the MPQAP. No findings of significance were identified. (Section 3.d)

Non-PSSC InspectionsCorrective Action Program Inspection

The inspection team concluded that requirements for problem identification and resolution specified in the MPQAP and 10 CFR 50, Appendix B were implemented adequately. Measures were established to assure that conditions adverse to quality were promptly identified and corrected at the MFFF. Conditions adverse to quality were effectively prioritized and evaluated commensurate with their safety significance. Corrective actions were implemented in a timely manner. Quality assurance (QA) records associated with these activities were properly maintained in accordance with project procedures. MOX Services was adequately implementing the MPQAP requirements related to corrective action follow up, closure, trend analysis, and root cause analysis. Lessons learned from industry construction experience were effectively reviewed and applied when appropriate. The inspectors also determined that MFFF had an adequate employee concerns program and provided sufficient training to their staff, that the staff were generally aware of the importance of having a strong Safety Conscious Work Environment (SCWE) and expressed a willingness to raise safety issues. No findings of significance were identified. (Section 4).

Follow-up of Previously Identified Items

(Closed) Violation (VIO) 70-3098/2010-01-01: Failure to Provide Adequate Design Review for Design Changes. The inspectors reviewed the adequacy of providing sufficient design review for design changes for activities associated with VIO 70-3098/2010-01-01. The inspectors reviewed the condition reports, engineering change requests, project procedures, and design calculations. Inspectors found that the justification for implemented column design changes was adequate. (Section 5.a)

(Reviewed) Inspector Follow-up Item (IFI) 70-3098/2012-03-04. The inspectors reviewed the adequacy of design of seismic isolation of the fire damper penetration barrier for BMP and BAP ceiling/roof and wall concrete penetrations and found the designs of individual components: (1)

light gage cold-formed steel members, (2) fiber reinforced concrete panels, and (3) anchorage systems were based on appropriate codes and standards and methodology and they were acceptable. The inspectors determined that the generic test plan for conducting seismic pressure tests in support of the MOX penetration seal program was adequate. However, no information has been presented on individual seismic pressure test results, design of seal assemblies, and seismic performance of seal assemblies related to the fire damper penetration barrier. A review of the seismic isolation of fire dampers, including a review of seismic pressure test results and design and performance of seal assemblies associated with the fire damper penetration barrier under seismic load will be performed as part of the continuation of the follow-up to IFI 70-3098/2012-03-04, Review Fire Damper Seismic Report. (Section 5.b)

REPORT DETAILS

1. Summary of Facility Status

During the inspection period, the applicant (Shaw AREVA MOX Services (MOX Services)) continued construction activities of principle systems, structures and components (PSSCs). Construction activities continued related to closure of temporary construction openings and finishing activities related to wall, ceiling and floor surfaces of the Mixed Oxide (MOX) Fuel Fabrication Building (BMF), including the Fuel Manufacturing Building (BMP), Aqueous Polishing Building (BAP), and the Shipping Receiving Building (BSR). Other construction activities included staging of process piping and installation of supports in the BAP, BSR, and BMP; installation of process piping in the BAP; installation of ventilation system ductwork and supports in the BAP, BSR, and BMP; installation of cable trays and cable tray supports in the BAP, BSR, and BMP; installation of cables and conduit in the BAP, BSR, and BMP; installation of electrical switchgear in the BSR; installation of fire doors and dampers in the BAP and BMP; and installation of pellet storage gloveboxes in the BMP. The applicant continued to receive, store, assemble, and test glove boxes and process equipment at the Process Assembly Facility (PAF).

2. Routine Resident Inspection Activities (Inspection Procedure (IP) 88130, Construction: Resident Inspection Program for On-Site Construction Activities at the Mixed Oxide Fuel Fabrication Facility; and IP 88110, Quality Assurance: Problem Identification, Resolution, and Corrective Action)

a. Scope and Observations

The inspectors routinely attended the applicant's construction plan-of-the-day meetings and engineering restraint meetings. The inspectors routinely held discussions with MOX Services design engineers, field engineers, quality assurance (QA) and quality control (QC) personnel, and subcontractor 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 (WPs) maintained at various work sites. The inspectors monitored the status of WP completion to verify construction personnel obtained proper authorizations to start work, monitor progress and to ensure WPs were kept up-to-date as tasks were completed.

The inspectors also observed proper communication in the work areas, that the work force was attentive, workers adhered to procedures, proper communication between supervisors and workers, that tanks containing various gasses were properly stored, and that hazardous materials were properly stored and/or properly controlled when in the field. The inspectors conducted daily tours of material storage and work areas to verify that materials and equipment were properly stored in accordance with QA requirements.

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). The inspectors also reviewed the closure of selected NCRs and CRs. The inspectors noted that the applicant entered issues identified during self assessments into the corrective action system.

The inspectors routinely performed tours of the MOX Fuel Fabrication Facility (MFFF) work areas to verify that MOX Services' staging of piping, installation of ductwork, and installation of glove-boxes, installation of fire dampers and fire doors met regulatory commitments and procedural requirements.

The inspectors conducted tours of material storage areas and warehouse facilities to determine if MOX Services was properly storing equipment and materials in accordance with MPQAP storage requirements. Specifically, the inspectors assessed MOX Services compliance with project procedure (PP) 10-38, Storage and Control of Material.

The inspectors observed routine lifts conducted to position glovebox movement of equipment such as generators, pumps, temporary lighting, and toolboxes. The lifts were conducted in accordance with the applicant's procedures. Specifically, the inspectors verified that installations of supports and glove boxes were in accordance with applicable field drawings and met the general construction notes.

The inspectors observed installation of piping supports, ventilation supports, electrical conduit supports, and cable tray supports. The inspectors also observed placement of ventilation fan units, cable trays, electrical conduits, tanks, and electrical switchgear. The inspectors verified that the installations were in accordance with applicable installation work package guidance.

