

SAFETY EVALUATION REPORT
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
REVISION 3 OF THE CONSTRUCTION AUTHORIZATION

1.0 INTRODUCTION

By letter dated February 8, 2011, Shaw AREVA MOX Services submitted and requested the U.S. Nuclear Regulatory Commission (NRC) to amend the Construction Authorization (CA) for the Mixed Oxide Fuel Fabrication Facility (CAMOX-001) to incorporate changes to Section 3A, 3C and 3F of the CA. The proposed changes to Sections 3A and 3C revise the CA to add a reference to the design basis contained in the License Application, which was evaluated in the staff's Safety Evaluation Report (SER), dated December 10, 2010 (ML103340354). The proposed change to Section 3F removes from the CA a condition related to the safety function of the Emergency Control Room air conditioning system, an issue also addressed in the previously published SER.

A Notice of Opportunity for a Hearing related to this amendment request was published in the *Federal Register* on April 22, 2011, (FR Volume 76, No. 78, page 22735). The comment period ended on June 21, 2011. No requests for a Hearing or Leave to Intervene were received by the NRC.

2.0 REGULATORY EVALUATION

The NRC, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Sections 70.23(a)(7) issued Construction Authorization No. CAMOX-001 for construction of a plutonium processing and fuel fabrication plant in March 2005. The plant is to be located on the Department of Energy's Savannah River Site near Aiken, South Carolina, and is known as the Mixed Oxide Fuel Fabrication Facility (MFFF).

The Commission has made appropriate findings as required by the Atomic Energy Act of 1954, as amended (the Act), the Commission's rules and regulations, and by the requirements of Section 102(2)(A) and (C) of the National Environmental Policy Act (NEPA), as set forth in Construction Authorization No. CAMOX-001 (CA).

The Final Safety Evaluation Report (NUREG-1821) for the Construction Authorization Request (CAR), dated March 2005 (ADAMS Accession No. ML050660399) relied, in part, on information provided in the applicant's construction authorization request, dated October 31, 2002 (as subsequently revised). The results of the staff's environmental review are contained in NUREG-1767, "Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina," dated January 2005 (Agencywide Documents Access and Management System [ADAMS] Accession Nos. ML050240233 and ML050240250).

MOX Services submitted a License Application (LA) to possess and use radioactive material on September 26, 2006, with supplement thereto. The results of the staff's review were documented in the Final Safety Evaluation Report for the License Application to Possess and Use Radioactive Material at the Mixed Oxide Fuel Fabrication Facility in December 2010 (ADAMS Accession No. ML103340354).

3.0 TECHNICAL EVALUATION

3.1 Section 3A and 3C of the CA

The applicant proposed changes to Section 3A of the CA to include a reference to the LA, as revised.

The applicant also proposed changes to Section 3C of the CA as follows: “This authorization described in the CAR as refined in the LA items relied on for safety (IROFS) design basis sections (and supplements thereto), and environmental protection commitments set forth in MOX Services’ Environmental Report and revisions thereto”.

The MFFF CAR lists the 53 principal structures, systems, and components (PSSCs) in Table 5.6-1 and shows their associated safety functions. The PSSCs are identified as administrative controls, active engineered controls or passive engineered controls. Since the NRC’s approval of the MFFF CAR in March 2005 (NRC, 2005), the applicant has identified, in the Integrated Safety Analysis (ISA) Summary associated with the LA, approximately 12,000 IROFS designated to perform the design basis safety functions of the PSSCs.

The staff’s findings, as documented in the MFFF Construction Authorization, state that “in accordance with 10 CFR 70.23(b), on the basis of information described in the CAR, as revised, and the additional statements and commitments heretofore made by Duke Cogema Stone and Webster, LLC (DCS) (now called Shaw Areva MOX Services), the design bases of the PSSCs for the proposed MFFF and the Quality Assurance program, provide reasonable assurance of protection against natural phenomena and the consequences of potential accidents.” The LA IROFS design basis sections document and describe the IROFS for the facility that support the performance of the MFFF’s safety functions. As such, these IROFS, in turn, address the safety functions needed to satisfy the design bases defined in the CAR. Findings related to the adequacy of the IROFS described in the LA were previously documented in the SER for the LA to Possess and Use Radioactive Material at the Mixed Oxide Fuel Fabrication Facility in Aiken, South Carolina, dated December 2010. In light of the foregoing, the changes in language to sections 3A and 3C of the CA to reference the LA IROFS design basis sections are acceptable.

3.2 Deletion of Section 3F of the CA

The applicant proposes to remove from Section 3F of the CA a condition related to the safety function of the Emergency Control Room (ECR) air conditioning system.

The following was documented in Section 8.1.2.5, “Habitability” of the SER on the LA dated December 2010:

“Upon completion of the ISA, the applicant did not identify a credible event that required operator actions in the ECR in order to meet 10 CFR 70.61 performance requirements. As a result, the applicant did not identify any IROFS function to maintain control room habitability for the ECR air conditioning system. Therefore, the ECR Heating Ventilation and air Conditioning System is not credited with providing a habitable environment during a chemical release event. The staff finds that the applicant’s ISA results and subsequent conclusions that there are no credible events that require ECR operator action to meet the performance requirements of 10 CFR 70.61 satisfies the intent of the Construction Authorization condition stated above.”

