



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

October 16, 2014

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
NUMBER 70-3098/2014-003**

Dear Mr. Trice:

During the period from July 1 through September 30, 2014, the U. S. Nuclear Regulatory Commission (NRC) completed inspections pertaining 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, no violations or deviations were identified.

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>.

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 70-3098/2014-003
w/attachment: Supplemental Information

cc w/encl: (See next page)

cc w/encl:

Mr. Scott Cannon, Federal Project Director
NA-262.1
P.O. Box A
Aiken, SC 29802

Mr. Sam Glenn, Deputy
Federal Project Director
NA-262.1
P.O. Box A
Aiken, SC 29802

Dr. Peter Winokur, Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Ave., NW, Suite 700
Washington, DC 20004

Mr. Joseph Olencz, NNSA/HQ
1000 Independence Ave., SW
Washington, DC 20585

Ms. Susan Jenkins
Division of Radioactive Waste Management
Bureau of Health and Environmental Control
2600 Bull St.
Columbia, SC 29201

D. Silverman
Morgan, Lewis, and Bockius
1111 Penn. Ave., NW
Washington, DC 20004

G. Carroll
Nuclear Watch South
P.O. Box 8574
Atlanta, GA 30306

Ms. Diane Curran
Harmon, Curran, Spielberg and Eisenberg,
LLP
1726 M St., NW, Suite 600
Washington, DC 20036

L. Zeller
Blue Ridge Environmental Defense League
P.O. Box 88
Glendale Springs, NC 28629

Mr. Dealis Gwyn, Licensing Manager
Shaw AREVA MOX Services
Savannah River Site
P.O. Box 7097
Aiken, SC 29804-7097

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 70-3098/2014-003
 w/attachment: Supplemental Information

cc w/encl: (See next page)

PUBLICLY AVAILABLE
 NON-PUBLICLY AVAILABLE
 SENSITIVE
 NON-SENSITIVE
 ADAMS: Yes
 ACCESSION NUMBER: ML14289A074
 SUNSI REVIEW COMPLETE
 FORM 665 ATTACHED

| | | | | | | | |
|--------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| OFFICE | RII: DCP | RII: DCP | RII: DCP | RII: DCI | RII: DCI | RII: DCI | RII: DCI |
| SIGNATURE | WBG via e-mail | CKH1 via e-mail | CBA1 via e-mail | CTJ1 via e-mail | DXT2 via e-mail | JAC1 via e-mail | MXS1 via e-mail |
| NAME | W. Gloersen | C. Huffman | C. Abbott | C. Jones | D. Terry-Ward | J. Christensen | M. Shannon |
| DATE | 10/15/2014 | 10/15/2014 | 10/15/2014 | 10/15/2014 | 10/15/2014 | 10/15/2014 | 10/16/2014 |
| E-MAIL COPY? | YES NO | YES NO | YES NO | YES NO | YES NO | YES NO | YES NO |
| | | | | | | | |

OFFICIAL RECORD COPY DOCUMENT NAME:
 G:\CC\IDCP\CPB1\MOX FFF\Inspection\Inspection Reports\2014\2014-003\IR 2014003.docx

Letter to Kelly Trice from Deborah Seymour dated October 16, 2014.

SUBJECT: MIXED OXIDE FUEL FABRICATION FACILITY- NRC INSPECTION REPORT
NUMBER 70-3098/2014-003

Distribution w/encl:

R. Johnson, NMSS
D. Tiktinsky, NMSS
K. Morrissey, NMSS
W. Jones, RII
J. Yerokun, RII
D. Seymour, RII
R. Musser, RII
A. Masters, RII
L. Suggs, RII
W. Gloersen, RII
C. Huffman, RII
PUBLIC

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 70-3098

Construction
Authorization No.: CAMOX-001

Report No.: 70-3098/2014-003

Applicant: Shaw AREVA MOX Services

Location: Savannah River Site
Aiken, South Carolina

Inspection Dates: July 1 – September 30, 2014

Inspectors:

- C. Huffman, Acting Senior Resident Inspector, Construction Projects Branch 1 (CPB1), Division of Construction Projects (DCP), Region II (RII)
- C. Jones, Senior Construction Inspector, Construction Inspection Branch 1 (CIB1), Division of Construction Inspection (DCI)
- C. Abbott, Resident Inspector, Vogtle Units 3&4, Construction Projects Branch 4 (CPB4), DCP
- D. Terry-Ward, Construction Inspector, CIB1, DCI
- J. Christensen, Construction Inspector, Construction Inspection Branch 3 (CIB3), DCI

Accompanying
Personnel:

- D. Tiktinsky, Senior Project Manager, Fuel Manufacturing Branch (FMB), Division of Fuel Cycle Safety and Safeguards (FCSS), Office of Nuclear Materials Safety and Safeguards (NMSS)
- K. Morrissey, Project Manager, FMB, FCSS, NMSS
- W. Gloersen, Senior Construction Project Inspector, CPB1, DCP, RII
- R. Barnard, Student Engineer, CIB3, DCI

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 Number 70-3098/2014-003

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 design basis sections of the license application (LA) and applicable industry standards. These inspections included, as applicable, the following inspection attributes: corrective action program, installation, material storage controls, procedure controls, and special processes (welding activities).

The principal systems, structures and components (PSSCs) discussed in this inspection report are PSSC-005, C3 Confinement System; PSSC-023, Fluid Transport Systems; and PSSC-024, Gloveboxes.

Routine Resident Inspections

The inspectors routinely reviewed the status of work packages (WPs) maintained at various work sites, conducted routine 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-005, C3 Confinement System

The inspectors observed construction activities related to PSSC-005, C3 Confinement System, as described in Table 5.6-1 of the MFFF CAR. The inspection attributes observed were fabrication, special processes (welding), procedure controls, and installation. The associated items relied on for safety (IROFS) components were High Depressurization Exhaust (HDE) ductwork. The inspectors observed welding of ductwork sections in the onsite fabrication facility occupied by the subcontractor. The inspectors concluded that ductwork installation (welding) and piping quality control (QC) inspection activities were acceptable. No findings of significance were identified (Section 3.a).