The inspectors performed reviews of WPs and routine walk downs of the areas to verify adequate cleanliness. The inspectors performed routine walk downs of installed piping and tanks to ensure cleanliness control barriers were properly maintained.

b. Conclusions

The inspectors routinely attended the applicant's construction plan-of-the-day meetings, reviewed the status of WPs maintained at various work sites, conducted daily tours of work and material storage areas, observed installation of mechanical equipment, and reviewed various corrective action documents to assess the adequacy of the MOX Services' corrective action program. Except as noted below, construction activities were performed in a safe and quality-related manner. No findings of significance were identified.

3. **PSSC Related Inspections**

a. PSSC-023, Fluid Transport Systems

(1) Attribute: Test Control; IP 88134, Construction: Piping Relied on for Safety

(a) Scope and Observations

The inspectors observed the ongoing activities related to installation of the aqueous polishing (AP) process piping. The applicant had designated BAP rooms C-110 and C-121 as focus rooms for completion of mechanical installation and process piping contained in these rooms. At the time of this inspection, the identification of the necessary sequence of installation and the related revisions to the applicable WPs were still under review by MOX Services.

During the inspection period, MOX Services focused on completing the installation of one of the oxalic mother liquors recovery units (KCD) process pipes (KCD-0259213C-SH01), which included installation in accordance with the design requirements and welding the piping to a tank nozzle. The inspectors observed these activities and reviewed the applicable work packages. WP 13-CP27-TK6000-CONN-P-M-001 provided steps for completing the welding of the piping to tank KCD6000. Section 2.6 of WP 13-CP27-TK6000-CONN-P-M-001 (Hold Point) states that, "Final pipe to tank nozzle tie in welds shall not be made until testing...has been completed." Piping (KCD-0259213C-SH01)(considered to be Category M¹ class piping), listed in Section 2.6, had a WP step that was signed and dated as "verified complete for required testing" on August 28, 2013. However, a note to this step stated that pressure testing was not accomplished because there were no shop or field welds within the boundaries of the piping isometric for this section of piping. Following this signature, the applicant was prepared and in the process of making the tank to piping welds. Once welded, the piping could not be tested due to pressure limitations of the tank.

The inspectors confirmed that the American Society of Mechanical Engineers (ASME) B31.3, Process Piping, ASME Code for Pressure Piping B31, Section 345 requires pressure testing and Section M345 requires a hydrostatic (sensitive leak) test for Category M class piping.

MOX Project Quality Assurance Plan (MPQAP), Section 11.1 specifies that tests are required to verify conformance of an item to specified requirements and also requires that tests to demonstrate satisfactory performance for service are planned and executed. The test control program includes various types of testing such as proof test before installation, preoperational tests, post maintenance tests, post modification tests, and operational tests.

MPQAP Section 5, Instructions, Procedures and Drawings, states, in part that quality affecting activities are performed in accordance with documented, approved QA procedures and other approved implementing documents (drawings, specifications, etc.) appropriate to the MOX Project work scope.

Work package, WP 13-CP27-TK6000-CONN-P-M-001, Section 2.6 required appropriate hydrostatic (sensitive leak) testing as required by ASME B31.3.

Contrary to the above, as of August 28, 2013, the applicant failed to perform quality affecting activities in accordance with approved implementing documents, in that, testing required to demonstrate that piping KCD-0259213C-SH01 would perform satisfactorily in service was not performed in accordance with written procedures. Specifically, appropriate hydrostatic testing required by ASME B31.3 was not performed as required. The appropriate hydrostatic testing would not have been performed because on August 28, 2013, the applicant inappropriately concluded that testing was not required and based on this conclusion verified and signed a hold point step that all testing was completed as required. This finding was determined to be a severity level (SL) IV

¹ A fluid service in which the potential for personnel exposure is judged to be significant and in which a single exposure to a very small quantity of a toxic fluid caused by leakage can produce serious irreversible harm to persons upon breathing or on bodily contact even when prompt restorative measures are taken.

violation using Section 6.5 of the Enforcement Policy. Because this was a SL IV violation and the example supporting the violation was entered into the applicant's corrective action program (CR-13-404), this violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2 of the NRC Enforcement Policy and is identified as NCV 70-3098/2013-03-01, Failure to Perform Required Hydrostatic Testing of BAP Process Piping.

The inspectors determined that this finding was more than minor because it represented an inadequate process and quality oversight function (hydrostatic testing) that, if left uncorrected, could adversely affect the quality of the construction of safety related components. Specifically, the inappropriate conclusion that the piping did not have to be hydrostatically tested if it did not have welds, could have resulted in large quantities of piping not being hydrostatically tested as required by the ASME B 31.3 process piping code. The finding is a SL IV violation because it did not involve multiple examples of deficient construction related to a QA breakdown of a single work activity.

(b) Conclusion

The inspectors observed construction activities related to PSSC-023, Fluid Transport Systems. The inspection attribute observed was test control. The associated IROFS component was KCD piping. Specifically, the inspectors observed installation and documentation of process piping installation. The detailed inspection activities identified one violation associated with WP 13-CP27-TK6000-CONN-P-M-001. NCV 70-3098/2013-03-01 was identified for failure to perform required hydrostatic testing of BAP process piping.

b. PSSC-023, Fluid Transport Systems

(1) Attribute: Installation; IP 88134, Construction: Piping Relied on for Safety

(a) Scope and Observations

The inspectors observed the ongoing activities related to installation of the BAP process piping. The applicant had designated BAP rooms C-110 and C-121 as focus rooms for completion of mechanical installation and process piping contained in these rooms. During the inspection period, the applicant focused on completing the installation of one process pipe (KCD-0259213C-SH01), and this included flushing of the line to ensure cleanliness prior to welding the piping onto the KCD-6000 tank nozzle. The inspectors observed the flushing activities and reviewed WP 13-CP27-C110-KCD-Flush-P-M-0001.

The inspectors noted that the flushing activities were performed in accordance with work package requirements and guidance and no problems with the pneumatic flushing activities were identified. Following the flushing activities, the applicant was required by steps in the work package to install internal cleanliness control barriers on the ends of the piping and these were documented as installed in the work package on August 22, 2013. On August 26, 2013, the inspectors found that the internal cleanliness control barriers had been removed. Discussions with the applicant noted that the job supervisor had directed that the cleanliness control barriers be removed in order to make final welds of the piping to the tank. The welding was subsequently delayed and the seals were not re-installed.

