CB&I | AREVA
MOX SERVICES, LLC

Mr. David Tiktinsky
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

DCS-NRC-000405
21 Dec 2015

Subject: Docket No. 070-03098
CB&I AREVA MOX Services
10CFR70.23(a)(8) Completion Process

As required by 10CFR70.23(a)(8) and further described in Section 1.2.1.3.1 of Final Safety Evaluation Report for the License Application To Possess and Use Radioactive Material at the Mixed Oxide Fuel Fabrication Facility in Aiken, SC , the NRC must verify MOX Services' construction of the Principal Structures, Systems, and Components (PSSCs) prior to issuance of a license to possess and use special nuclear material (i.e., operating license). While the NRC is required to make the necessary regulatory finding, MOX Services endeavors to provide the support necessary that would result in the timely and efficient NRC verification of the completion of construction of PSSCs.

In support of the NRC's PSSC verification activities, MOX Services is

1. Describing the process MOX Services will utilize to provide timely support of NRC PSSC verification (Enclosure 1). This process will be documented in an update to the License Application.
2. Submitting a crosswalk that correlates Construction Authorization Request PSSCs and the Integrated Safety Analysis Summary Items Relied on For Safety (IROFS) (Enclosure 2)
3. Committing to submit PSSC completion letters to the NRC to provide timely notification. PSSC completion letters will be based on MOX Services completion packages that will provide the basis for completion.

In addition, MOX Services is requesting that the NRC provide notification to MOX Services of PSSC completions that are accepted by the NRC.

If you have any questions, please contact me (803-442-6485) or Dealis Gwyn, Licensing & Nuclear Safety Manager, (803-819-2780).

Sincerely,

David Del Vecchio
President and Project Manager

Enclosure (1) – MOX Services Support of NRC PSSC Verification
(2) – CAR PSSCs to ISAS Summary Crosswalk

cc w/o enclosures:

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ENCLOSURE 1

MOX Services Support of NRC PSSC Verification

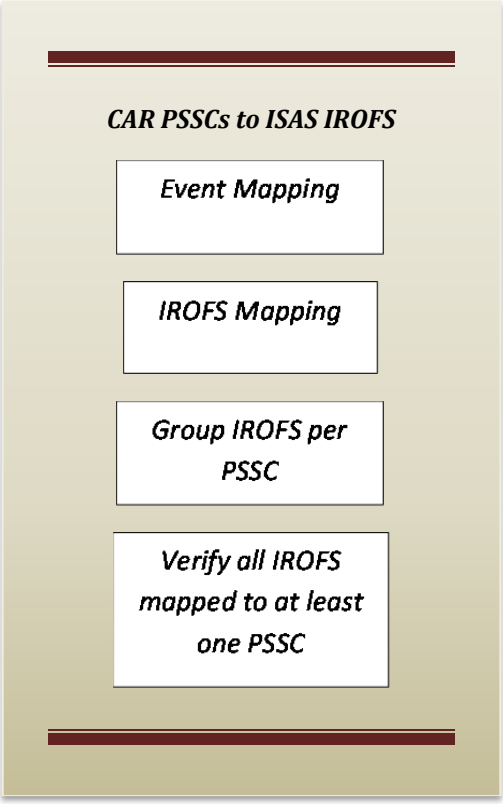
INTRODUCTION

> **§ 70.23 Requirements for the approval of applications.**
> *(a) (8) An application for a license will be approved if the Commission determines that, where the proposed activity is the operation of a plutonium processing and fuel fabrication plant, construction of the principal structures, systems, and components approved pursuant to paragraph (b) of this section has been completed in accordance with the application;*

MOX Services has been interacting with the Nuclear Regulatory Commission (NRC) staff over the years in our support of the NRC verification of Principal Structures, Systems, and Components (PSSCs) as required in 10CFR70.23(a)(8). The NRC provides additional discussion of this effort in Section 1.2.1.3.1 of Final Safety Evaluation Report for the License Application to Possess and Use Radioactive Material at the Mixed Oxide Fuel Fabrication Facility in Aiken, SC. While the NRC is required to make the necessary regulatory finding, MOX Services endeavors to provide the support necessary that would result in the timely and efficient NRC verification of the completion of construction of PSSCs (which is one of the prerequisites for MOX Services to initiate hot startup testing). To date, MOX Services has linked selected construction activities to PSSCs in the project schedule and provides updated PSSC schedules to the NRC on a weekly basis. As MOX Services prepares for PSSC completions, it has been developing a PSSC completion process. During the development of this process, it has been recognized that there are some actions that could benefit the NRC in their verification effort. These actions include 1) documentation of the relationship between the Integrated Safety Analysis Summary (ISAS) Items Relied on for Safety (IROFS) and the Construction Authorization Request (CAR) PSSCs, 2) providing the NRC with notification of PSSC completion consistent with project completion, and 3) use of PSSC subpackages notifications to further align NRC verification with actual MOX Services' construction completion. Further discussion of these topics is provided below.

