



**Department of Energy
National Nuclear Security Administration
Savannah River
Acquisition and Project Management Office
P.O. Box A
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November 30, 2021

**MEMORANDUM FOR ROBERT RAINES
ASSOCIATE ADMINISTRATOR
FOR ACQUISITION AND PROJECT MANAGEMENT**

FROM: SCOTT CANNON *Scott Cannon 11/30/2021*
DIRECTOR AND FEDERAL PROJECT DIRECTOR
SAVANNAH RIVER ACQUISITION AND PROJECT
MANAGEMENT OFFICE

SUBJECT: Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) Project Closure
Report

REFERENCES:

- 1) NNSA-2021-004012, Action to Approve the Physical Completion Checklist for the Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) Project at Savannah River Site, dated August 30, 2021
- 2) Defense Nuclear Nonproliferation Construction Fiscal Year 2022 Work Authorization (WA), DN 234 22 410003-00

In accordance with the references, attached is the Closure Report for the MOX MFFF. The milestone for the Closure Report in the WA is December 31, 2021. The Closure Report was completed November 8, 2021, well ahead of schedule.

The Closure Report includes project closure details provided by the M&O contractor, Savannah River Nuclear Solutions. In addition, the report includes an Executive Summary developed by the National Nuclear Security Administration Savannah River Acquisition and Project Management Office (APMO) to provide a project closeout overview as well as describe activities managed by APMO.

NNSA-MOXT-22-0002

Attachment:
MOX MFFF Project Closure Report, NNSA-MOXT-22-0001, 8-11-21

NNSA-MOXT-22-0002

cc:

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**National Nuclear Security Administration (NNSA)
Savannah River
Acquisition and Project Management Office (SRS APMO)**

**Mixed Oxide (MOX)
Fuel Fabrication Facility (MFF) Project Closure Report**

NNSA-MOXT-22-0001

**Cindy Brizes, FPD, MOXT
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Date: 11/8/2021

National Nuclear Security Administration (NNSA) MOX Project Closure Executive Summary Report

On October 10, 2018, the Department of Energy (DOE) NNSA Procuring Contracting Officer of the Office of Acquisition and Project Management issued Chicago Bridge & Iron (CB&I) AREVA MOX Services, LLC (MS) a notice of termination (for convenience) for construction of the MOX MFFF. The notice began the process of winding down construction operations and preserving existing structures associated with the MOX facilities. The notice also included a requirement for MS to prepare and submit a termination plan, government property inventory list, subcontract closeout schedules, and workforce retention and reduction plans. MS was also directed to provide a detailed list of technology covered by the Technology Transfer Agreement (TTFA) and supporting basis for other purchased project technology, information, structures, systems, and components the contractor would be interested in purchasing. NNSA committed to working with the MS leadership team to minimize adverse impacts to displaced workers.

The total MOX Termination and Transition work scope included MOX Services termination, demobilization, anticipated settlement costs, SRNS transition and termination, NNSA support, legal, and Department of Justice costs. Various issues such as project magnitude, complexity, unknown risks, closure of an incomplete DOE Order 413.3B line-item construction project, and little to no guidance on project cancellation requirements, led NNSA to anticipate that it could cost the taxpayers up to \$1B and take 3 years to terminate the MOX project.

In November 2019, the NNSA Federal Project Director (FPD) reported an Estimate at Completion (EAC) (see table 1 below) of \$675 million in its Monthly Project Report (MPR) to DOE/Headquarters (HQ) for MOX Termination.

Table 1

MOX Termination Estimate at Complete	
MOX Services Term Costs Oct18 to Apr19	\$75M
Anticipated Settlement Costs	\$200M
SRNS Term Costs Oct18 to Apr19	\$10M
SRNS Estimated Term Costs Apr19 to FY21	\$194M
SRNS Term Fee	\$15M
NNSA PMO Costs FY19-FY21	\$80M
Contingency / Potential FY22 Costs	\$101M
Total	\$675M

The NNSA SRS APMO issued Savannah River Nuclear Solutions, LLC (SRNS) Work Authorization No. DN 234 19 410003-00 for the MOX Project Termination and Transition Planning support under the existing SRNS Management and Operating (M&O) contract. SRNS submitted their Termination and Transition Plan December 21, 2018 outlining their strategy for transition, acceptance, and turnover to SRNS management of MOX facilities, equipment, materials, documents and records, systems, and other

transitioned Government property. NNSA requested that MS work cooperatively with SRNS to transition work scope and associated personnel in a timely and cost-efficient manner.