MPQAP, Section 2, Quality Assurance Program, Paragraph 2.1.1 states, in part, that specific processes and controls, implementing the requirements of NQA-1-1994 Part II subparts, are specified in QA project procedures and detailed work place procedures.

Nuclear Quality Assurance Requirements for Nuclear Facilities Applications (NQA-1), Subpart 2.1, Section 6, Cleanliness During Installation, requires that "Openings and pipe ends shall be sealed at all times except when they must be unsealed to carry out necessary operations." Section 7, Maintenance of Installation Cleanliness, requires that "After any isolable item has been installed in a clean condition...access control shall be established to minimize the introduction of contaminants...".

MPQAP Section 5, Instructions, Procedures and Drawings, Paragraph 5.2.1, Types of Implementing Documents, states, in part, that the type of document to be used to perform work shall be appropriate to the nature and circumstances of the work being performed. Procedures ... ensure specified safety and environmental conditions are maintained.

Contrary to the above, on or before August 26, 2013, Work Package (WP) 13-CP27-C110-KCD-Flush-P-M-0001, used to perform work on safety-related process pipe KCD-0259213C, was not appropriate to the nature and circumstances of the work being performed, and did not ensure specified safety and environmental conditions were maintained. WP 13-CP27-C110-KCD-Flush-P-M-0001, Section 5.12, required the applicant to "Install an Internal Cleanliness Control Barrier on cleaned pipe assemblies" and that "the barrier is intended to control access." Neither the work package nor project procedures had steps for removal of the barriers or to control access while the barriers were removed.

The lack of procedural controls resulted in safety-related pipe ends that were not sealed at all times and access control was not established when the barriers were removed. Specifically, process pipe KCD-0259213C was cleaned and cleanliness control barriers were installed on August 22, 2013; and on August 26, 2013, it was identified that the cleanliness barriers had been removed and not replaced.

This finding was determined to be a SL IV violation using Section 6.5 of the Enforcement Policy. Because this was a SL IV violation and the example supporting the violation was entered into the applicant's corrective action program (CR-13-389), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy and is identified as NCV 70-3098/2013-03-02, Failure to Maintain Cleanliness Control Barriers and Establish Access Controls on BAP Process Piping.

The inspectors determined that this finding was more than minor because it represented an inadequate process and quality oversight function (cleanliness and access control) that, if left uncorrected, could adversely affect the quality of the construction of safety-related components. Specifically, foreign material control of safety-related process piping systems is important due to small orifices in the process lines and tanks which could be plugged by the foreign material. Process pipe KCD-0259213C connected to a safety-related tank with small orifices. Plugging of the orifices could interfere with IROFS instrumentation involved with chemical safety and criticality safety, and could prevent continuing operations of the facility and fulfillment of the facilities overall safety

functions. The finding is a SL IV, because it did not involve multiple examples of deficient construction related to the QA breakdown of a single work activity.

(b) Conclusion

The inspectors observed construction activities related to PSSC-023, Fluid Transport Systems. The inspection attribute observed was installation. The associated IROFS component was KCD piping. Specifically, the inspectors observed installation and documentation of process piping installation. The detailed inspection activities identified one violation associated with WP 13-CP27-C110-KCD-Flush-P-M-0001. NCV 70-3098/2013-03-02 was identified for failure to maintain cleanliness control barriers and establish access controls on BAP process piping.

c. PSSC-021, Fire Barriers

(1) Attribute: Procedures; IP 88136, Construction: Mechanical Components

(a) Scope and Observations

The inspectors observed the ongoing activities related to installation of fire dampers in the BAP. The inspectors reviewed WP 12-CP23-C153-HSA-L-T-M-0001 related to installation of fire damper C153 in the BAP wall penetration.

Installation requirements for the fire damper were documented in WP 12-CP23-C153-HSA-L-T-M-0001, dated July 29, 2013. Section 2.1.1 of the WP detailed the installation requirements and specified, "Install all work in accordance with the design issued drawings and documents listed on Form PP11-44D." Form PP11-44D listed multiple design specifications, design drawings, and engineering change requests (ECRs). In addition, Section 2.1.3.4 of the WP directed the installer to, "Refer to the approved Superior Air Handling drawings to determine proper orientation." The inspectors discussed with the applicant the difficulty for the installer to determine which documents actually provided the appropriate requirements for the specific fire damper installation.

The inspectors noted that the fire damper WP installation requirement issues appeared to be similar to the issues identified in violation (VIO) 70-3098/2012-01-01, Five Examples for Failure to Provide Work Documents Appropriate to the Nature and Circumstances of the Work Being Performed and to Perform Quality-Affecting Work Activities in Accordance With Approved Implementing Documents. The inspectors determined that further review of the fire damper WP installation requirement issues is necessary to determine if prior and ongoing corrective actions for VIO 70-3098/2012-01-01 were appropriate, adequate and effective. Pending further review, this issue is considered to be an unresolved item (URI) and is being identified as URI 70-3098/2013-03-03: Potentially Inadequate Corrective Actions Regarding Quality of Work Package Guidance.

(b) Conclusion

The inspectors observed construction activities related to PSSC-021, Fire Barriers, as described in Table 5.6-1 of the MFFF CAR. The inspection attribute observed was procedures and the associated SSCs were fire dampers located in the BAP. URI 70-

3098/2013-03-03, Potentially Inadequate Corrective Actions Regarding Quality of Work Package Guidance was identified.

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

(1) Attribute: Design Control (BMP Wall 317); IP 88132, Construction: Structural Concrete Activities

(a) Scope and Observations

The inspectors selected three reports to conduct an onsite inspection of redesigned and reconstructed MOX BMP T.1 line shear wall, W317 from line 10 to line 12 at elevation 46' -10" to 73'-0" and the BMP floor slab, F305 between line10 and line12 that supports shear wall W317; including final design, design drawings, and construction. On June 24 - 28, 2013 the inspectors performed a detailed technical review of the selected three reports and the associated documents; interviewed the structural engineers; and inspected the reconstructed wall and floor system.