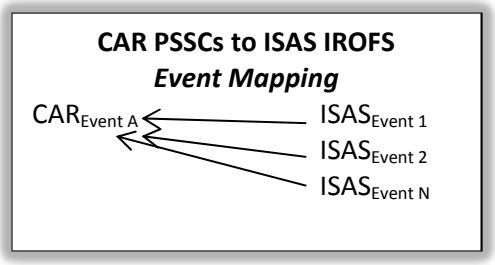
CAR PSSCs to ISAS IROFS

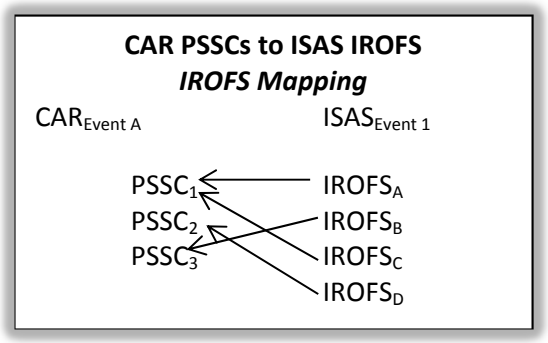
10CFR70.23(a)(8) requires the NRC to verify construction of principal structures, systems, and components (PSSCs) prior to issuance of a license. PSSCs are effectively Items Relied on for Safety (IROFS) that were identified in the Construction Authorization Request (CAR) as part of the safety assessment of the design basis. PSSCs are items identified in the CAR that are required to comply with 10CFR70.61 performance requirements. These PSSCs were identified at a level sufficient to support the NRC review for compliance with 10CFR70.22 to support issuance of a Construction Authorization (CA). CAR Table 5.6-1, *MFFF Principal SSCs* summarized the PSSCs that supported the NRC issuance of CA-MOX-001 in March 2005.



In order to receive a license to possess and use Special Nuclear Material (SNM), an Integrated Safety Analysis (ISA) is required by 10CFR70.62. MOX Services provided a summary of this ISA to the NRC in 2006 in its Integrated Safety Analysis Summary (ISAS), which was submitted along with the License Application (LA). The NRC completed its review of the LA, ISAS, and other licensing submittals in 2010 – as documented with the issuance of the Final Safety Evaluation Report (FSER) in December 2010. As noted in the FSER, the NRC staff will not issue a license to possess and use SNM before a determination that construction of the PSSCs is in accordance with the application (i.e., LA).

Since the ISA is a more detailed evaluation, events were evaluated and the associated IROFS were identified with more specificity than in the CAR phase. With the more detailed evaluation, some events evolved into multiple events, some were determined to be not credible, while others were combined to facilitate evaluation. This usually resulted in a more detailed identification of the IROFS for the events – which significantly increased the number of IROFS described in the ISAS from the 53 PSSCs identified in the CAR. Since the 10CFR70.23(a)(8) specifically requires NRC verification of construction of PSSCs (and not IROFS), a PSSC to ISAS IROFS correlation was developed as a tool to facilitate the NRC finding that must be made regarding PSSC construction prior to issuance of a license. The results of the correlation (or mapping) are provided in Enclosure 2,





CAR PSSCs to ISAS IROFS Summary Crosswalk. The basis for Enclosure 2 was prepared, reviewed, and approved in accordance with project procedure PP8-4, *Development and Maintenance of Compliance Crosswalks* in two phases. Initially, ISAS events were mapped to the events in the CAR that resulted in the PSSCs identified in CAR Table 5.6-1. Subsequently, for each event, ISAS IROFS (also referred to as control groups) were mapped to the PSSCs associated with the corresponding CAR event. CAR PSSCs to ISAS IROFS Summary is a compilation of the results of all the ISAS IROFS to CAR PSSCs for each event.

As discussed in FSER Section 1.2.1.3.1, the NRC must complete verification of construction of the 53 PSSCs; however, the NRC is planning on using a sample-based inspection program of the IROFS that relate to a PSSC. As such, an additional verification was performed to validate that the IROFS identified in the ISAS were mapped to at least one PSSC. This validation ensures that, upon verification of construction of the 53 PSSCs, all the IROFS identified in the ISAS were included in the inspection pool for at least one PSSC.

CAR PSSCs to ISAS IROFS Summary Crosswalk is being provided to the NRC in order to efficiently schedule and support NRC PSSC inspections and to facilitate common terminology in documentation related to PSSC completion. *CAR PSSCs to ISAS IROFS Summary Crosswalk* is consistent with the 2015 ISAS and will be maintained consistent with future updates to the ISAS. Updates to the *CAR PSSCs to ISAS IROFS Summary Crosswalk* will be available for inspection.

