



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
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ATLANTA, GEORGIA 30303-8931

July 25, 2007

Mr. David Stinson  
MOX Services President and Project Manager  
Shaw AREVA MOX Services  
Savannah River Site  
P.O. Box 7097  
Aiken, South Carolina 29804-7097

SUBJECT: MIXED OXIDE FUEL FABRICATION FACILITY - NRC INSPECTION REPORT  
NO. 07003098/2007003

Dear Mr. Stinson:

This refers to the inspection conducted from April 1 through June 30, 2007, concerning the Mixed Oxide Fuel Fabrication Facility (MFFF) construction site. The enclosed inspection report documents the inspection results, which were discussed on June 27, 2007, with you and other members of your staff.

The inspection 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 inspector reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, no violations or deviations were identified.

In accordance with 10 CFR 2.390 of NRC's "Rules of Practice," this document 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 70-3098/2007-003

cc w/encl: (See next page)

D. Stinson

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ADAMS:  Yes      ACCESSION NUMBER: ML072080093

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E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No.: 70-3098

Construction  
Authorization No.: CAMOX-001

Report No.: 70-3098/2007-003

Certificate Holder: Shaw AREVA MOX Services

Location: Savannah River Site  
Aiken, South Carolina

Inspection Dates: April 1 - June 30, 2007

Inspector: Melvin C. Shannon, Senior Resident Inspector  
Division of Construction Projects

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

## **EXECUTIVE SUMMARY**

Shaw AREVA MOX Services  
Mixed Oxide Fuel Fabrication Facility  
NRC Inspection Report No. 70-3098/2007-003

This routine inspection included activities conducted by the senior resident inspector during normal shifts and involved the observation and evaluation of the certificate holder's programs for quality assurance (QA), vendor audits, corrective actions and geotechnical/foundation activities. The inspection identified the following aspects of the certificate holder's programs as outlined below:

### **Geotechnical/Foundation Activities**

- Site preservation activities related to tower crane base mat installation, concrete plant base mat installation and tower crane and concrete plant heavy lift program requirements were conducted in accordance with the certification procedures and the certificate holder's QA program; procedures were established in accordance with the certificate holder's program; procedures were followed; and the certificate holder's records retention program properly maintained QA records. No findings of significance were identified (Section 2.a).

### **Supplier/Vendor Inspection Activities**

- The certificate holder was performing acceptable oversight of vendor/supplier QA program and related activities. No items of significance were identified in the certificate holder's vendor/supplier QA audit program (Section 2.b).

### **Corrective Action Program**

- The certificate holder was promptly documenting conditions adverse to quality into the corrective action program. The certificate holder was supporting a strong receipt inspection effort to ensure issues were promptly identified and resolved prior to the start of construction activities. The number and type of problems indicated that the certificate holder needed to maintain a strong QA/QC oversight of the materials receipt program (Section 2.c).

#### **Attachment:**

Persons Contacted

Inspection Procedures

List of Items Opened, Closed, and Discussed

List of Acronyms Used

List of Documents Reviewed

## REPORT DETAILS

### 1. Summary of Facility Status

The certificate holder's oversight of the preparations and implementation of site preservation activities (including maintenance of the MOX erosion controls, installation of the tower crane, site preparation and installation of concrete plants, testing of concrete specimens, vendor audits, and receipt of material) continued throughout this reporting cycle. These site preservation activities were performed by Department of Energy (DOE) contractors, MOX Services contractors and monitored by MOX Services Quality Assurance (QA)/Quality Control (QC) personnel.

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

#### a. Geotechnical/Foundation Activities

##### (1) Scope and Observations

During the inspection period, the certificate holder made necessary repairs to the protective coatings on the excavation slopes and installed curbs and drains to protect the slopes. The inspector reviewed the concrete strength testing activities (related to tower crane base mat installation) to ensure that they were accomplished in accordance with the construction authorization (CA). The certificate holder's activities were conducted in accordance with the approved QA program and the Mixed Oxide (MOX) Project Quality Assurance Plan (MPQAP). QA program policies and procedures were established and implemented for items and services important to safety. The certificate holder's system for preparing and maintaining records was functioning properly. The inspector maintained a current knowledge of the status of construction activities.

