



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

September 28, 2016

EA-16-010

Mr. David Del Vecchio  
President and Chief Operating Officer  
CB&I AREVA MOX Services  
Savannah River Site  
P.O. Box 7097  
Aiken, SC 29804-7097

**SUBJECT: MIXED OXIDE FUEL FABRICATION FACILITY- NRC INSPECTION REPORT  
NUMBER 70-3098/2016-006 AND NOTICE OF VIOLATION**

Dear Mr. Del Vecchio:

This letter refers to the apparent violations that were identified during an inspection conducted at the Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF), located in Aiken, South Carolina. The details of the inspection are documented in Nuclear Regulatory Commission (NRC) Inspection Report 70-3098/2016-005, issued on July 25, 2016.

In our inspection report, we provided you with the opportunity to address the apparent violations identified in the report by attending a predecisional enforcement conference, or by providing a written response before we made our final enforcement decision. In a letter dated August 17, 2016, you provided a written response to the two apparent violations. Your response acknowledged the two apparent violations, provided the causes of the violations, and described corrective actions taken to preclude recurrence.

Based on the information developed during the inspection, and the information that you provided in your response dated August 17, 2016, the NRC has determined that two violations of NRC requirements occurred. The violations are cited in the enclosed Notice of Violation (Notice) (Enclosure 1) and the circumstances surrounding them are described in detail in NRC Inspection Report 70-3098/2016-005.

The first violation involves CB&I AREVA MOX Services (MOX Services) failure to adequately perform measures to verify the validity of certificates of conformance (CoC) for Quality Level-1 (safety-related) welded ledger assemblies purchased from Specialty Maintenance and Construction, Inc. (SMCI) between November 2008 and June 2010. Specifically, MOX Services failed to verify that the CoC identified MOX Services specific procurement requirements for the ledgers and that the purchased ledgers met the requirements.

The second violation involves MOX Services failure to conduct adequate audits of SMCI. Specifically, the audit reports for the ledger assembly supplier (SMCI) did not document objective evidence of inspections or surveillances related to manual welding during their audits.

These deficiencies resulted in the installation of approximately 100 ledger assemblies with the following weld deficiencies: undersize (leg and/or throat), less than specified length, undercut and code prohibited joint design. Full capacity repairs on the ledger assemblies were required in order to meet the design requirements for the facility.

The NRC recognizes that the violations did not result in any actual consequences to the workers or the public, because the deficient ledger assembly welds did not cause or result in any structural failures. However, the NRC considers the potential consequences to be significant. In this case, the violations reflect a breakdown in your Quality Assurance (QA) program for construction, related to receipt inspections and audits of structural components. Under different circumstances, a QA program breakdown could have resulted in substantially more significant consequences, during subsequent construction or once the facility becomes operational. The NRC acknowledges that the two violations discussed above are interrelated. Therefore, these violations are categorized collectively in accordance with the NRC Enforcement Policy as a Severity Level III Problem.

In accordance with the NRC Enforcement Policy, a base civil penalty in the amount of \$35,000 is considered for a Severity Level III problem. Because your facility has not been the subject of escalated enforcement actions within the last two years, the NRC considered whether credit was warranted for the factor of *Corrective Action* in accordance with the civil penalty assessment process in Section 2.3.4 of the Enforcement Policy.

As documented in your written response of August 17, 2016, your immediate corrective actions included but were not limited to the following: (1) full capacity repairs were made on the ledger assemblies in order to restore compliance to the design requirements for the facility; (2) receipt inspectors were provided and completed an 8-hour training course in weld inspection; (3) criteria for progressive shop inspections and implementation of quality "Hold Points" were established to confirm technical and quality attributes throughout manufacturing (4) receipt inspection packages were required to contain the documentation required by the procurement specification; and (5) MOX Services conducted an audit of SMCI on June 4, 2015, SMCI-15-VE50 R1, which resulted in placing restrictions on SMCI to address the deficiencies identified in SMCI-15-VE50-01 through 12 prior to issuance of additional procurements for the MOX Project. In addition, your long term corrective actions included but were not limited to the following: (1) SMCI fabricated welds in inventory will be evaluated for compliance with specification requirements consistent with a defined sampling plan; (2) a physical inspection of all welded equipment installed in the MFFF will be performed; (3) Project Assurance in collaboration with Engineering will update the Quality Inspection Plan to capture engineering design attributes to be inspected both in the vendor facility as well as during receipt inspection; and (4) receipt inspectors will be required to obtain 10 hours of on-the-job weld inspection with a certified weld inspector. Based on the above, the NRC determined that credit is warranted for the factor of *Corrective Action*.