The inspectors reviewed the following documents:

- ECR-012276: Reconstruction of T. 1 Line (BMP W317), Revision (Rev.) 5.
- ECR-012533: Qualification of Walls in BMP from P to W and 9 to 12 @ Elev. 46'-10" to 73'-0", BMP Pours W317, W313, F301, F303, F305, and F307, Rev. 1
- FCR-000591: BMP W317/313 T.1 Line Steel Changes, Rev. 0
- DCS01-BMF-DS-PLF-B-01409-3: MOX Fuel Fabrication Facility BMP Area Concrete and Reinforcing, Intermediate Elevations, T.1, V.2 (Drawing)
- DCS01-BMF-DS-PLF-B-01369-2: MOX Fuel Fabrication Facility BMP Area Concrete and Reinforcing, Plan at El. 46'-10" (Drawing)

The inspectors determined that the final redesign, the design drawings, and the construction of the BMP T.1 line shear wall, W317 and the BMP floor slab F305 that supports shear wall W317 were based on appropriate design codes and standards and acceptable construction methods. The inspectors found that the hydro demolition technique the applicant used for demolition of floor slab F305 without damaging the embedded plates and reinforcement was acceptable.

(b) Conclusions

The inspectors reviewed construction activities related to PSSC-036, MOX Fuel Fabrication Building Structure (Including Vent Stack), as described in Table 5.6-1 of the MFFF CAR. The inspection attribute observed was design control. The associated IROFS component was the BMP T.1 line shear wall. The inspectors reviewed the adequacy of redesign of BMP T.1 line shear wall W317 and floor slab F305, hydro demolition of floor slab F305, and construction of the shear wall and the floor slab, and found them adequate and acceptable. MOX Services implemented adequate oversight of design control activities consistent with the regulatory requirements of the MPQAP. No findings of significance were identified.

4. Non-PSSC Inspections

a. Quality Assurance: IP 88110, Quality Assurance: Problem Identification, Resolution and Corrective Actions (Construction, Pre-Operation and Operation)

(1) Scope and Observations

The scope of the inspection covered a review of various documents and activities related to QL-1 and QL-2 construction for conformance to NRC regulations, the MPQAP, and applicable industry standards. The purpose of the inspection was to evaluate programmatic implementation of the applicant's problem identification, resolution and corrective action requirements.

The inspectors reviewed applicable portions of MOX Services' Corrective Action Program (CAP) to assess its adequacy and whether it has been effectively implemented. The inspectors reviewed procedures associated with problem identification and corrective actions. The inspectors reviewed several CRs and NCRs generated by the applicant to verify that there was proper documentation, prioritization, and resolution of problems identified. The inspectors reviewed the significance level, timeliness and adequacy of corrective actions to verify compliance with the approved procedures. The inspectors reviewed procedures associated with lessons learned, trend analysis, and root cause analysis. The inspectors reviewed the documentation and records associated with lessons learned, trend analysis, and root cause analysis.

The inspection focused on several aspects of the applicant's programs as outlined below:

(a) Procedures

The inspectors reviewed the MOX Services' CAP implementing procedures to determine if they were appropriately prepared, approved and implemented. Specifically, the inspectors reviewed PP1-7, MOX Fuel Fabrication Lessons Learned Program; PP3-1, Employee Concerns Program; PP3-2, Trend Analysis, PP3-5, Control of Nonconforming Items; PP3-6, Corrective Action Process; PP3-11, Assessments; and PP3-25, Root Cause Analysis, to confirm that the procedures were consistent with requirements and commitments for identifying, reporting, and documenting conditions adverse to quality.

(b) Identification and Classification of Conditions Adverse to Quality

The inspectors reviewed a sample of CRs and NCRs to evaluate whether the documents: (1) adequately described the issue; (2) were labeled with unique identifiers; and (3) had been assigned a significance level consistent with the criteria in PP3-6, Corrective Action Process. As part of MOX Services' CAP review, the inspectors attended a management review committee (MRC) meeting in order to evaluate the applicant's process for review of recently initiated CRs, threshold for assigning significance levels to initiated CRs, the evaluation process and remedial corrective actions, and corrective action plan used to preclude recurrence, as applicable. Also, the inspectors attended a lessons learned program meeting to ensure that issues discussed were being properly evaluated for entry into the CAP, when appropriate.

(c) Documentation and Reporting of Conditions Adverse to Quality

The inspectors reviewed a sample of CRs from several areas in order to evaluate whether the applicant had an adequate process and necessary instructions for documenting and reporting of conditions adverse to quality. The inspectors also reviewed conditions adverse to quality to evaluate whether the applicant's management had determined the extent of the adverse condition and that remedial action was completed as soon as practical with the results documented within the CR. For the CRs reviewed, the inspectors verified that the QA organization concurred with the proposed corrective action, including remedial action. The inspectors verified that conditions adverse to quality and their associated corrective actions were being appropriately documented, according to the applicant's QA requirements described in PP3-6.

(d) Follow-up, Closure, and Trending

The inspectors reviewed Quality Assurance Audit Report No. SA-12-05 on the Corrective Action process conducted September 24 through October 2, 2012. The inspectors also reviewed the ten CRs that were initiated as a result of that audit to evaluate the success of their disposition.

The inspectors reviewed three management assessments of various aspects of the corrective action program. In each case the inspectors reviewed the CRs which were initiated from those assessments to confirm that appropriate corrective actions were completed.

During these reviews, inspectors noticed several instances where the supervisor review of CRs occurred more than two days after the date of CR initiation. Procedure PP3-6, Step 3.3.2 requires CRs to receive supervisor review within two days after initiation.

Applicant representatives stated that they recognized there had been other examples of late supervisor review in the past and CR 12-533, also initiated from this audit, was anticipated to address the timeliness issue. That CR directed the appointment of CR Coordinators in the various sections of the MOX organization who would have the ability to monitor timeliness and initiate a significance level D CR each time the review period was missed, allowing for trending. The applicant was still in the process of addressing this issue.