PSSC-023, Fluid Transport Systems

The inspectors observed construction activities related to PSSC-023, Fluid Transport Systems, as described in Table 5.6-1 of the MFFF CAR. The inspection attributes observed were fabrication, special processes (welding), procedure controls, and installation. The associated IROFS components were process piping, scrubbing columns, and supporting structures. The inspectors observed welding of piping sections in the aqueous polishing (BAP) active gallery and secure warehouse. The inspectors concluded that piping installation (welding) and piping QC inspection activities were acceptable. No findings of significance were identified (Section 3.b).

PSSC-024, Gloveboxes

The inspectors observed construction activities related to PSSC-024, Gloveboxes, as described in Table 5.6-1 of the MFFF CAR. The inspection attributes observed were procedure controls, special processes (welding), and installation. The inspectors observed ongoing installation and procedure control activities associated with the following glovebox systems:

- Jar Storage and Handling Unit (NTM)
- Ground and Sorted Pellet Storage Unit (PSJ)
- Scrap Pellet Storage Unit (PSI)
- Sintered Pellet Storage Unit (PSF)

Observations included alignment of the glovebox shells, component installation, internal cleanliness and welding of the glovebox units. No findings of significance were identified (Section 3.c).

Programmatic Inspections

Quality Assurance: Control of Materials, Equipment, and Services (Inspection Procedure (IP) 88130)

Requirements for handling storage and shipping, as specified in the MPQAP, were performed by the applicant in accordance with project procedures. Project procedures provided adequate measures to ensure that applicable requirements of NQA-1, Quality Assurance Requirements for Nuclear Facilities Applications (NQA-1 1994) including, but not limited to, storage area designation, access control, special protective environments, temperature levels and periodic surveillances were adequate to prevent damage or deterioration to QL-1 materials. The inspectors had reasonable assurance that the storage of material was adequate to assure that the applicant's commitments related to the regulatory requirements of the MPQAP were met. No findings of significance were identified (Section 4.a).

Quality Assurance: Problem Identification, Resolution, and Corrective Action (IP 88110)

The requirements for problem identification and resolution specified in the MPQAP were implemented adequately. Measures were established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, non-conformances, and significant conditions adverse to quality, were promptly identified and corrected at the MFFF. The documentation and reporting of conditions adverse to quality were adequately performed in accordance with procedures and specifications. QA records associated with these activities were properly maintained in accordance with project procedures. No findings of significance were identified (Section 4.b).

Follow-up of Previously Identified Items (IP 88110)

The NRC staff has concluded that the contributing causes and subsequent corrective actions relevant to Inspector Follow-up Item (IFI) 70-3098/2012-001-004 are documented in Condition Report (CR) 10888-MOX-CR-12-183, which was the subject of a subsequent NRC enforcement action. IFI 70-3098/2012-001-004, Review the Applicability of Using Design Control to Define Critical Characteristics is closed (Section 5).

REPORT DETAILS

1. Summary of Facility Status

During the period, the applicant (Shaw AREVA MOX Services (MOX Services)) continued construction activities of principal systems, structures and components (PSSCs). Construction activities included staging, welding, and mounting of process piping and installation of supports in the Aqueous Polishing Building (BAP) and Manufacturing Building (BMP); installation of ventilation system ductwork and supports in the BAP, Shipping Receiving Building (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 powder and pellet storage gloveboxes in the BMP. The applicant continued to receive, store, assemble, and test gloveboxes 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; IP 88110, Quality Assurance: Problem Identification, Resolution, and Corrective Action)

a. Scope and Observations

The inspectors routinely held discussions with MOX Services design engineers, field engineers, regulatory compliance personnel, 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, observed that the work force was attentive, workers adhered to procedures, and noted that hazardous materials were properly stored and/or properly controlled when in the field. The inspectors conducted routine tours of material storage and work areas to verify that materials and equipment were properly stored in accordance with QA requirements.

In addition, the inspectors conducted tours of material storage areas and warehouse facilities to determine if MOX Services properly stored equipment and materials in accordance with MOX Project Quality Assurance Plan (MPQAP) storage requirements. Specifically, the inspectors verified that MOX Services implemented the material storage requirements in Project Procedure (PP) 10-38, Storage and Control of Material, Revision (Rev.) 1.

The inspectors routinely reviewed various corrective action documents. The review included non-conformance reports (NCRs) and condition reports (CRs). 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 BMP, BAP, and BSR work areas to verify that MOX Services' staging of piping and installation of ductwork, piping and gloveboxes, met regulatory commitments and procedural requirements.

The inspectors observed routine lifts conducted to position gloveboxes. The lifts were conducted in accordance with the applicant's procedures. Specifically, the inspectors verified that installations of supports and gloveboxes were in accordance with applicable field drawings and met the general construction notes.

The inspectors observed installation of piping supports and ventilation supports. 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 reviewed the status of WPs maintained at various work sites, conducted routine 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 (CAP). Construction activities were performed in a safe and quality-related manner. No findings of significance were identified.

3. PSSC Related Inspections

a. PSSC-005, C3 Confinement System

(1) Attributes: Fabrication, Special Processes, and Installation (IP 55050, Nuclear Welding)

(a) Scope and Observations

The inspectors observed construction activities related to PSSC-005, C3 Confinement System, as described in Table 5.6-1 of the MFFF Construction Authorization Request (CAR). The inspection attributes observed were procedure controls, special processes (welding), and installation. The associated item relied on for safety (IROFS) components were sections of ductwork and supports that compose the High Depressurization Exhaust (HDE) heating ventilation and air conditioning (HVAC) system.