The inspector observed the following activities: (1) installation of the tower crane base mat; (2) installation of the temporary concrete plant base mats; (3) initial concrete testing (slump, air entrainment, and temperature); and (4) concrete strength tests. The inspector also reviewed additional strength testing records. The inspector verified that the certificate holder's procedural guidance was appropriate for these activities. The inspector verified that test results met procedural requirements, test personnel were qualified to perform associated testing activities and test results were appropriately entered into the certificate holder's document control system.

The inspector also observed the heavy lifts conducted to construct the tower crane and concrete plants. The lifts were conducted in accordance with MOX Services procedures. The inspector noted worker adherence to personnel safety practices.

The inspector reviewed the applicable sections of the certificate holder's QA program and verified that the various concrete base mat activities were conducted in accordance with the program. Specifically, the inspector verified that the procedural guidance was established, reviewed, and approved in accordance with the QA program. The inspector routinely held discussions with various MOX Services individuals and attended various MOX Services status meetings in order to maintain current knowledge of construction activities.

(2) Conclusions

Site preservation activities related to tower crane base mat installation, concrete plant base mat installation and tower crane and concrete plant heavy lift program requirements were conducted in accordance with the certification procedures and the certificate holder's QA program; procedures were established in accordance with the certificate holder's program; procedures were followed; and the certificate holder's records retention program properly maintained QA records. No findings of significance were identified.

b. Supplier/Vendor Inspection

(1) Scope and Observations

The inspector reviewed the certificate holder's audits and surveillances of the reinforcing (re-bar) material supplier, embedded piping supplier and embedded plate supplier. The intent of the certificate holder's audits and surveillances was to ensure that the suppliers had established QA programs and corrective action programs. The inspector verified that the certificate holder was providing acceptable oversight of the vendor's QA activities. The inspection was conducted by reviewing the certificate holder's QA surveillance reports.

The inspector reviewed surveillance reports QC-07-0064 and QC-07-0065 related to the manufacturing of embedded plates. The surveillances included observations of production, traceability, marking of heat numbers and packaging of embed plates. The inspector also reviewed Surveillance Reports QC-07-00055, 59, 60, 61, and 62 related to the manufacturing of embedded piping. The surveillances included observations of the production, marking, packaging, shipping, testing, chemical analysis, welding process verification, and dimensional checks. The surveillances appeared to be comprehensive.

(2) Conclusions

The certificate holder was performing acceptable oversight of vendor/supplier QA program and related activities. No items of significance were identified in the certificate holder's vendor/supplier QA audit program.

c. Corrective Action Program

(1) Scope and Observations

The inspector reviewed the certificate holder's program for documenting conditions adverse to quality in the area of material receipt at the MOX site. During this inspection period, the certificate holder was receiving re-bar material and embedded piping from the supplier (Energy & Process Corporation). The inspector observed several receipt inspections performed by the certificate holder's QA/QC organization to verify the adequacy of the receipt inspection and to verify that deficiencies were promptly and adequately documented.

The inspector noted that during this quarter, the certificate holder and the suppliers continued to document non-conformance reports associated with the receipt of QL-1

re-bar from the supplier (Energy & Process Corporation). The inspector reviewed numerous non-conformance reports (NCRs) associated with the material receipt program (see Attachment for a complete list of the NCRs). Some of the issues identified in the NCRs included: incorrect amount of material received, inaccurate bills of lading, incorrect mark numbers, damaged material, material not in accordance with the paperwork, missing tags, incorrect heat numbers, foreign material control problems, reports missing revision numbers, incorrect dimensions, and inconsistencies with supplier test results and test reports.

