Shaw | AREVA
MOX SERVICES, LLC

Document Control Desk
U.S. Nuclear Regulatory Commission
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DCS-NRC-000277

Subject: Docket Number 07-03098
Shaw AREVA MOX Services
Mixed Oxide Fuel Fabrication Facility
Submittal of Revised License Application Pages (Redacted)

Reference: (A) K.D. Stinson (MOX Services) letter to Document Control Desk (NRC), Submittal of Redacted License Application, DCS-NRC-000267, 12 April 2010

Shaw AREVA MOX Services, LLC (MOX Services) is submitting to the U.S. Nuclear Regulatory Commission (NRC) revised pages to the Redacted version of its License Application (LA) for the Mixed Oxide Fuel Fabrication Facility (MFFF) that will be incorporated into the next update. The enclosed pages represent clarifications to the earlier submittal of Reference (A).

This version of the revised pages redacts both sensitive and proprietary information and is provided in Enclosure (1). A non-redacted version of the revised LA pages was provided to the NRC in a separate submittal.

If you have any questions, please feel free to contact me at (803) 819-2156 or Dealis Gwyn, Licensing Manager at (803) 819-2780.

Sincerely,

for KELLY TRICE, ERIC CHASSARD

Kelly D. Trice, President and COO (Acting)

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Enclosures:

(1) Revised License Application Pages (Redacted)

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Enclosure 1

Revised License Application Pages (Redacted)

### 1.1.3 Controlled Area Boundary

The MFFF has established access control measures in order to provide positive control for ingress/egress of personnel, vehicles and materials for the MFFF operational areas during normal and emergency conditions. These measures include a system of barriers and controls which include protective force members that enforce and control access based on operational/emergency needs and security threat levels. Boundaries are established to provide geographical locations or lines of demarcation. These boundaries include the Savannah River Site Boundary (Controlled Access), the MFFF Site Controlled Area Boundary, the Protected Area (Restricted Area) Boundary. Each of these areas require specific access authorization in order to be granted access or remove material based on operational conditions.

The MFFF Site Controlled Area has two primary ingress/egress roadways which will be restricted during security/emergency events and controlled by MFFF Protective Force personnel. These areas, as depicted in Figure 1.1.2-2, are in accordance with 10 CFR §20.1003 and 10 CFR §70.61(f).

A Memorandum of Agreement between the SRS Protective Force contractor, MOX Services, DOE-EM, and NNSA establishes Command and Control requirements concerning the MFFF for all phases of operations.

### 1.1.4 Material Flow

#### 1.1.4.1 Plutonium Oxide Feed Material

$PuO_2$ feed material, transported in approved shipping containers, is received in the Shipping and Receiving Area of the MOX Fuel Fabrication Building. The feed material is offloaded in the $PuO_2$ truck bay where the outer packaging is removed. The feed material is then moved to the MOX Processing (MP) Area for sampling and storage for process use. Material control and accounting and radiation protection functions are performed.

#### 1.1.4.2 Depleted Uranium Oxide Feed Material

Depleted uranium oxide ($DUO_2$) feed material, which is packaged in drums and shipped by truck, is received and stored in the $DUO_2$ storage area of the Secured Warehouse Building. Onsite vehicles transfer $DUO_2$ to the truck bay in the Shipping and Receiving Area, as needed in the MP Area.

#### 1.1.4.3 Completed Fuel Assembly Handling

Completed fuel assemblies are stored in the assembly storage vault in the MP Area. For shipment offsite, the assemblies are loaded into a MOX fresh fuel shipping cask and conveyed into the Shipping and Receiving Area for loading onto a transport vehicle.

#### 1.1.4.4 Conventional Materials

Other conventional materials and supplies are received at the Receiving Warehouse Building. Packing materials are removed, and the materials, supplies, or equipment are verified and inspected. The materials, supplies, or equipment are sorted and moved to storage in the Secured Warehouse Building, or delivered via onsite vehicles to other areas where needed.

the structures, systems, and components (SSCs) and activities of personnel that are relied on for safety (i.e., IROFS).

The consequence severity levels that are used in the hazard evaluation are based on 10 CFR §70.61 and are provided in Table 5.1-1. Risk is the product of the event likelihood and consequences. The risk of each credible event is determined by cross-referencing the severity of the consequence of the unmitigated accident sequence with the likelihood of occurrence in a risk matrix. A risk matrix, shown in Table 5.1-2, is used to determine the requirement for IROFS.

The ISA demonstrates that the IROFS are adequate to perform their intended safety functions when necessary. The ISA is an ongoing process and is maintained during all phases of the facility life cycle. MOX Services has completed an ISA in accordance with the methods and criteria contained in the ISA Summary and the programmatic commitments discussed below. MOX Services commits to maintaining the ISA.