The inspectors observed in-process welding of HDE ductwork sections and associated supports performed by the subcontractor (Superior Air Handling Company). The inspectors reviewed weld data sheets, weld technique sheets and QC sign offs to determine whether work was performed in accordance with procedures. The inspectors observed that properly calibrated equipment was used to verify sufficient purge on the interior of ductwork during welding. The inspectors also observed welding variables to verify the requirements of the approved weld technique sheets were met. Specifically, the inspectors observed work associated with Weld Record 120113 and Weld Technique Sheet D9.1-GT-SS-01 for Quality Level (QL) -1 HVAC supports associated with the HDE system. The inspectors also performed a visual inspection HDE ductwork in the

installed locations to verify that they were installed in accordance with the applicable drawings, specifications, and American Welding Society code D9.1, Sheet Metal Welding.

(b) Conclusions

The inspectors reviewed records and inspected components related to PSSC-005, C3 Confinement Systems, as described in Table 5.6-1 of the MFFF CAR. The inspection attributes observed were fabrication and installation. The associated IROFS components were sections of ductwork and supports that compose the HDE HVAC system. No findings of significance were identified.

b. PSSC-023, Fluid Transport Systems

(1) Attributes: Fabrication, and Special Processes, Installation (IP 55050, Nuclear Welding)

(a) Scope and Observations

The inspectors observed construction activities related to PSSC-023, Fluid Transport Systems, as described in Table 5.6-1 of the MFFF CAR. The inspection attributes observed were fabrication, special processes (welding), procedure controls, and installation. The associated IROFS components were process piping and scrubbing columns.

During the inspection period, the applicant continued welding piping and mounting piping in BAP room C-234 (active gallery) and secure warehouse. The inspectors observed cleanliness and fit up of the welds prior to welding. The inspectors also observed welding after the final QC inspections. The inspectors observed piping and structural welds on support rack modules 13N, 13S, and 14N as they were assembled in the secure warehouse. Specifically, the inspectors observed weld number KDB-DS-PLI-T-5225300-04 as installed on pipe rack module 14N in the secure warehouse to determine whether the weld met the acceptance criteria of ASME B31.3, Process Piping. The inspectors also reviewed non-destructive examination (NDE) reports and radiography records associated with this weld to determine whether the weld was acceptable. The inspectors reviewed the welder qualifications for the welder to determine whether the weld was completed by a qualified individual. The inspectors observed structural welds for the pipe rack modules completed at the vendor and MOX facility to determine whether they were made and installed in accordance with the applicable drawings and American Welding Society code, D1.6, Structural Welding Code – Stainless Steel, 1999 edition (AWS D1.6). The inspectors concluded that structural steel installation, piping installation (welding) and associated QC inspection activities were acceptable.

The inspectors observed work performed at the onsite piping fabrication area. Specifically, the inspectors observed the bending of pipe, material traceability, and contamination controls associated with handling and cutting of stainless steel.

The inspectors performed a visual inspection of Offgas Treatment Unit (KWG) scrubbing columns KWG1000 and KWG200 in their installed location to verify the columns and the supporting structural steel were made and installed in accordance with the applicable drawings and AWS D1.6. The inspectors also reviewed solution annealing reports

supplied by the vendor to determine whether pipes penetrating these scrubbing columns maintained the proper strength and corrosion resistance after bending.

The inspectors performed a visual inspection of installed support rack modules in the active gallery to determine whether the welds met the fit-up and visual inspection requirements of AWS D1.6. The inspectors reviewed the disposition of Field Change Request (FCR) 004094 to determine whether interferences with construction aid holes were appropriately dispositioned.

The inspectors observed welds for piping that travels from the active gallery through penetration plate WP-C-234-N26-M00-A to the adjacent tank rooms to determine whether the welds met the acceptance criteria of ASME B31.3

(b) Conclusions

The inspectors observed construction activities related to PSSC-023, Fluid Transport Systems, as described in Table 5.6-1 of the MFFF CAR. The inspection attributes observed were fabrication, special processes (welding), procedure controls, and installation. The associated IROFS components were process piping and scrubbing columns. The inspectors observed welding of piping sections in the BAP active gallery. The inspectors concluded that structural support installation, piping installation (welding) and QC inspection activities were acceptable. No findings of significance were identified.

c. PSSC-024, Gloveboxes

(1) Attribute: Installation (IP 88130, Construction: Resident Inspection Program for On-Site Construction Activities at the Mixed Oxide Fuel Fabrication Facility)

(a) Scope and Observations

The inspectors observed construction activities related to PSSC-024, Gloveboxes, as described in Table 5.6-1 of the MFFF CAR. The inspection attributes observed were procedure controls, special processes (welding), and installation.

The inspectors observed the progress of installation and procedure control activities associated with the Ground and Sorted Pellet Storage Unit (PSJ) in accordance with WP 14-CP24-B239-PSJ-PE-M-0001. Observations included alignment of the glovebox units and welding activities associated with assembling the constituent glovebox shells. The inspectors observed welding process variables, inspection hold points and distortion control techniques to verify these activities were conducted in accordance with Weld Data Sheet 1401580 and Weld Technique Sheet D1.6-GT-A-B-01.

The inspectors also observed installation, alignment, housekeeping, and passivation layer restoration activities associated with the Jar Storage and Handling Unit (NTM) to verify activities were performed in accordance with WP 14-CP24-NTM-PE-M-0001.

The inspectors also observed installation activities associated with the Sintered Pellet Storage (PSF) and Scrap Pellet Storage (PSI) Units to determine whether work was performed in accordance with WPs 14-B129-PSF-GB-M-1295 and 14-CP24-B135-PSI-PE-M-0001, respectively.

(b) Conclusions

The inspectors observed construction activities and reviewed records related to PSSC-024, Gloveboxes, as described in Table 5.6-1 of the MFFF CAR. The inspection attributes observed were procedure controls, special processes and installation. The inspectors observed installation, alignment of the glovebox units, welding and procedure control activities associated with the gloveboxes as noted in the Scope and Observations section. No findings of significance were identified.

4. Programmatic Inspectionsa. Quality Assurance: Control of Materials, Equipment, And Services (IP 88130)(1) Scope and Observations

The inspectors observed the storage of QL-1 material to determine whether the handling, storage, cleaning, packaging, shipping, and preservation of items were controlled in accordance with requirements of the MPQAP, applicable portions of NQA-1 1994 and site procedures to prevent damage or loss and to minimize deterioration.