PSSC Completion Letters

As discussed above, 53 PSSCs (some with multiple safety functions) were identified in the CAR. As can be seen in Enclosure 2, there are examples where multiple ISAS IROFS are mapped to a single PSSC or to multiple PSSCs. The resultant planning and scheduling of the necessary and sufficient suite of PSSC related inspections can be challenging. While 10CFR70.23(a)(8) only requires a finding related to construction of PSSCs, MOX Services believes it would be an efficient use of MOX Services' and NRC resources to verify completion on a PSSC basis. Since construction of PSSCs is staggered, it is appropriate for the NRC to verify PSSC completion consistent with the staggered schedules associated with PSSC construction. In order to support NRC efforts, MOX Services will notify the NRC upon completion of each PSSC. This notification will include MOX Services' basis for our assertion that the PSSC construction is complete as well as references to supporting completion basis information. In order to support timely resolution of any NRC questions related to completeness of an individual PSSC, MOX Services requests that the NRC provide acceptance of the PSSC completion notification upon satisfactory resolution of any questions or concerns. Once MOX Services has completed

construction of all 53 PSSCs, MOX Services will provide the NRC a final notification that construction of all PSSCs has been completed.

PSSC Completion Packages

In support of the PSSC completion letters discussed above, MOX Services will develop PSSC completion packages. In general, MOX Services will rely on existing or planned processes to support PSSC completion. As a result, PSSC completion packages are expected to be primarily a road map to the supporting documentation that the PSSC has been constructed in accordance with the application. PSSC completion packages are developed by MOX Services and will be available onsite.

PSSC Completion Maintenance

As there is potential that project changes could impact PSSC completion, MOX Services will implement a process to ensure timely NRC notification of any impacted PSSC completion. The process will include appropriate criteria to evaluate project modifications related to PSSC components to determine if a revised PSSC completion package and/or NRC notification is required.

PSSC Subpackages

In developing PSSC completion schedules for the associated ISAS IROFS and IROFS components, MOX Services has recognized the potential benefit of dividing some PSSCs into PSSC subpackages. Some ISAS IROFS with a large number of associated IROFS components (e.g., Process Vessels and Pipes) are mapped to multiple PSSCs. For example, a completion notification for Process Vessels and Pipes (which includes hundreds of IROFS components) could be submitted and identified as a subpackage for PSSC-003, PSSC-010, PSSC-023, PSSC-041, and PSSC-045. Another potential advantage is providing the NRC completion notification closer to the actual construction completion date. A PSSC may include multiple components or sometimes systems whose construction completion date may vary by years. By providing the NRC with early notification via PSSC subpackages, NRC verifications of completion can be performed closer to the actual construction completion date. In addition, it provides the NRC with information that could be used to optimize its inspection resources. Multiple PSSC subpackages completion notifications may be provided in a single completion letter. The key factors in grouping subpackages are 1) ISAS IROFS with large numbers of IROFS components associated with multiple PSSCs and 2) construction completion schedule insights. The "all complete" PSSC notification, will affirm (with references) that all the subpackages for each PSSC are complete. The use of PSSC subpackages is consistent with 10CFR70.23(a)(8) while providing the NRC more "real time" completion notifications.

License Application Changes

MOX Services will document the PSSC completion process in a new chapter to the License Application. In this chapter, MOX Services will include a description of the PSSC completion process – including PSSC completion packages, PSSC completion letters, and PSSC maintenance (configuration control). In addition, MOX Services will provide completion definitions for each of the ISAS IROFS (control groups) associated with each PSSC. These definitions will be included to facilitate a common understanding of MOX Services' plans for completion notification. These definitions will allow early notifications of some PSSCs when the PSSC is substantially complete (e.g., MFFF structure is constructed with the exception of temporary construction openings). MOX Services' processes track to completion any remaining open items. The process and the completion of the open items will be available for NRC inspection to support NRC 10CFR70.23(a)(8) verification activities.

Summary

MOX Services is committed to supporting efficient and effective NRC verification of PSSC construction. In addition to committing to provide PSSC completion notifications, MOX Services is also planning to document the PSSC completion process in the License Application, define completion for each PSSC ISAS IROFS (control groups), apply configuration control to PSSC completion process, and further subdivide PSSCs in subpackages to allow earlier NRC notification of completion. The CAR PSSCs to ISAS IROFS crosswalk (Enclosure 2) will be maintained under configuration control. These actions are intended to facilitate NRC verification of compliance with regulatory requirements (i.e., verification of construction of PSSCs) in a manner that allows efficient use of MOX Services' and NRC resources.