Therefore, to encourage prompt and comprehensive correction of violations, I have been authorized, after consultation with the Director, Office of Enforcement, not to propose a civil penalty in this case. However, significant violations in the future could result in a civil penalty.

The NRC has concluded that information regarding (1) the reason for the violations, (2) the corrective actions that have been taken and the results achieved, and (3) the date when full compliance will be achieved is already addressed on the docket in your letter dated August 17, 2016. Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you

choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

Administratively, this letter is issued as a separate inspection report, 70-3098/2016-006, and the following violations are opened: 70-3098/2016-06-01, Failure to Adequately Perform Measures to Verify the Validity of CoC for QL-1 Welded Components; and 70-3098/2016-06-02, Failure to Conduct Adequate Audits of SMCI. Accordingly, apparent violations 70-3098/2016-05-01 and 70-3098/2016-05-02 are closed.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, and its enclosure will be made available electronically for public inspection in the NRC Public Document Room and in the NRC's ADAMS, accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions regarding this matter, please contact Michael Ernstes at (404) 997-4540.

Sincerely,

***/RA Laura Dudes for/***

Catherine Haney  
Regional Administrator

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

Enclosure: Notice of Violation

cc w/encl: (See next page)

cc w/encl:

Mr. Scott Cannon, Federal Project Director  
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Aiken, SC 29804-7097

Letter to D. Del Vecchio from Catherine Haney dated September 28, 2016.

SUBJECT: MIXED OXIDE FUEL FABRICATION FACILITY- NRC INSPECTION REPORT  
NO. 70-3098/2016-006 AND NOTICE OF VIOLATION

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Richard Skokowski, RIII  
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If you have any questions regarding this matter, please contact Michael Ernstes at (404) 997-4540.

Sincerely,

*/RA/*

Catherine Haney  
Regional Administrator

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

Enclosure: Notice of Violation

cc w/encl: (See next page)

\*See previous concurrence

ADAMS:  PUBLICLY AVAILABLE     NON-PUBLICLY AVAILABLE     SENSITIVE     NON-SENSITIVE  
 ACCESSION NUMBER ML16272A4444     SUNSI REVIEW COMPLETE     FORM 665 ATTACHED

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SIGNATURE	/RA via Email/	*	*	*	/RA/	/RA via Email/
NAME	MErnstes	WJones	DGamberoni	SPrice	LDudes	CErlanger
DATE	8/29/2016	8/30/2016	8/31/2016	9/1/2016	9/28/2016	9/26/2016
E-MAIL COPY	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO
OFFICE	OE					
SIGNATURE	/RA via Email/					
NAME						
DATE	09/26/2016					
E-MAIL COPY	YES NO	YES NO				

OFFICIAL RECORD COPY

## NOTICE OF VIOLATION

CB&I AREVA MOX Services  
Aiken, SC

Docket No. 70-3098  
Construction Authorization No.: CAMOX-001  
EA-16-010

During NRC inspections conducted between December 2014 and July 2016, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are described below:

- A. Condition 3.A of the NRC Construction Authorization No. CAMOX-001, Revision (Rev.) 2, dated June 12, 2008, authorizes, in part, the applicant to construct a plutonium processing and mixed oxide fuel fabrication plant in accordance with the statements, representations, and conditions of the MOX Project Quality Assurance Plan (MPQAP), dated March 26, 2002, and supplements thereto; (MPQAP, Rev. 6, dated May 22, 2008).