(e) Employee Concerns Program (ECP)

The inspectors evaluated the applicant's Safety Conscience Work Environment (SCWE) through a review of the applicant's ECP procedure and interviews. The inspectors interviewed the ECP manager and the Quality Assurance Corrective Actions manager to determine the extent of connection with the Corrective Action Program. The ECP manager has monthly meetings with the project management to inform of any trends and issues related to ECP. The ECP process allows for the individuals to present concerns and know its resolution. The inspectors also determined that MFFF had an adequate employee concerns program and provided sufficient training to their staff, that the staff were generally aware of the importance of having a strong SCWE.

The inspectors determined from MFFF management that every person coming onto the site was required to have training on the applicant's CAP, and the applicant's ECP

process as part of the General Employee Training. The ECP is also included in the Consolidated Annual Training program required at the MFFF.

(2) Conclusions

Requirements for problem identification and resolution specified in the MPQAP and 10 CFR 50, Appendix B were implemented adequately. Measures were established to assure that conditions adverse to quality were promptly identified and corrected at the MFFF. Conditions adverse to quality were effectively prioritized and evaluated commensurate with their safety significance. Corrective actions were implemented in a timely manner. QA records associated with these activities were properly maintained in accordance with project procedures. MOX Services was adequately implementing the MPQAP requirements related to corrective action follow up, closure, trend analysis, and root cause analysis. Lessons learned from industry construction experience were effectively reviewed and applied when appropriate. The inspectors also determined that MFFF had an adequate employee concerns program and provided sufficient training to their staff, that the staff were generally aware of the importance of having a strong SCWE and expressed a willingness to raise safety issues. No findings of significance were identified.

5. Follow-up of Previously Identified Items

- a. (Closed) Violation (VIO) 70-3098/2010-01-01, Failure to Provide Adequate Design Review for Design Changes (Two Examples); IP 88107, Quality Assurance: Design and Document Control

(1) Scope and Observations

The inspectors selected six reports to conduct an onsite inspection of two examples of Violation (VIO) 70-3098/2010-01-01: Failure to Provide Adequate Design Review for Design Changes, Two Examples. These two examples were (i) failure to provide adequate design review for a design change approved by Engineering Change Request ECR-005971, Rev. 1 and (ii) approved design change in ECR-001833 did not include an adequate evaluation to justify the design change implemented. The inspectors performed a detailed technical review of the selected six reports and the associated documents, interviewed the structural engineers, and inspected some of the columns and their geometric locations with respect to the shear walls.

The review of associated documents included:

- DCS-NRC-000282: Shaw AREVA MOX Services Revised Reply to a Notice of Violation, September 30, 2010
- CR-09-0402: Modification to Column without Documented Calculation
- ECR-005971: Evaluation of all BMF concrete columns in response to CR# 09-0402, Revisions 0, 1, and 2
- ECR-001833: Column Correction in BMP W120, Rev. 0, 1, and 2
- ECR-006151: Additional Technical and Analytical Justification for the Columns of the BMF Structure in Response to CR #09-0402, Rev. 0
- CR-10-0102: Concrete Engineering Specialists Column Non-destructive Testing (NDT)

- ECR-000751: BSR W-5 Concrete Pour – Change From Lenton Couplers to Barsplice Screwlok Couples in Wall Piers, Rev. 1
- ECR-001677: BMP WR120 Column M10A Reinforcement, Rev. 1
- ECR-001899: Column in BMP F201, Rev. 0
- ECR-001954: (Pour BMP W122) column M9A vertical bar spacing, Rev. 0
- CR-10-0214: Technical Justification of Civil/Structural Design Documents (including CR-09-0450)
- Project Procedure PP9-3: Design Control, Rev. 16
- Project Procedure PP9-21: Engineering Change Request, Rev. 7

The inspectors observed that the applicant revised the ECR-005971, Rev. 1 analysis by deleting and not using the unapproved input information from a MOX Services' subcontractor, Concrete Engineering Specialists (CES). The applicant conducted reanalysis of the columns M10A and N10 and evaluated their capacities following appropriate design codes and standards. The inspectors determined that the applicant conducted adequate design review for the Columns M10A and N10 and that the approved design change for the first example was adequate. The inspectors observed that the applicant provided the needed analysis and justification for the second example to demonstrate that the design changes implemented in ECR-001833 are satisfactory. The inspectors concluded that the implemented design changes for the second example are adequate. Furthermore, the inspectors also found that the corrective steps that the applicant has taken, including revising procedures for Design Control and Engineering Change Request to emphasize the requirements for documentation and justification for design changes are sufficient to prevent recurrence.

(2) Conclusions

The inspectors reviewed the adequacy of providing sufficient design review for design changes for activities associated with VIO 70-3098/2010-01-01, Failure to Provide Adequate Design Review for Design Changes. The inspectors reviewed the condition reports, engineering change requests, project procedures, and design calculations. Inspectors found that the justification for implemented column design changes was adequate.

b. (Reviewed) Inspection Follow-up Item (IFI) 70-3098/2012-03-04, Review Fire Damper Seismic Report; IP 88107, Design and Document Control

(1) Scope and Observations

The inspectors selected eight reports to conduct an onsite inspection of seismic isolation of fire damper penetration barriers for BMP ceiling/roof and wall concrete penetrations. The inspectors performed a detailed technical review of the selected eight reports and the associated documents; interviewed the structural engineers; and inspected the prototype seismic isolation system.