### 5.1.3 Management Measures

Management measures are applied to IROFS by providing the administrative and programmatic framework for configuration management, maintenance, training and qualification, procedures, audits and assessments, incident investigation, and records management. IROFS and appropriate management measures are implemented based on the results of the ISA to ensure compliance with the performance requirements of 10 CFR §70.61. MOX Services implements and maintains these management measures, as described in Chapter 15, to ensure the required reliability and availability of IROFS. The application of management measures to IROFS is described in Section 5.2.5.2.4

### 5.1.4 Control Of Facility And Process Changes

MOX Services maintains the ISA, ISA Summary, and License Application (LA) so that they are accurate and up-to-date by means of the MFFF configuration management processes, which include written procedures. MOX Services evaluates changes to the facility and its processes for impact on the ISA and LA, and updates the LA and ISA Summary, as needed, in order to ensure their continued accuracy. The evaluation of the facility and process changes includes identification and impact of changes to parameters used in the postulated accident sequences of the ISA (including event likelihood and consequences). Responsibility for maintaining and updating the ISA, ISA Summary, and the LA belongs to the ES&H Licensing Manager, as described in Chapter 4.

MOX Services will address safety-significant vulnerabilities or unacceptable performance deficiencies, if any are identified, in the evaluation of the proposed facility and process changes. MOX Services will take prompt and appropriate actions to address vulnerabilities that are identified.

MOX Services controls facility and process changes in accordance with the following requirements:

Glovebox design incorporates use of shielding to protect workers from direct radiation. Interior shielding is provided to ensure that radiation from specific sources is minimized. Glovebox walls incorporate appropriate shield materials to reduce worker exposures. Regular glovebox maintenance is conducted to preserve operability. Irregular, longer duration glovebox maintenance is scheduled at times when radiation sources are not present, to minimize radiation exposures to the maintenance personnel and to limit the potential for a release of airborne radioactive material.

Glovebox design complies with 10 CFR §20.1406 requirements for the minimization of contamination and uses the MELOX and La Hague facility design experience for guidance. The design includes permanent shielding in the process rooms.

Project quality assurance applies to shielding design, procurement, installation, maintenance, and operation. Radiation shielding testing verifies the efficacy of installed shielding materials in meeting radiation shielding design goals and the direct dose regulatory requirements of 10 CFR Part 20.

Shielding materials are selected for the source term to effectively reduce dose rates to meet ALARA goals. Borated polymers are used for neutron attenuation, and stainless steel and leaded glass, are used for photon shielding in the glovebox units.

#### 9.1.2.3 Ventilation Systems, Glovebox Design, and Waste Minimization

The design of ventilation systems and gloveboxes ensures that during routine and nonroutine operations and anticipated events, the airborne concentration in occupied operating areas remains well below the limits of 10 CFR Part 20, Appendix B. Engineering controls are preferred over the use of respiratory protection.

The MFFF process implements recycling and reuse for waste minimization. For example, the recycling process minimizes the quantity of plutonium in the final waste by using systems that return (recycle) radioactive material to previous steps of the main process. Liquid waste is minimized in the AP process by use of recycling to the maximum extent practical. Nitric acid is recovered by evaporation from the process and partly reused as reagent feedstock for the plutonium dissolution subprocess. Distillates from the evaporation process are collected and partly reused in the process. Spent solvent from the plutonium separation step is regenerated by washing with sodium carbonate, sodium hydroxide, and nitric acid to remove degradation products from organic compounds, including trace amounts of plutonium and uranium.

Solid waste is minimized by reuse of solid scrap material from fuel fabrication. Many other system design features perform contamination control, confinement, and associated waste minimization functions. The process design reduces the distribution and retention of radioactive materials throughout plant systems by using vacuum systems in the gloveboxes. Airborne dust is collected in dust pots in dedusting systems installed in the gloveboxes, and the material is recycled. These design features control contamination to ensure that secondary waste production is minimized during plant operation.

this section. Reviews are also conducted, as appropriate, by construction management, operations, ES&H, QA, and support services personnel. The design control process also interfaces with the document control and records management process via procedures.

During construction, the Vice President - Construction has responsibility for configuration management through establishment and maintenance of processes and procedures used during construction of the facility.

During operational testing, operation, and deactivation, the Plant Manager is responsible for ensuring the implementation of configuration management.

The various MOX Services departments and subcontractors perform quality-related activities. The primary MOX Services subcontractors work to the MPQAP. Some MOX Services subcontractors are responsible for development of their respective QA Programs, which shall be consistent with the requirements of the MPQAP for those activities determined to be within the scope of the MPQAP. The interfaces between subcontractors and MOX Services or among subcontractors shall be documented. MOX Services and subcontracted personnel have the responsibility to identify quality problems. Disagreements that cannot be resolved are elevated to the next level of management for resolution. If this level of management cannot resolve the issue, then the issue is elevated through successive layers of management until resolution is achieved.