MPQAP, Section 7, Control of Purchased Material, Equipment, and Services, Section 7.2.7, Certificate of Conformance, allows for the use of a certificate of conformance (CoC) to accept material, equipment, or services from a supplier. MPQAP Section 7.2.7.F required, in part, that "measures shall be identified to verify the validity of supplier certificates and the effectiveness of the certification process (such as by audit of the supplier/subcontractor or by an independent inspection or test of the item)."

MOX Services specification DCS01-BAA-DS-SPE-B-09352, Metal Fabrications for Quality Levels 1, 2, 3, and 4, required vendor documentation submittals for welder qualifications, inspector qualifications, and certified welding inspection reports.

Contrary to the above, between June 2008 and November 2010, MOX Services accepted material, equipment, and services from a supplier, Specialty Maintenance and Construction, Inc. (SMCI) without verifying the validity of supplier certificates and the effectiveness of the certification process (such as by audit of the supplier/subcontractor or by an independent inspection or test of the item). In this case, the MOX Services certification process and receipt inspections failed to identify that CoC and related documentation for safety-related ledger assemblies did not meet MOX Services specifications regarding welder qualifications, inspector qualifications, and certified welding inspection reports.

- B. Condition 3.A of the NRC Construction Authorization No. CAMOX-001, Revision (Rev.) 2, dated June 12, 2008, authorizes, in part, the applicant to construct a plutonium processing and mixed oxide fuel fabrication plant in accordance with the statements, representations, and conditions of the MOX Project Quality Assurance Plan (MPQAP), dated March 26, 2002, and supplements thereto; (MPQAP, Rev. 6, dated May 22, 2008).

MPQAP, Section 5, Instructions, Procedures, and Drawings, Section 5.1 General, states in part that "Quality-affecting activities are prescribed by and performed in accordance with documented, approved QA procedures and other approved implementing documents (drawings, specifications, etc.) appropriate to the MOX Project workscope."

CB&I AREVA MOX Services Project Procedure (PP) 3-12, Supplier Evaluation, Rev. 8, dated March 4, 2008, Section 3.8.10, specified that "the Lead Auditor shall perform the audit by examining objective evidence (e.g. records, work in progress, etc.), conducting

Enclosure

interviews, and reviewing procedures and QA Program documents to ensure compliance with MOX Services QA Program requirements established for the supplier or product.”

MOX Services specification DCS01-BAA-DS-SPE-B-09352, Metal Fabrications for Quality Levels 1, 2, 3, and 4, required QL-1 items to be welded and inspected in accordance with American Welding Society (AWS) D1.1, Structural Welding Code - Steel.

Contrary to the above, between June 2008 and November 2010, MOX Services’ audits of SMCI were inadequate in that the audits failed to ensure SMCI’s compliance with the MOX Services’ QA program requirements established for the supplier or product, as required by the MPQAP and PP3-12. MOX Services failed to perform and document adequate examination of objective evidence during audits preceding the fabrication and installation of the ledger assemblies. Specifically, MOX Services failed to provide objective evidence for the adequacy of manual welding performed by SMCI prior to procurement of the ledger assemblies. As a result, approximately 100 ledger assemblies were obtained from SMCI with the following weld deficiencies: undersize (leg and/or throat), less than specified length, undercut and code-prohibited joint design. The ledger assemblies were also fabricated with material shapes that resulted in an intermittent partial joint penetration weld instead of the specified intermittent fillet weld. An intermittent partial joint penetration weld is prohibited by AWS D1.1. These ledger assemblies were used in the load bearing floor/ceiling supports in 25 rooms of the Aqueous Polishing Building (BAP) in the MOX Service’s facility. The welding deficiencies resulted in temporary closure of effected areas, an extensive engineering redesign and repair work that lasted approximately nine months.

This is a Severity Level III Problem. (NRC Enforcement Policy - Supplement 6.5 c)

The NRC has concluded that information regarding the reason for the violations, the corrective actions taken and planned to correct the violations and prevent recurrence, and the date when full compliance will be achieved, is already adequately addressed on the docket in your letter dated August 17, 2016. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation, EA 16-010", and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region II, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or in the NRC’s Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. Therefore, to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 28<sup>th</sup> day of September 2016.