The review of associated documents included:

- DCS01-BMF-DS-CAL-B-01385-0: Fire Damper Penetration Barrier
- DCS01-BMF-DS-CAL-B-01347-0: ABC-Enclosures
- DCS01-AAJ-DS-DOB-B-40103-3: Basis of Design for Structures

- DCS01-BRA-DS-TRD-B-01365-0: Technical Requirements Documents for MFFF Penetration Seals
- DCS01-XGA-DS-CAL-B-01350-0: Requirements for Hilti HSL-3 Post Installed Anchors
- DCS01-QJJ-DS-CAL-V-10421-0: Pressure Differentials Across Internal Barriers Within the MOX Facility
- Document No.: 51-9196562-000: Generic Test Plan for Conducting Seismic Pressure Tests
- DCS01-XGA-DS-CAL-B-01072-0: Seismic Floor Response Spectra for BMF and BEG
- DCS01-BMF-DS-PLF-A-04509-2: MOX Fuel Fabrication Facility ABC Construction of Typical Fire Damper Penetration Details (Drawing)
- DCS01-BMF-DS-PLS-B-01692-1: MOX Fuel Fabrication Facility Typical Fire Damper Retainer Angle Plan, Sections and Details (Drawing)

The inspectors found that the designs of the individual light gage cold-formed steel members, fiber reinforced concrete panels, and anchorage associated with the fire damper penetration barrier are based on appropriate codes and standards and design methodology and are acceptable. Calculations were performed to evaluate the pressure differentials across internal barriers in the MOX BMP and Aqueous Polishing Building as a result of the normal operation of the ventilation system. The inspectors determined that the pressure differential calculations were performed using industry standard methods and are acceptable.

A generic test plan had been developed by MOX Services for conducting seismic pressure tests in support of the MOX penetration seal program. The objectives of this generic test plan were to: (1) define the overall process and documentation requirements for conducting seismic pressure tests and (2) provide the template for individual detailed seismic pressure test plans. Although this generic test plan was not yet a MOX Services controlled document, the inspectors determined that the generic test plan for conducting seismic pressure tests in support of the MOX penetration seal program was adequate. The inspectors found that at the time this inspection, no information was available regarding individual seismic pressure test results and design of seal assemblies associated with the fire damper penetration barrier. Furthermore, although the inspectors found that the conceptual design of the fire damper penetration barrier assembly, including its seismic isolation from concrete walls and ceiling/floor penetrations was adequate; seismic performance of this assembly to satisfy the dual safety functions of providing seismic isolation and confinement integrity have not been demonstrated by MOX Services.

(2) Conclusions

The inspectors reviewed the adequacy of design of seismic isolation of the fire damper penetration barrier for BMP and BAP ceiling/roof and wall concrete penetrations and found the designs of individual components: (1) light gage cold-formed steel members, (2) fiber reinforced concrete panels, and (3) anchorage systems are based on appropriate codes and standards and methodology and they were acceptable. The inspectors determined that the generic test plan for conducting seismic pressure tests in support of the MOX penetration seal program was adequate. However, no information has been presented on individual seismic pressure test results, design of seal

assemblies, and seismic performance of seal assemblies related to the fire damper penetration barrier. A review of the seismic isolation of fire dampers, including a review of seismic pressure test results and design and performance of seal assemblies associated with the fire damper penetration barrier under seismic load will be performed as part of the continuation of the follow-up to IFI 70-3098/2012-03-04, Review Fire Damper Seismic Report.

6. Exit Interviews

The inspection scope and results were summarized throughout this reporting period, by resident inspectors on October 17 and 31, 2013, and by the regional inspectors on July 19, 2013. Dissenting views were not expressed by 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 this report.

SUPPLEMENTAL INFORMATION

1. PARTIAL LIST OF PERSONS CONTACTED

MOX Services

R. Alley, Engineering Assurance Manager
M. Gober, Vice President, Engineering
D. Gwyn, Licensing/Nuclear Safety Manager
D. Ivey, Quality Assurance Manager
R. Justice, Jr., Quality Assurance Programs Manager
D. Kehoe, Quality Assurance/Quality Control Manager
J. Keklak, Regulatory Compliance Manager
S. King, Vice President, Operations
S. Marr, Executive Vice President and Deputy Project Manager
J. Peregoy, Quality Control Manager
F. Pinkston, Employee Concerns Program Manager
B. Stephens, Vice President, Process Unit Design & Commissioning
K. Trice, President and Chief Operating Officer
R. Whitley, Vice President, Project Assurance

2. INSPECTION PROCEDURES (IPs) USED

IP 88107 Design and Document Control
IP 88110 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 88134 Piping Systems Relied on For Safety
IP 88136 Mechanical Components

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

<u>Item Number</u>	<u>Status</u>	<u>Description</u>
70-3098/2013-03-01	Opened/Closed	NCV: Failure to Perform Required Hydrostatic Testing of BAP Process Piping (Section 3.a)
70-3098/2013-03-01	Opened/Closed	NCV: Failure to Maintain Cleanliness Control Barriers and Establish Access Controls on BAP Process Piping (Section 3.b)
70-3098/2013-03-01	Opened	URI: Potentially Inadequate Corrective Actions Regarding Quality of Work Package Guidance (Section 3.c)

70-3098/2010-01-01 Closed

VIO: Failure to Provide an Adequate Design Review for Design Changes, Two Examples (Section 5.a)

70-3098/2012-03-04 Reviewed

IFI: Review Fire Damper Seismic Report (Section 5.b)

4. LIST OF ACRONYMS USED

ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
BAP	Aqueous Polishing Building
BMF	Manufacturing Building
BMP	MOX Process Building
BSR	Shipping and Receiving Building
CAP	Corrective Action Program
CAR	Construction Authorization Request
CES	Concrete Engineering Specialist
CIB1, 2	Construction Inspection Branch 1, 2
CPB1, 2	Construction Projects Branch 1, 2
CR	Condition Report
DCI	Division of Construction Inspection
DCP	Division of Construction Projects
ECP	Employee Concerns Program
ECR	Engineering Change Request
IFI	Inspection Follow-Up Item
IP	Inspection Procedure
IR	Inspection Report
IROFS	Items Relied on for Safety
KCD	Oxalic Mother Liquors Recovery
LA	License Application
M&TE	Measuring and Test Equipment
MFFF	MOX Fuel Fabrication Facility
MOX	Mixed Oxide
MOX Services	Shaw AREVA MOX Services
MPQAP	MOX Project Quality Assurance Plan
MRC	Management Review Committee
NCR	Non-conformance Report
NCV	Non-cited Violation
NDE	Non-Destructive Examination
NDT	Non-Destructive Testing
No.	Number
NQA-1	Nuclear Quality Assurance Requirements for Nuclear Facilities Applications
NRC	Nuclear Regulatory Commission
PAF	Process Assembly Facility
PP	Project Procedure
PSSC(s)	Principle System(s), Structure(s), and Component(s)
QA	Quality Assurance
QC	Quality Control