The inspectors performed walkdowns of storage areas in the following locations:

- BSR
- BMP
- BAP
- Northeast Laydown Yard
- West Laydown Yard
- South Laydown Yard
- PAF
- Receiving Warehouse
- Celebration Laydown Yard
- A Area Storage Yard

The inspectors reviewed the following procedures to determine whether the requirements of MPQAP had been properly transferred to the working level:

- PP10-37, Control of Issued Material, Rev. 2
- PP10-38, Storage and Control of Material, Rev. 1
- PP11-40, Preventative Maintenance of In-Storage/Installed Equipment During the Construction Phase, Rev. 3
- PP11-33, Housekeeping and Work Area Cleanness, Rev. 0
- PP10-39, Issue and Return of Material, Rev. 1

The inspectors observed the storage and tagging of nonconforming items stored in the field to determine whether they met the tagging and segregation requirements of site procedure PP3-5, Control of Nonconforming Items, Rev. 10

The inspectors reviewed Assembly and Test Group - Storage Inspection Record (ATG SIR) MFFF Storage Inspection Records from May-July 2014, to determine whether the checklist criteria were adequate to ensure that the requirements of PP10-38 were

verified monthly and that deficiencies identified during the inspections were documented and addressed appropriately.

The inspectors reviewed the welding rod room to determine whether the storage conditions met the requirements of NQA-1, 1994, manufacturer's recommendations and PP10-38, Storage and Control of Material. The inspectors observed logs (form PP11-58B) of oven temperatures and the calibration dates of measuring and test equipment (M&TE) to determine whether adequate measures were taken to ensure that welding filler material was properly stored.

The inspectors reviewed corrective actions associated with storage issues to determine whether corrective action were adequate to address inadequacies, determine if damage or deterioration had occurred and the timeliness of corrective actions to prevent damage or deterioration.

The inspectors observed the lifting and placing of gloveboxes into their installation locations to determine whether lifts were performed in accordance with procedures and without damage.

The inspectors observed the condition of packaging and indications on monitoring equipment on items received at the site to determine if QL-1 materials were subject to potential damage from inadequate handling or adverse environmental controls during shipping.

The inspectors observed the use of desiccant and atmospheric monitoring equipment on gloveboxes to ensure equipment installed in the gloveboxes did not deteriorate due to atmospheric conditions or construction activities. The inspectors observed access control and environmental monitoring for Levels A and B storage areas.

(2) Conclusion

The inspectors conducted routine tours of work and material storage areas, and observed installation of mechanical equipment. Requirements for handling storage and shipping, as specified in the MPQAP, were performed by the applicant in accordance with project procedures. Project procedures provided adequate measures to ensure that applicable requirements of NQA-1 1994 including, but not limited to, storage area designation, access control, special protective environments, temperature levels and periodic surveillances were adequate to prevent damage or deterioration to QL-1 materials. The inspectors had reasonable assurance that the storage of material was adequate to assure that the applicant's commitments related to the regulatory requirements of the MPQAP were met. No findings of significance were identified.

b. Quality Assurance: Problem Identification, Resolution and Corrective Actions (PIRCA) (IP 88110)

(1) Scope and Observations

The scope of the inspection covered a review of various documents and activities related to QL-1 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' CAP to assess its adequacy and whether it was effectively implemented. The inspectors reviewed procedures associated with problem identification and corrective actions. The inspectors reviewed several CRs and NCRs that were initiated by the applicant to verify that there was proper documentation, prioritization, and resolution of problems identified. The inspectors reviewed the classification of the condition, timeliness and adequacy of corrective actions to verify compliance with the applicant's approved procedures.

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 the procedures were appropriately approved and implemented. Specifically, MOX PP3-5, Control of Nonconforming Items; and PP3-6, Corrective Action Process, were reviewed to evaluate if the changes made to the procedures were consistent with requirements and commitments for identifying, reporting, and documenting conditions adverse to quality. During this inspection, the inspectors reviewed PP 3-6, to determine whether the applicant had a program for performing a sufficient analysis of conditions adverse to quality, and when required, the procedure instructed the applicant to perform corrective action(s) to prevent recurrence.

Additionally, the inspectors reviewed PP8-3, Evaluation and Reporting of Defects and Nonconformance (10 CFR Part 21), for identification, screening, and submittal of Part 21 reports. The inspectors reviewed this procedure to determine whether the procedure contained the appropriate provisions for screening and reporting Part 21 issues to the NRC.

The inspectors also reviewed 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 (CAQ)

The inspectors reviewed a sample of closed CRs that were generated in 2013 as well as 2014 to determine whether the CRs: (1) were assigned a significance level consistent with the criteria in PP3-6; (2) had unique identifiers for tracking; and (3) adequately described the problem for which the CR was initiated. As part of MOX Services' CAP review, the inspectors reviewed PP3-6 guidelines for the management review committee (MRC) meeting. This was done to evaluate the applicant's process for the review of initiated CRs as well as the threshold for assigning significance levels to initiated CRs. The inspectors also reviewed the MRC evaluation process to determine whether the CRs had an approved corrective action plan used to preclude recurrence, as applicable.

The inspectors reviewed a sample of NCRs and verified that the NCRs had unique identifiers, provided an adequate description of the nonconforming condition, and were issued for material non-conformances that were within the scope of the NCR-related

deficiencies identified in PP3-5. The inspectors reviewed a sample of NCRs and verified that nonconforming conditions were appropriately evaluated, and the dispositions were approved as required.

(c) Documentation and Reporting of CAQs

The inspectors reviewed a sample of CRs from different areas to verify that the applicant implemented an adequate process for documenting and reporting conditions adverse to quality. The inspectors verified that the CRs were appropriately reviewed to determine if the extent of condition was documented, the remedial action(s) completed in a timely manner and documentary evidence was documented within the CR. Additional CRs regarding the premature closure of CRs were also reviewed.