The staff reviewed the applicant's assessment of ECR habitability and agrees that there is no identified accident sequence in which action of an ECR operator is a safety control to prevent or mitigate the consequences of that accident sequence. As a result, ECR habitability is not relied on for safety and thus does not need to be IROFS. Therefore, the deletion of Section 3F of the CA is acceptable.

4.0 CONCLUSIONS

The NRC staff has reviewed the proposed changes to the CA requested by the applicant with respect to: a) a revision to the CA to reference the design basis contained in the License Application; and b) the removal of a CA condition related to the safety function of the ECR air conditioning system.

The staff's review determined that the proposed changes to the CA are acceptable and meet all regulatory requirements in 10 CFR Part 70.

ENVIRONMENTAL EVALUATION
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The Commission has made appropriate findings as required by the Atomic Energy Act of 1954, as amended (the Act), the Commission's rules and regulations, and by the requirements of Section 102(2)(A) and (C) of the National Environmental Policy Act (NEPA), as set forth in Construction Authorization No. CAMOX-001 (CA).

The staff performed an environmental review and documented the results in NUREG-1767, "Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina," dated January 2005 (Agencywide Documents Access and Management System [ADAMS] Accession Nos. ML050240233 and ML050240250).

TECHNICAL EVALUATION

3.1 Categorical Exclusion of Revisions to the CA

The applicant proposed to change Section 3A of the CA to include a reference to the LA, as revised.

The applicant also proposed to change Section 3C of the CA as follows: “This authorization described in the CAR as refined in the LA items relied on for safety (IROFS) design basis sections (and supplements thereto), and environmental protection commitments set forth in MOX Services’ Environmental Report and revisions thereto”.

The MFFF CAR lists the 53 principal structures, systems, and components (PSSCs) in Table 5.6-1 and shows their associated safety functions. The PSSCs are identified as administrative controls, active engineered controls or passive engineered controls. Since the NRC’s approval of the MFFF CAR in March 2005 (NRC, 2005), the applicant has identified, in the Integrated Safety Analysis (ISA) Summary associated with the LA, approximately 12,000 IROFS designated to perform the design basis safety functions of the PSSCs.

The staff’s findings as documented in the MFFF Construction Authorization, stated “in accordance with 10 CFR 70.23(b), on the basis of information described in the CAR, as revised, and the additional statements and commitments heretofore made by Duke Cogema Stone and Webster, LLC (DCS) (now called Shaw Areva MOX Services), the design bases of the PSSCs for the proposed MFFF and the Quality Assurance program, provide reasonable assurance of protection against natural phenomena and the consequences of potential accidents.” The LA IROFS design basis sections document and describe the IROFS for the facility that support the performance of the MFFF’s safety functions. As such, these IROFS, in turn, address the safety functions needed to satisfy the design bases defined in the CAR.

The proposed changes do not cause: a) a significant change in the types or significant change in the amounts of any effluents that may be released offsite; b) a significant increase in individual or cumulative occupational radiation exposure; c) a significant construction impact; and d) a significant increase in the potential for or consequences from radiological accident. Based on these findings, the CA modification request meets the criteria in 10 CFR 51.22(c)(11) for a licensing action that is categorically excluded from NEPA review.

3.2 Deletion of Section 3F of the CA

The applicant proposes to remove from Section 3F of the CA a condition related to the safety function of the Emergency Control Room (ECR) air conditioning system.

The following was documented in Section 8.1.2.5, “Habitability” of the staff SER on the LA dated December 2010:

“Upon completion of the ISA, the applicant did not identify a credible event that required operator actions in the ECR in order to meet 10 CFR 70.61 performance requirements. As a result, the applicant did not identify any IROFS function to maintain control room habitability for the ECR air conditioning system. Therefore, the ECR Heating Ventilation and air Conditioning System is not credited with providing a habitable environment during a chemical release event. The staff finds that the applicant’s ISA results and subsequent conclusions that there are no credible events that require ECR operator action to meet the performance requirements of 10 CFR 70.61 satisfies the intent of the Construction Authorization condition stated above.” The proposed change do not cause: a) a significant change in the types or significant change in the amounts of any effluents that may be released offsite; b) a significant increase in individual or cumulative occupational radiation exposure; c) a significant construction impact; and d) a significant increase in the potential for or consequences from radiological accident. Based on

these findings, the CA modification request meets the criteria in 10 CFR 51.22(c)(11) for a licensing action that is categorically excluded from NEPA review.

3.0 CONCLUSIONS

The NRC staff has reviewed the proposed changes to the CA requested by the applicant with respect to: a) a revision to the CA to reference the design basis contained in the License Application; and b) the removal of a CA condition related to the safety function of the ECR air conditioning system.

The proposed changes do not cause: a) a significant change in the types or significant change in the amounts of any effluents that may be released offsite; b) a significant increase in individual or cumulative occupational radiation exposure; c) a significant construction impact; and d) a significant increase in the potential for or consequences from radiological accident. Based on these findings, the CA modification request meets the criteria in 10 CFR 51.22(c)(11) for a licensing action that is categorically excluded from NEPA review.