QL	Quality Level
QL-1	Quality Level 1
QL-2	Quality Level 2
QL-4	Quality Level 4
RII	Region II
Rev.	Revision
SDR	Supplier Deficiency Report
SCWE	Safety Conscious Work Environment
SL	Severity Level
SSC	System(s), Structure(s), and Component(s)
VIO	Violation
WP	Work Package

5. **LIST OF PSSCs REVIEWED**

PSSC-021	Fire Dampers
PSSC-023	Fluid Transport Systems
PSSC-036	MOX Fuel Fabrication Building Structure (Including Vent Stack)

6. **RECORDS AND DOCUMENTS REVIEWED**

Project Procedures

PP 1-7, MOX Fuel Fabrication Lessons Learned Program, Rev. 3
 PP 3-1, Employee Concerns Program, Rev. 8
 PP 3-2, Trend Analysis, Rev. 3
 PP 3-5, Control of Nonconforming Items, Rev. 9
 PP 3-5, Control of Nonconforming Items, Rev. 10
 PP 3-6, Corrective Action Process, Rev. 15
 PP 3-6-6R15 ICN01, Corrective Action Process
 PP 3-6-6R15 ICN02, Corrective Action Process
 PP 3-6-6R15 ICN03, Corrective Action Process
 PP 3-11, Assessments, Rev. 8
 PP 3-25, Root Cause Analysis, Rev. 4

Condition Reports

10888-MOX-CR-11-033, Discovered Adverse Conditions not Documented and Tracked through Corrective Action Process
 10888-MOX-CR-11-420, Assessment Report did not Evaluate Identified Adverse Conditions
 10888-MOX-CR-11-496, Problem Conditions Discovered in Procurement Assessment
 10888-MOX-CR-12-058, Management Assessments
 10888-MOX-CR-12-270, PP11-39 Control of Hazardous Energy – Lockout/Tagout Violation
 10888-MOX-CR-12-348, HANGER B129 -HV-0006
 10888-MOX-CR-12-364, Vendor Failure to Verify Physical Dimensions During CGD of Steel
 10888-MOX-CR-12-369, Mislabeled Embed Plates

- 10888-MOX-CR-12-374, Mechanical rebar splices torqued outside of calibrated wrench range
- 10888-MOX-CR-12-375, NCR-QC-12-3758 Closure with No Disposition for a Nonconforming Condition
- 10888-MOX-CR-12-379, Electrical MT&E Program Deficiencies
- 10888-MOX-CR-12-384, Welded (Seamed) Piping Purchased for MOX Project may not Conform to B31.3 Requirements
- 10888-MOX-CR-12-385, Violation of requirements for the use of Hilti Diamond Core Drill bits at MOX Project
- 10888-MOX-CR-12-393, Spacing for Post-Installed Anchor Bolts
- 10888-MOX-CR-12-397, Corrective Actions from Previous Self-Assessment were not Implemented
- 10888-MOX-CR-12-398, Construction Concrete Placement
- 10888-MOX-CR-12-401, Improper Storage of Construction Materials
- 10888-MOX-CR-12-412, NCR's Written on Set 45 Grout for Failing 28 Day Strength Tests
- 10888-MOX-CR-12-414, NCRs Discontinued Contrary to Project Procedure
- 10888-MOX-CR-12-419, Pour Card sign off
- 10888-MOX-CR-12-420, Bent Post Installed Anchors
- 10888-MOX-CR-12-422, QC Corrective Action Process Deficiencies
- 10888-MOX-CR-12-436, Housekeeping and Work Area Cleanliness conditions adverse to Safety and Quality
- 10888-MOX-CR-12-453, Leak Rate Database Management
- 10888-MOX-CR-12-457, Concrete repair material site mix proportions
- 10888-MOX-CR-12-469, Non-conforming Condition not Identified Promptly
- 10888-MOX-CR-12-482, Control Cable Routed with Power Cables
- 10888-MOX-CR-12-483, Improper Storage of Construction Materials
- 10888-MOX-CR-12-498, 10 CFR 21 Condition NCR QC-12-4389
- 10888-MOX-CR-12-517, Assessment report deficiencies
- 10888-MOX-CR-12-530, Discrepancy in Certification Qualification
- 10888-MOX-CR-12-532, Inaccurate response to the NRC Notice of Violation
- 10888-MOX-CR-12-533, Condition Report Process Deficiencies
- 10888-MOX-CR-12-534, Disposition and Technical Justification Recorded In Wrong Place
- 10888-MOX-CR-12-535, Potential 10CFR21 Conditions
- 10888-MOX-CR-12-536, NCR Deficiencies
- 10888-MOX-CR-12-538, QAQC 1047 training is missing
- 10888-MOX-CR-12-539, Corrective Actions not included with Condition Reports
- 10888-MOX-CR-12-564, Cube breaks did not meet ASTM C109 requirements
- 10888-MOX-CR-13-003, Broken Hilti Anchor
- 10888-MOX-CR-13-059, Concrete Truck/mixer -water meter out of calibration
- 10888-MOX-CR-13-103, Mechanical Splicing Testing Frequency
- 10888-MOX-CR-13-251, Training Roster Signature Falsification
- 10888-MOX-CR-13-266, LL-2013-118 Required Response Investigation Determined An Impact On Potential Future Work
- 10888-MOX-CR-13-267, Work performed without Authorization provided on Form PP11-44A (Open)
- 10888-MOX-CR-13-274, Failure to Attach PPG-3C Design Verification Forms to QAIS initiated NCRs (Open)
- 10888-MOX-CR-13-282, Root Cause Compliance Deficiency (Open)