### 15.2.4 Scope of CM Program

Upon issuance of the MFFF Possession and Use License, the scope of the configuration management program will be consistent with, and support the implementation of 10 CFR 70.72. Within that scope, configuration management includes IROFS identified by the integrated safety analysis and any items which may affect the safety function of the IROFS. Documents subject to configuration management include calculations, safety analyses, design criteria, engineering drawings, system descriptions, technical documents, operating procedures and specifications that establish design and safety requirements for IROFS. During the design phase, these documents are maintained under configuration management when initially approved.

The number of documents included in the configuration management program increases throughout the design process. As drawings and specifications related to IROFS are prepared and issued for procurement, fabrication, or construction, these documents are included in configuration management.

During construction, initial startup, and operations, the scope of documents under configuration management similarly increase to include, as appropriate: vendor data; test data; inspection data; initial startup, test, operating and administrative procedures as applicable to IROFS and nonconformance reports. These documents include documentation related to IROFS that is generated through functional interfaces with QA, maintenance, and training and qualifications of personnel. Configuration management procedures will provide for evaluation, implementation, and tracking of changes to IROFS, and processes, equipment, computer programs, and activities of personnel that impact IROFS.

Configuration management is implemented through or otherwise related to other management measures. Key interfaces and relationships to other management measures are described below:

# 16.0 AUTHORIZATIONS AND EXEMPTIONS

## 16.1 EXEMPTIONS

### 16.1.1 Decommissioning

U.S. Department of Energy (DOE) will assume responsibility for decommissioning the Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) as discussed in SECY 99-177, "Current Status of Legislative Issues Related to U.S. Nuclear Regulatory Commission (NRC) Licensing a Mixed Oxide Fuel Fabrication Facility," Issue 8. MOX Services has submitted under separate cover a request for an exemption from decommissioning requirements.

As described above, DOE will assume responsibility for decommissioning. Therefore, the method of financial assurance is in accordance with 10 CFR §70.25(f)(5) and 10 Code of Federal Regulations (CFR) §40.36(e)(5).

### 16.1.2 Financial Protection

SECY 99-177, Issue 7, addresses the issue of Price-Anderson liability coverage. DOE has agreed to indemnify MOX Services in accordance with Section 170(d) of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2210(d), and Department of Energy Acquisition Regulation (DEAR) 952.250-70 (48 CFR §952.250-70). Because the DOE indemnity will apply to the MFFF, there is no need for the application of the NRC financial protection requirements. MOX Services has submitted under separate cover a request for an exemption pursuant to 10 CFR §140.8 from the requirements of 10 CFR Part 140, including the requirement of 10 CFR §140.13a to provide $200 million in financial protection.

### 16.1.3 Labeling

MOX Services has submitted under separate cover a request for an exemption from the labeling requirements of 10 CFR §20.1904(a) because of the nature of the MFFF operation. The intent of these sections is met by posting areas that house or temporarily store radioactive material with signs incorporating the radiation symbol and with the warning: "CAUTION RADIOACTIVE MATERIAL; ANY CONTAINER IN THIS AREA MAY CONTAIN RADIOACTIVE MATERIAL". This exemption is based on practicality and industry experience applied effectively at other licensed SNM handling facilities.

## 16.2 AUTHORIZATIONS

### 16.2.1 Prior Commitments

The License Application reflects the current commitments by MOX Services to meet the regulatory requirements for a Part 70 license. Previous commitments are included in the License Application, as appropriate.

### 16.2.2 Frequencies

When measurement, surveillance, and/or other frequencies are specified in this License Application or other license commitments, the following shall apply:

- DAILY means once each 30-hour, or less, period.
- WEEKLY means once each eight, or less, consecutive days.
- MONTHLY means 12 per year, with each covering a span of 40-days or less.
- SEMIMONTHLY means twice a month, each covering a span of 20-days or less.
- BIMONTHLY means every 2 months, with each covering a span of 70-days or less.
- QUARTERLY means four per year, with each covering a span of 115-days or less.
- SEMIANNUAL (or BIANNUAL) means two per year, with each covering a span of 225-days or less.
- ANNUAL means once per year, not to exceed a span of 15-months.
- BIENNIAL means once every two years, with each covering a span of 30-months or less.
- TRIENNIAL means once every three years, with each covering a span of 45-months or less.

### 16.2.3 Changes to the License Application

MOX Services maintains the License Application (LA) so that it is accurate and up-to-date by means of the MFFF configuration management processes, which include written procedures. MOX Services evaluates changes to the facility and its processes for impact on the LA, and updates the LA, as needed, in order to ensure its continued accuracy. Responsibility for maintaining and updating the LA belongs to the ES&H Licensing Manager, as described in Chapter 4.

A change to the facility or its processes is evaluated, as described above, before the change is implemented. The evaluation of the change determines, before the change is implemented, whether an application for an amendment to the LA is required to be submitted in accordance with 10 CFR §70.34.

- The sites, structures, processes, systems, equipment, components, computer programs, and activities of personnel are described in the License Application. MOX Services may