The inspectors also reviewed the management assessment reports as well as surveillances to determine whether the results were distributed to the appropriate organizations and management, and that corrective action were initiated as necessary.

Inspectors reviewed three 10 CFR Part 21 Evaluation forms and associated CRs and NCRs from the past year. The forms were evaluated to verify that potential significant conditions adverse to quality were adequately evaluated and the process was properly implemented.

(d) Follow-up, Closure, and Trending

The inspectors reviewed Quality Assurance Audit Report No. SA-13-A01 dated April 12, 2013, as well as the following management assessments:

- CY13-A-PUD-008-0, Process Unit Design and Commissioning Work Package Planning, Development, Approval, and Closure, dated March 19, 2013,
- CY13-M-CON-024, Assessment Report, Management Assessment Number CY13-M-CON-024, Assessment Period: August 5, 2013 – September 13, 2013,
- CY13-M-CSM-029, 2013 Management Assessment Report, Assessment Number CY13-M-CSM-029, 2013, dated December 17, 2013,
- CY12-M-CON-054, Assessment Report, Management Assessment Number CY12-M-CON-054, Assessment Period: January 30, 2013 – June 6, 2013.

During this review, the inspectors reviewed the CRs that were initiated as a result of that audit and assessments to evaluate the success of their disposition. In each case the inspectors reviewed the CRs which were initiated to confirm that appropriate corrective actions were completed.

(2) Conclusions

The requirements for problem identification and resolution specified in the MPQAP were implemented adequately. Measures were established to assure that CAQs, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, non-conformances, and significant conditions adverse to quality, were promptly identified and corrected at the MFFF. The documentation and reporting of conditions adverse to quality were adequately performed in accordance with procedures and specifications. QA records associated with these activities were properly maintained in accordance with project procedures. No findings of significance were identified.

5. Follow-up on Previously Identified Items (IP 88110)

a. (Closed) Inspector Follow-up Item (IFI) 70-3098/2012-001-004, Review the Applicability of Using Design Control to Define Critical Characteristics

(1) Scope and Observations

A January 2012 inspection of commercial grade dedication activities documented in NRC Inspection Report 70-3098/2012-001 (ML12132A276) determined that further review by the NRC staff was needed to evaluate the applicant's controls for selection of critical characteristics that were used for dedication of commercial grade items. In particular, the inspection follow-up was to address a concern related to critical characteristics used for commercial grade dedications of Hilti HIT-RE 500 and HIT-RE 500-SD epoxy adhesives.

In this inspection, the following information was evaluated in order to determine a disposition for the follow-up item:

In September 2010, the applicant issued condition report 10888-MOX-CR-10-513 to investigate a condition adverse to quality where the Hilti epoxy adhesives had not received an adequate commercial grade item dedication for use in securing post-installed reinforcements for QL-1 seismic structures in the MFFF. The applicant's evaluation of the condition confirmed that some critical characteristics of the epoxy application had not been verified, and on December 21, 2010, the applicant issued revision 2 to commercial grade item evaluation (CGIE) DCS01-DS-WWJ-DS-CGD-M-65973 to require verifications of the adhesive bond strength, tensile strength, compressive strength, and compressive modulus.

In January 2011, applicant's quality assurance auditors conducted a commercial survey of Hilti Entwicklungsgesellschaft in Kaufering, Germany. As documented in survey report, HIL-11-VE128, the applicant's auditors found that the manufacturer did not conduct testing to show a capability of the adhesive to meet the characteristics outlined in revision 2 of the CGIE. In addition, the applicant's auditors stated they did not witness testing that demonstrated the product capabilities that were advertised in the manufacturer's commercial literature. The inspectors noted that the applicant's auditors stated that the capabilities of the manufacturer would be considered acceptable, provided the CGIE was revised to prescribe critical characteristics that matched the actual manufacturing processes described in the survey report.

On February 23, 2011, the applicant issued revision 3 to CGIE DCS01-DS-WWJ-DS-CGD-M-6597. Based upon the revised dedication criteria contained in revision 3 of CGIE DCS01-WWJ-DS-CGD-M-65973, the applicant accepted the Hilti epoxy adhesive for authorized applications as specified in NCR-QC-10-2696.

The inspectors reviewed revision 3 to CGIE DCS01-WWJ-DS-CGD-M-65973 and determined that the January 2011 dedication of Hilti product lines HIT-RE 500 and HIT-RE 500-SD did not provide reasonable assurance that the critical characteristics used for acceptance of the products would assure the capability of the adhesive anchoring system to perform its IROFS safety function. In this instance, the CGIE identified critical characteristics and criteria, but MOX Services did not verify that the critical characteristics would provide the necessary protection against bond failures during a

seismic event. Specifically, some of the dedication criteria relied upon assertions contained in the manufacturer's published literature that had not been verified in accordance with the requirements of the MPQAP.

Section 7.2.8.A of the MPQAP defines critical characteristics as those important design, material, and performance characteristics of a commercial grade item that, once verified, will provide reasonable assurance that the item will perform its intended IROFS function.

Section 7.2.8.A.4) states, in part, that "dedication is an acceptance process undertaken to provide reasonable assurance that a commercial grade item to be used as a basic component will perform its intended IROFS function ... This assurance is achieved by identifying the critical characteristics of the item and verifying their acceptability by inspections, tests, or analyses performed by the purchaser, or third-party dedicating entity after delivery,..."

Contrary to the MPQAP, the applicant failed to verify the acceptability of commercial grade item to provide reasonable assurance that the item would perform its intended IROFS function. Specifically, the applicant determined the acceptability of the product capabilities that relied, in part, upon information contained in commercial literature that was not verified by inspections, tests, or analysis performed by the purchaser, or third party dedicating entity after delivery.

As a result, commercial grade Hilti epoxy adhesives were accepted for authorized applications without verifying that design, material, and performance characteristics would provide reasonable assurance the material would perform its intended IROFS function.