DOE had no process in place for termination of a specialized and sizable project, therefore, programmatic decisions needed to be made regarding facilities, equipment, materials, and associated records. At that time, it was estimated to take approximately three years to complete disposition of the MOX Project property. The SRS APMO worked aggressively to projectize the remaining work scope and developed a plan to delineate the NNSA process for internal screening and disposition of personal property. The personal property process established the Property Screening Working Group (PSWG), which included NA-10, NA-20, NA-50, NA-70, the Savannah River Field Office and MOX APMO members. The property was subdivided into 4 primary categories:

1. NA-20 identifies a use
2. NA-10 identifies a use
3. NA-50/40/70/80 identifies a use that supports the other program offices, or
4. Property is dispositioned through the normal government process.

The SRS APMO developed a list to prioritize and bundle property into packages for recommendation to the PSWG. The criterion was based on, but not limited to critical path need to support NNSA missions, expiration dates, storage and maintenance costs, spoilage and pilferage list, shelf life, storage space utilized/footprint reduction, temporary structures, potential for scrap sales, partially installed property, and shipping costs. A High-Risk Personal Property (HRPP) review was performed on all government property. All high-risk property disposition or destruction required NNSA OPMO approval. In October of 2019, SRNS assumed the property disposition recommendation package development process.

Property that was not designated for use by the PSWG was then advertised to other NNSA entities by the OPMO. Other SRS contractors could claim property not identified for use by NNSA entities. Property not claimed through those screenings were advertised in the Energy Asset Disposal System (EADS) and dispositioned through the EADS/GSAXcess process. If still no interest, property could be transferred to the Savannah River Site Community Reuse Organization (SRSCRO) in accordance with DOE G 580.1-1A to be utilized throughout the local Central Savannah River Site Area (CSRA).

The NNSA/SRNS MOX Project Termination (MOXT) Materials Disposition team balanced the PSWG process in parallel with managing the preparation, shipping, and sale of scrap of unusable bulk/metal items, planning for auctions to expedite disposition of property not claimed by the DOE or other government entities, coordinating the sale of TTFA equipment, and work scope designated to go to SRSCRO. NNSA and SRNS maintained a dynamic and collaborative teaming approach throughout the entire process, overcoming major obstacles, while remaining focused on project milestones.

Cooperation between NNSA and ORANO was also critical to success. A substantial amount of the engineered equipment was covered under the Technology Transfer Fee Agreement and was proprietary to ORANO. Through negotiations with ORANO, the proprietary property was dispositioned by several paths: destruction; sale to ORANO; transfer to the UK; and transfer to NNSA to support critical projects and training.

Some of the major obstacles included following nuclear operations procedures for greenfield activities. NNSA worked with SRNS to ensure that procedures for activities like radiation monitoring and equipment sanitization were applied in a graded approach.

In just 17 months, the MOXT team dispositioned over 10 million units (see details in table 2 below) of property with an acquisition value of over \$900 million and cleared over 4 million square feet (see project work off curve in Table 3 below) at the Savannah River Site (SRS). 11 facilities, 3 warehouses, 24 laydown yards and 18 material staging areas were made available to DOE/NNSA projects at the SRS. In addition, over 30 temporary facilities were demolished. Through the use of timely contracts and working in the best interest of the government, the team was able to get over \$5 million through auctions and scrap sales to support the effort.