The inspector noted that the certificate holder was promptly documenting conditions adverse to quality into the corrective action program. The inspector noted that although the certificate holder had provided additional guidance regarding material documentation necessary for shipment and receipt of material, the suppliers were still having difficulty providing the correct documentation. The certificate holder was supporting a strong receipt inspection effort to ensure these issues were promptly identified and resolved prior to the start of construction activities. This included an extended MOX Services QA presence at the piping supplier's manufacturing facility. Although the various issues were subsequently resolved, the number and type of problems indicated that the certificate holder needed to maintain a strong QA/QC oversight of the materials receipt program.

No items of significance were identified in the certificate holder's material receipt inspection program.

(2) Conclusions

The certificate holder was promptly documenting conditions adverse to quality into the corrective action program. The certificate holder was supporting a strong receipt inspection effort to ensure issues were promptly identified and resolved prior to the start of construction activities. The number and type of problems indicated that the certificate holder needed to maintain a strong QA/QC oversight of the materials receipt program.

3. Exit Interview

The inspection scope and results were presented to members of the certificate holder's management at various meetings throughout the inspection period and were summarized on June 27, 2007. Although proprietary documents and processes may have been reviewed during this inspection, the proprietary nature of these documents or processes were deleted from this report. No dissenting comments were received from the certificate holder.

**1. PARTIAL LIST OF PERSONS CONTACTED**

Certificate Holder Personnel

J. Adair, Civil - Mechanical Engineering Manager  
P. Bishop, Construction Supervisor  
D. Gwyn, Regulatory Affairs Manager  
R. Justice, Quality Assurance Engineer  
J. King, Construction Supervisor  
D. Leach, Deputy Director, MFFF Project  
G. Shell, QA Manager  
D. Stinson, President and Chief Operating Officer  
J. Vaughn, Civil Engineer

Department of Energy

S. Glenn, National Nuclear Security Administration (NNSA)

**2. INSPECTION PROCEDURES (IPs) USED**

IP 88130      Resident Inspection Program for On-Site Construction Activities at the  
Mixed Oxide Fuel Fabrication Facility

**3. LIST OF ACRONYMS USED**

ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
CA	Construction Authorization
DOE	Department of Energy
GA	Georgia
IP	Inspection Procedure
MFFF	MOX Fuel Fabrication Facility
MOX	Mixed Oxide
MPQAP	MOX Project Quality Assurance Plan
NCR	Nonconformance Report
NNSA	National Nuclear Security Administration
QA	Quality Assurance
QC	Quality Control
QL-1	Quality Level 1
SC	South Carolina

4. **LIST OF DOCUMENTS REVIEWED**

**Specifications and Procedures**

Construction Specification Section 02310, Excavation, Backfilling, and Compaction for Structures, Specification DCS01-WRT-DS-SPE-B-09304-0, dated October 4, 2005

**Drawings**

Drawing Number DCS01-XGP-DS-PLG-G-00266, MOX Fuel Fabrication Facility Overall Plot Plan, Revision 1

**Miscellaneous Documents**

Basis of Design for Site/Geotechnical, DCS01-AAJ-DS-DOB-B-40102-E

Mixed Oxide Fuel Fabrication Facility Construction Authorization Request, Docket No. 70-3098 (latest revision)

Mixed Oxide Fuel Fabrication Facility Integrated Safety Analysis Summary, Docket No. 70-3098

Mud Mat Concrete Checklist

NUREG-1767, Volume 1, Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina

NUREG-1767, Volume 2, Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina

NUREG-1821, Final Safety Evaluation Report on the Construction Authorization Request for the Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina, Docket No. 70-3098, March 2005

**Non-Conformance Reports**

NCR QC-07-010	NCR QC-07-022	NCR QC-07-031
NCR QC-07-011	NCR QC-07-023	NCR QC-07-032
NCR QC-07-012	NCR QC-07-024	NCR QC-07-033
NCR QC-07-013	NCR QC-07-025	NCR 26040-034
NCR QC-07-015	NCR QC-07-027	NCR 26040-005
NCR QC-07-018	NCR QC-07-028	NCR 26040-006
NCR QC-07-020	NCR QC-07-029	NCR 26040-007
NCR QC-07-021	NCR QC-07-030	NCR 26040-008