The failure to verify the acceptability of a commercial grade item, specifically for commercial grade dedication of Hilti epoxy adhesive is a violation of NRC requirements. However, the NRC staff concluded after additional inspection, that this IFI and the associated violation is similar to the minor violation identified in 2012 and documented in the licensee's corrective action program. Specifically, condition report Number 10888-MOX-CR-12-183, HIT-REE 500-SD Design Qualification & CGIE CCAs, initiated based on the NRC's finding, provided measures to prevent future procurements and dedications of Hilti epoxy adhesives for QL-1 applications. Actions initiated under condition report 10888-MOX-CR-14-100 provided an evaluation for the extent of deficiencies with critical characteristics in commercial products other than Hilti epoxy adhesives. Pending evaluations conducted under 10888-MOX-CR-09-339 were to determine the cumulative adverse impact of nonconforming installations of post-installed reinforcements. In addition, on January 23, 2013, revision 4 to CGIE DCS01-WWJ-DS-CGD-M-65973 was issued to void the document, due to no further plans to dedicate Hilti epoxy adhesives.

(2) Conclusions

The NRC staff has concluded that the contributing causes and subsequent corrective actions relevant to this inspection follow-up item is documented in CR 10888-MOX-CR-12-183, which was the subject of a subsequent NRC enforcement action. IFI 70-3098/2012-001-004, Review the Applicability of Using Design Control to Define Critical Characteristics, is closed.

6. Exit Interviews

The inspection scope and results were summarized throughout this reporting period and on October 2, 2014. 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

R. Alley, Engineering Assurance Manager
J. Anderson, Quality Assurance Programs Manager
D. Del Vecchio, VP Project Management
M. Gober, VP Engineering
D. Gwyn, Licensing/Nuclear Safety Manager
D. Ivey, Project Quality Manager
A. Johnston, Quality Control Supervisor
R. Justice, Jr., Quality Assurance Programs Manager
E. Radford, Regulatory Compliance
G. Rousseau, MOX Deputy Project Manager
A. Schneider, Project Engineer
K. Trosen, Lead Welding and Materials Engineer
L. Wood, Regulatory Compliance Manager
R. Whitley, VP Project Assurance

2. INSPECTION PROCEDURES (IPs) USED

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 55050 Nuclear Welding General Inspection Procedure

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

| <u>Item Number</u> | <u>Status</u> | <u>Description</u> |
|--------------------------|---------------|---|
| IFI 70-3098/2012-001-004 | Closed | Review the Applicability of Using Design Control to Define Critical Characteristics (Section 5) |

4. LIST OF PSSCs REVIEWED

PSSC-005 C3 Confinement System
PSSC-023 Fluid Transport Systems
PSSC-024 Gloveboxes

5. LIST OF ACRONYMS USED

ADAMS Agency-Wide Document Access and Management System
ATG SIR Assembly and Test Group - Storage Inspection Record
BAP Aqueous Polishing Building
BMP MOX Processing Building
BSR Shipping and Receiving Building
CAP Corrective Action Program
CAQ Condition Adverse to Quality
CAR Construction Authorization Request

| | |
|--------------|---|
| CFR | Code of Federal Regulations |
| CPB1 | Construction Projects Branch 1 |
| CR | Condition Report |
| DCP | Division of Construction Projects |
| DCI | Division of Construction Inspection |
| FCR | Field Change Request |
| GB | Glovebox |
| HDE | High Depressurization Exhaust |
| HVAC | Heating, Ventilation, and Air Conditioning |
| ICN | Interim Change Notice |
| IFI | Inspector Follow-up Item |
| IP(s) | Inspection Procedure(s) |
| IROFS | Items Relied on for Safety |
| KWG | Off-gas Treatment Unit |
| LA | License Application |
| MFFF | MOX Fuel Fabrication Facility |
| MOX | Mixed Oxide |
| MOX Services | Shaw AREVA MOX Services |
| MPQAP | MOX Project Quality Assurance Plan |
| MRC | Management Review Committee |
| M&TE | Measuring and Test Equipment |
| NQA-1 1994 | Quality Assurance Requirements for Nuclear Facilities Applications 1994 Edition |
| NCR | Non-Conformance Report |
| NDE | Non-destructive Examination |
| NRC | Nuclear Regulatory Commission |
| NTM | Jar Storage and Handling Unit |
| PAF | Process Assembly Facility |
| PP | Project Procedure |
| PSF | Sintered Pellet Storage |
| PSI | Scrap Pellet Storage Unit |
| PSJ | Ground Assorted Pellet Storage Unit |
| PSSC(s) | Principal System(s), Structure(s), and Component(s) |
| QA | Quality Assurance |
| QC | Quality Control |
| QL | Quality Level |
| QL-1 | Quality Level 1 |
| RII | Region II |
| Rev. | Revision |
| WP(s) | Work Package(s) |

6. RECORDS AND DOCUMENTS REVIEWED

Audits, Surveillances, and Assessments

CY12-M-CON-054, Assessment Report, January 30, 2013 – June 6, 2013, Field Storage and Maintenance of Traceability of QL-1 Material that has been issued to Construction Installation Organizations from Warehouse Facilities

CY12-M-CON-054, Assessment Plan, Field Storage and Maintenance of Traceability of QL-1 Material that has been issued to Construction Installation Organizations from Warehouse Facilities

CY13-A-PUD-008-0, Process Unit Design and Commissioning Work Package Planning, Development, Approval, and Closure, dated March 19, 2013
 CY13-M-CON-024, Assessment Report, Management Assessment Number CY13-M-CON-024, Assessment Period: August 5, 2013 – September 13, 2013
 CY13-M-CSM-029, 2013 Management Assessment Report, Assessment Number CY13-M-CSM-029, 2013, dated December 17, 2013
 SA-13-A01 dated April 12, 2013