Table 2

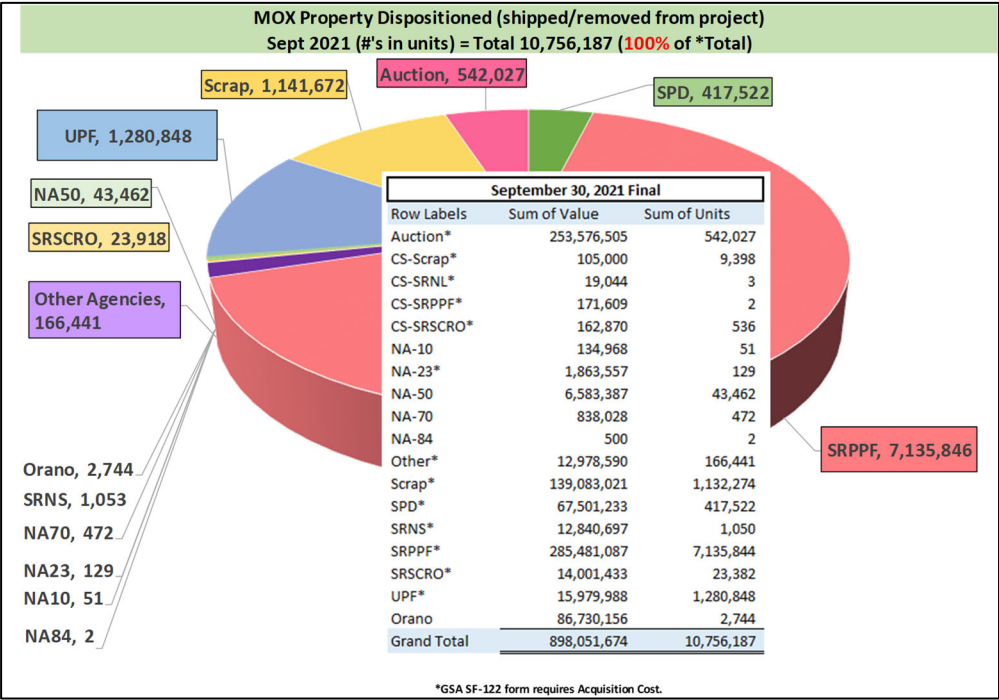
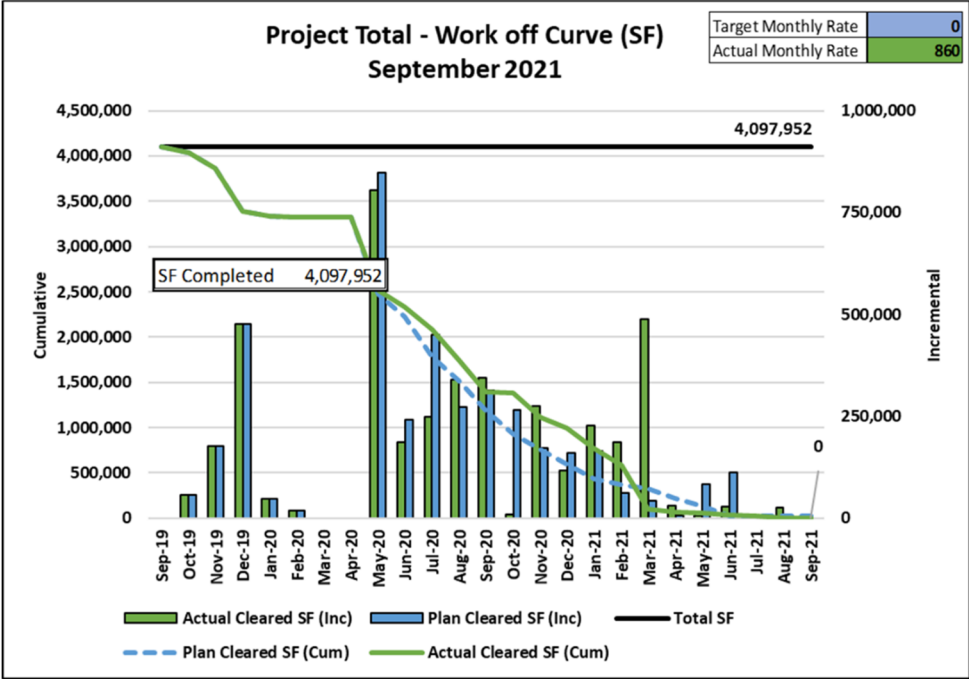


Table 3



MOXT achieved 100% physical completion milestone on schedule on September 30, 2021. For a canceled project, CD-4 requirements are not applicable. The SRS APMO team developed a tailored approach, pre-approved by HQ, utilizing a Physical Completion Checklist for verification. The team compiled all evidence and verified that, with the transfer of all buildings and materials as well as limited demolition, project physical completion was achieved by September 30, 2021.