10888-MOX-CR-13-285, Document Control Corrective Action Program Deficiency (Open)
 10888-MOX-CR-13-286, Training Corrective Action Program Deficiency (Open)
 10888-MOX-CR-13-287, Engineering Corrective Action Program Deficiency (Open)
 10888-MOX-CR-13-288, QA Corrective Action Program Deficiency (Open)
 10888-MOX-CR-13-290, Construction Corrective Action Program Deficiency (Open)

Non-Conformance Reports

NCR-QC-11-2918, Drawing 6314-M-930-2 MFFF Room BAP C141 KPA-TK 9500 panels
 NCR-AT-12-4369, DCS01 EEJ DS CCT E 80002 Electrical Panel NPG*SPNL0001A
 NCR-CE-12-4439, Missing Ground Plates QL-1 (IROF) BAP Room C-113 Drawing (GRS)
 NCR-QC-12-4442, Cadweld Ground Plate CAT-ID: 1323 QC-RIR-12-39211 Item #001
 NCR-AT-12-4498, Calibration of Measurements & Test Equipment (M&TE) Electrical panels
 NCR-AT-12-4437, DCS01 EEJ DS CCT E 50066 Electrical Panel KCC*SPNL0002A
 NCR QC 10 2295, DCS01 BKA DS SPE B 09330 Sec J Concrete
 NCR QC 12 4151, CGAR 65831a Lenton Couplers, QC-RIR-12-33128, line item 7, CAT ID 6318, line item 9, CAT ID 7687, line item 10, CAT ID 7258 and line item 11 CAT ID 6316
 NCR CE 12 4289, Tolerance on Pipe Support Detail Drawing DCS01 ZMS DS PLD M C234 PS 80033-SH01 Round tube steel positioned beyond drawing tolerance
 NCR CE 11 3304, DCS01 BMF DS PLF B 01352-SH 02, Rebar Spacing Violations (BSR-F105.1)
 NCR AC 12 4251, DCS01 BMF DS PLF B 01352-SH01 missing main steel wall dowels, BSR W307.3/W308.2
 NCR EN 10 2201, DCS91 BMF DS PLF B 01352 Sh.1 #7 Hook Bars
 NCR AC 12 4135, DCS01 BMF DS PLF B 01352-SH01 Hook Bars Across CSJ at Nonconforming Angle, BSR F301.2
 NCR AC 12 4296, DCS01 BMF DS PLF B 01352-SH01 Incorrect number of horizontal wall dowels, BSR W307.3/W308.2
 NCR AC 12 4309, DCS01 BMF PLF B 01352 SH 03 BAP W307, 4.8 Line at G.1 Line, horizontal rebar spacing
 NCR QC 10 1784, DCS01 BKA DS SPE B 09330 General workmanship of reinforcing steel bars in repair area
 NCR AC 12 4313, DCS01 BMF PLF B 01352 SH01 At the intersection of 3.4 and F line the D1 dowels not installed per vendor drawing 2316.
 NCR CE 12 3995, DCS01 BKA DS SPE B 09330-6 V11 hook bar, east face of K Line
 NCR CE 12 4315, DCS01 DS PLS B 01772 Sht 1 One 2CB MK5 embed plate on the roof slab bottom mat.
 NCR AC 12 4372, DCS01 BMF DS PLF B 01352-SH01 Incorrect number of horizontal wall dowels, BSR W308.1
 NCR CE 12 4311, DCS01 BMF DS PLF B 01352-01 Horizontal Hook Bars at Construction Joint not within Clear Cover Requirements
 NCR AC 12 4493, DCS01 BMF DS PLF B 01352 SH03 Horizontal Main Steel Violating Maximum Spacing, BSR W308.5
 NCR AC 11 3381, DCS01 BMF DS PLF B 01352-03 Wall dowels violate maximum clear cover
 NCR CE 12 4527, DCS01 BMF DS PLF B 01352 SH03 Rev 1 Embed Plate installed at Incorrect Elevation

NCR CE 12 4555, PP11-51 Section 3.4.6.2 Spalling around 114CB embed plates on floor of Rooms D-104 & D-106

NCR CE 10 2351, PP11-12, Section 3.8 - Concrete Repairs Performed Without Proper Documentation

10888 MOX NCR 13 4978, Inadequate Consolidation of Concrete Room B-172b/2'-7" South of 11 Line, 4'-0" East of S Line

Audit Plans and Reports:

SA-12-A05, Corrective Action Process, approved December 4, 2012

Management Assessments

SQAP Status Report Third Quarter CY 2012

SQAP Status Report Fourth Quarter CY 2012

CY-12-M-QA-051, 2012 QA/QC Management Assessment, Lessons Learned, NUREG 1055

CY-13-M-CSM-001, 2012 Management Assessment Report, Contracts and Supply Chain Management (April, June, August, October 2012)

Procurement Administrative Review Final Report (Assessment Performed March 28 – 30, 2011), dated August 29, 2011

Procurement Administrative Review Final Report (Assessment Performed October 25 – 28, 2010), dated February 16, 2011

Procurement Administrative Review Final Report (Assessment Performed April 23 – 24, 2012), dated July 30, 2012

Miscellaneous Documents

2012 MOX SCWE Survey Results Table 1

2012 MOX SCWE Survey Results Table 8

2012 MOX SCWE Survey Results Crosstabulation 1

2012 MOX SCWE Survey Results Crosstabulation 2

2012 MOX SCWE Survey Results Crosstabulation 3

2012 MOX SCWE Survey Results Crosstabulation 4

2013 MOX SCWE Survey Results Table 1

2013 MOX SCWE Survey Results Table 8

2013 MOX SCWE Survey Results Crosstabulation 1

2013 MOX SCWE Survey Results Crosstabulation 2

2013 MOX SCWE Survey Results Crosstabulation 3

2013 MOX SCWE Survey Results Crosstabulation 4

Comparisons of MOX SCWE Survey Results from 2010 through 2013

Interoffice Memorandum: Procurement Administrative Final Report, February 10, 2011