Condition Reports

10888-MOX-CR-09-399, Cumulative Effect of Structural Issues on ANSYS
 10888-MOX-CR-10-513, Indeterminate Commercial Grade Dedication of Epoxy Adhesive
 10888-MOX-CR-12-183, HIT-RE 500-SD Design Qualification and CGIE Critical Characteristics for Acceptance
 10888-MOX-CR-14-100, Dedication Plan Critical Characteristics for Acceptance Incongruent with Design Characteristics
 10888-MOX-CR-12-557, Control of issued material
 10888-MOX-CR-13-015, Incorrect Welding Filler Material Used
 10888-MOX-CR-13-064, QL-1 Material Control
 10888-MOX-CR-13-125, Work Package Planning, Development, and Approval Compliance with PP11-14
 10888-MOX-CR-13-127, Weld Data Sheet By-Passed Hold Point
 10888-MOX-CR-13-133, Transfer of Material from apparent non-existent Work Packages to Real work packages
 10888-MOX-CR-13-144, Field Material Storage and Traceability Issues Identified During Construction Management Assessment
 10888-MOX-CR-13-146, Control of QL-1 and 2 Material layup and storage
 10888-MOX-CR-13-154, Inadequate traceability and storage issues of QL-1 Material
 10888-MOX-CR-13-169, Storage and Control of Materials issued to the field
 10888-MOX-CR-13-171, Issued Material to Bulk Work Packages
 10888-MOX-CR-13-178, Loss of traceability HVAC
 10888-MOX-CR-13-181, Tracking of Conditional Releases
 10888-MOX-CR-13-188, Uncontrolled Weld Filler Material
 10888-MOX-CR-13-194, Sequencing Pipe Installation
 10888-MOX-CR-13-228, Failure to Protect QL-1 Items (piping) from Adjacent Construction Activities in C-110
 10888-MOX-CR-13-247, Work Steps Missing QC Hold Points
 10888-MOX-CR-13-316, Inconsistent Specification of QL for Cable Tray/Wireway with IROFS Cables & Associated Supports
 10888-MOX-CR-13-325, Signature Forged on Issued Design Drawings
 10888-MOX-CR-13-343, Missed Hold Points
 10888-MOX-CR-13-344, QC Hold Violated
 10888-MOX-CR-13-348, Failure to Adequately Manage Issued QL-1 Material
 10888-MOX-CR-13-349, Cable Pull with no given Tmax
 10888-MOX-CR-13-363, Mgmt Assessment (#CY13-M-CON-024) of Const Laydown Areas
 10888-MOX-CR-13-371, Mgmt Assessment (#CY13-M-CON-024) of Const Laydown Areas
 10888-MOX-CR-13-377, Mgmt Assessment (#CY13-M-CON-024) of Const Laydown Areas
 10888-MOX-CR-13-385, Mgmt Assessment (#CY13-M-CON-024) of Const Laydown Areas
 10888-MOX-CR-13-406, Inconsistencies among CR-12-548 and Reply to NOV on HVAC Duct Butt Weld Penetration
 10888-MOX-CR-13-411, Improper cable Storage
 10888-MOX-CR-13-432, Hold Point Skipped in WP#13-CP20-CLSM-LOAD-TEST-C

10888-MOX-CR-13-461, Welding without Correct Documentation on Weld Material Requisition
 10888-MOX-CR-13-467, Improperly Stored QL-1 and QL-2 Material
 10888-MOX-CR-13-471, Installation of Nonconforming Product Room C116
 10888-MOX-CR-13-478, Failure to Establish Hold Points
 10888-MOX-CR-13-491, Improper Issue and Use of Weld Filler Material
 10888-MOX-CR-13-493, Welding Outside Posted Parameter
 10888-MOX-CR-13-494, Unknown Parties altered installed and QC accepted
 Fire protection system segment CM6.B in room C111
 10888-MOX-CR-14-067, B-209 Bypassed Hold point
 10888-MOX-CR-14-090, Unqualified weld procedure and welder
 10888-MOX-CR-14-146, Storage Area Inspections
 10888-MOX-CR-14-161, HVAC FME Controls
 10888-MOX-CR-14-163, Piping FME Controls
 10888-MOX-CR-14-167, Procurement Document submittal deficiencies
 10888-MOX-CR-14-294
 10888-MOX-CR-14-316
 10888-MOX-CR-14-317
 10888-MOX-CR-14-320
 10888-MOX-CR-14-321
 10888-MOX-CR-14-339
 10888-MOX-CR-14-340
 10888-MOX-CR-14-362
 10888-MOX-CR-14-369
 10888-MOX-CR-14-370
 10888-MOX-CR-14-371

Drawings

DCS01-EEJ-DS-PLI-E-27320, MOX Fuel Fabrication Facility, Cable Tray Installation Details, Rev.5
 DCS01-EEJ-DS-PLI-E-27359, sheet 04, MOX Fuel Fabrication Facility, MOX Processing Area, Electrical Room B-324, L Cable Tray Plan, Rev. 3
 DCS01-EEJ-DS-PLI-E-27359, sheet 05, MOX Fuel Fabrication Facility, MOX Processing Area, Electrical Room B-324, K Cable Tray Plan, Rev. 3
 DCS01-EEJ-DS-PLI-E-27359, sheet 08, MOX Fuel Fabrication Facility, MOX Processing Area, Electrical Room B-324, Wireway Sections, Rev. 2
 DCS01-EEJ-DS-PLI-E- 27400, MOX Fuel Fabrication Facility, Cable Tray & Wireway, General Notes, Symbol & Legend, Rev. 7
 DWG 6353-WM-052, Active Gallery South Wall Frame Weld Map, Rev. 0
 Newport News Industrial Drawings, Aqueous Polishing Area Off-Gas Treatment NOX Scrubbing Column KWG 1000 Support Structure B1 and B2, Sheets S001-S003
 Newport News Industrial Drawings, NOX Scrubbing Column KWG CLMN 1000 Assembly and Details, MC1000
 FCR 004094, Increase Weld Size to Account for Weld Discontinuity at Construction Aid Holes in the Weld Zone

Engineering Change Requests

ECR 011904, Rev. 0, Update DCS01-BKA-DS-SPE-B-09330 for Epoxy Adhesive Hilti HIT-RE 500-SD

ECR-017170, Rev. 0, Epoxy Bonding System for Post-Installed Reinforcement
Dowels

Nonconformance Reports

NCR 10888-MOX-NCR-10-2696, Inadequate Documentation for Dedication of Hilti Epoxy
 NCR 10888-MOX-NCR-13-5307, ZMJ glovebox Loctite Usage
 NCR 10888-MOX-NCR-14-5744, Duct Spool Incorrect Inside Radius
 NCR 10888-MOX-NCR-14-5554, PSJ M08 Rails nonconforming
 NCR 10888-MOX-NCR-14-5412, GME E-Stop Bracket Thickness
 NCR 10888-MOX-NCR-14-5651, WWJ Grout ASTM C-109 Requirements
 NCR 10888-MOX-NCR-14-5656, ZMS Comb Assembly Dimensions Newport
 News Industrial Non-Conformity Report No 293, Solution Annealing of
 Bent Pipe MC1000 and MC2000, Rev. A
 10888-MOX-NCR-13-4810
 10888-MOX-NCR-13-4813
 10888-MOX-NCR-13-4815
 10888-MOX-NCR-13-4935
 10888-MOX-NCR-13-5101
 10888-MOX-NCR-13-5131
 10888-MOX-NCR-13-5157
 10888-MOX-NCR-13-5212
 10888-MOX-NCR-13-5257

Part 21 Evaluation Reports

2013-07
 2013-08
 2013-31

Project Procedures

PP 3-5, Control of Nonconforming Items, Rev. 10
 PP 3-6, Corrective Action Process, Rev. 16
 PP 3-25, Root Cause Analysis, Rev. 4
 PP 3-32, Visual Welding Inspection Criteria, Rev. 0
 PP 8-2, Regulatory Commitments, Rev 5
 PP 8-3, Evaluation and Reporting of Defects and Noncompliance (10CFRPart 21), Rev. 6

 PP 9-21, Engineering Change Request, Rev. 11
 PP 10-37, Control of Issued Material, Rev. 2
 PP 10-38, Storage and Control of Material, Rev. 1
 PP 10-39, Issue and Return of Material, Rev. 1
 PP 11-33, Housekeeping and Work Area Cleanliness, Rev. 0
 PP 11-40, Preventative Maintenance of In-Storage/Installed Equipment During
 the Construction Phase, Rev. 3
 PP 11-51, AWS D1.1 and D1.6 General Welding Procedure, Rev. 2

Root Cause Analysis

RCA-12-002, Improper Storage and Control of Construction Materials (based on CR-12-401),
 dated September 2012

Specifications

DCS01-ZMJ-DS-SPE-M-19113-6, Glovebox Shell Fabrication, Inspection and Test Requirements
 DCS01-ZMS-DS-SPE-M-15145-5, Field Fabrication and Installation of Pipe and Electrical Raceway Supports
 WTS B31.3-GTAC-8-8-01, Rev. 4

Work Orders/Packages

Work Package 14-CP24-NTM-PE-M-0001, Installation of Glovebox Shell for NTM Main Tunnel
 Work Package 14-CP24-B239-PSJ-PE-M-0001, Installation of Glovebox Shell for PSJ Process Equipment
 Work Package 14-C234-ZMS-S-M-0005-13S-1392, Install Pipe Supports in BAP C-234
 Work Package 13-CP27-C234-ZMS-S-M-0001-13S, Install Pipe Supports on Module 13S for BAP
 Work Package 13-CP27-C234-ZMS-S-M-0001-13N, Install Pipe Supports in BAP Room C234
 Work Package 12-CP24-B129-PSF-GB1000-2000-M-0001, Installation of Sintered Pellet Storage Glovebox
 Work Package 14-CP24-B135-PSI-PE-M-0001, Installation of PSI Internal Process Equipment
 Work Package 14-B129-PSF-GB-M-1295, Installation PSF Internal Equipment

Other Documents

CGIE DCS01-WWJ-DS-CGD-M-65973, Rev. 3 and 4, Commercial Grade Item Evaluation for Hilti HIT-RE 500 and HIT-RE 500-SD Epoxy Adhesives
 DCS01-BKA-DS-SPE-B-09330-6, Section 03302, Placing Concrete and Reinforcing Steel for Quality Level 1, 2, 3, and 4, dated June 23, 2011
 HIL-11-VE128, Survey of Hilti Entwicklungsgesellschaft MBH, dated February 20, 2011
 Hilti Publication, HIT-RE 500-SD Epoxy Adhesive Anchoring System 4.2.6 (undated)
 Hilti Publication, HIT-RE 500 Epoxy Adhesive Anchoring System 4.2.7 (undated)
 ATG SIR MFFF Storage Inspection Records May-July 2014
 WTS B31.3-GTAC-8-8-01, Rev. 4
 DWG 6353-WM-052, Active Gallery South Wall Frame Weld Map, Rev. 0
 FCR 004094, Increase Weld Size to Account for Weld Discontinuity at Construction Aid Holes in the Weld Zone
 Welder Symbol P126 – Record of Welder or Welding Operator Qualification for AWS D1.6, AWS D1.1, and ASME IX
 Newport News Industrial Non-Conformity Report No 293, Solution Annealing of Bent Pipe MC1000 and MC2000, Rev. A
 Newport News Industrial Drawings, Aqueous Polishing Area Off-Gas Treatment NOX Scrubbing Column KWG 1000 Support Structure B1 and B2, Sheets S001-S003
 Newport News Industrial Drawings, NOX Scrubbing Column KWG CLMN 1000 Assembly and Details, MC1000
 DCS01-ZMJ-DS-SPE-M-19113-6, Glovebox Shell Fabrication, Inspection and Test Requirements

DCS01-ZMS-DS-SPE-M-15145-5, Field Fabrication and Installation of Pipe
and Electrical Raceway Supports
Welder Symbol P126 – Record of Welder or Welding Operator Qualification
for AWS D1.6, AWS D1.1, and ASME IX
ATG SIR MFFF Storage Inspection Records May-July 2014