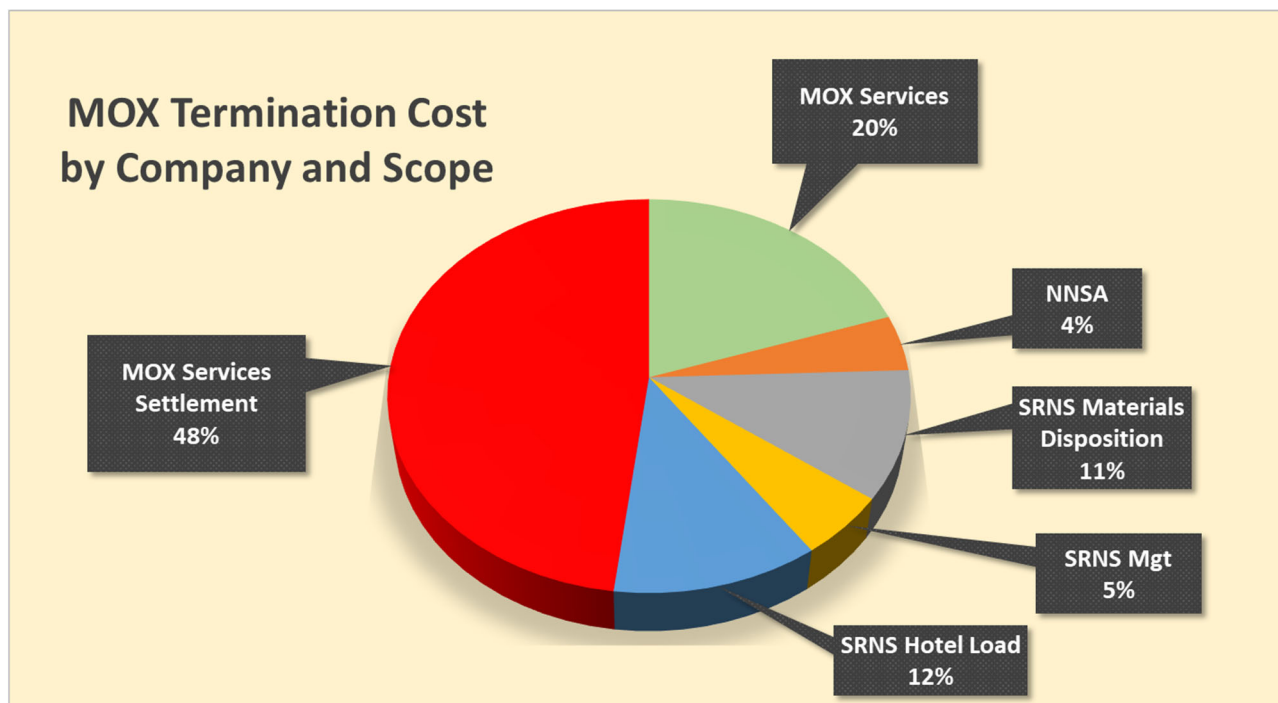
This major milestone was complete on schedule with a \$36 million favorable cost variance/underrun through the August 2021 reporting period. This was accomplished with cost to date at only 57% of the November 2019 EAC of \$675 million (See Table 4 below for details). Termination costs were minimized through labor/financial reviews conducted during the termination and closure process and by challenging unnecessary SRNS M&O procedural requirements that did not apply to termination of a green-field construction project.

Table 4

MOX Termination Costs						
<i>Data Source: Actual Cost data through August 2021</i>						
<i>SRNS (Cobra), NNSA Other (NNSA Program Office)</i>						
Scope	Work Performed BCWP	Actual Cost ACWP	Est. At Complete EAC	Cost Variance CV	Sept 2019 EAC	% spent of original EAC
Management and Integration Support to NNSA	709,861	1,568,591	1,568,591	(858,730)		
Development		1,404,955	1,404,955	(1,404,955)		
Building Evaluation (CA)	4,879,742	4,823,269	4,823,269	56,473		
Material Evaluations (CA)	3,624,629	1,042,971	1,042,971	2,581,658		
Information Evaluation (CA)	1,966,046	745,507	745,507	1,220,539		
Surveillance and Maintenance	35,924,869	28,206,960	28,293,127	7,717,908		
MFFF Technical Baseline	11,937,265	11,463,458	11,463,458	473,807		
D&R/D&D		17,069	17,069	(17,069)		
Materials Disposition	62,933,993	44,868,737	44,919,340	18,065,257		
Records Management	1,325,913	34,999	37,191	1,290,915		
IT	14,383,233	10,159,342	10,510,539	4,223,891		
Closure	839,794	165,111	176,971	674,683		
Project Support	4,949,584	7,007,161	7,132,610	(2,057,576)		
Material Disposition Credits	(4,834,299)	(4,834,299)	(4,834,299)	-		
SRNS Subtotal	138,640,630	106,673,830	107,301,298	31,966,800	219,000,000	49%
MOX Services Support	1,808,457	1,808,457	1,808,457	-		
MOX Services Term Costs Oct18-Apr19	75,000,000	75,000,000	75,000,000	-		
MS Closeout Costs	186,000,000	186,000,000	200,000,000	-		
MOX Services Subtotal	262,808,457	262,808,457	276,808,457	-	275,000,000	96%
NNSA / Other Costs	22,000,000	17,720,562	22,000,000	4,279,438	181,000,000	10%
Grand Total	423,449,087	387,202,849	406,109,755	36,246,238	675,000,000	57%

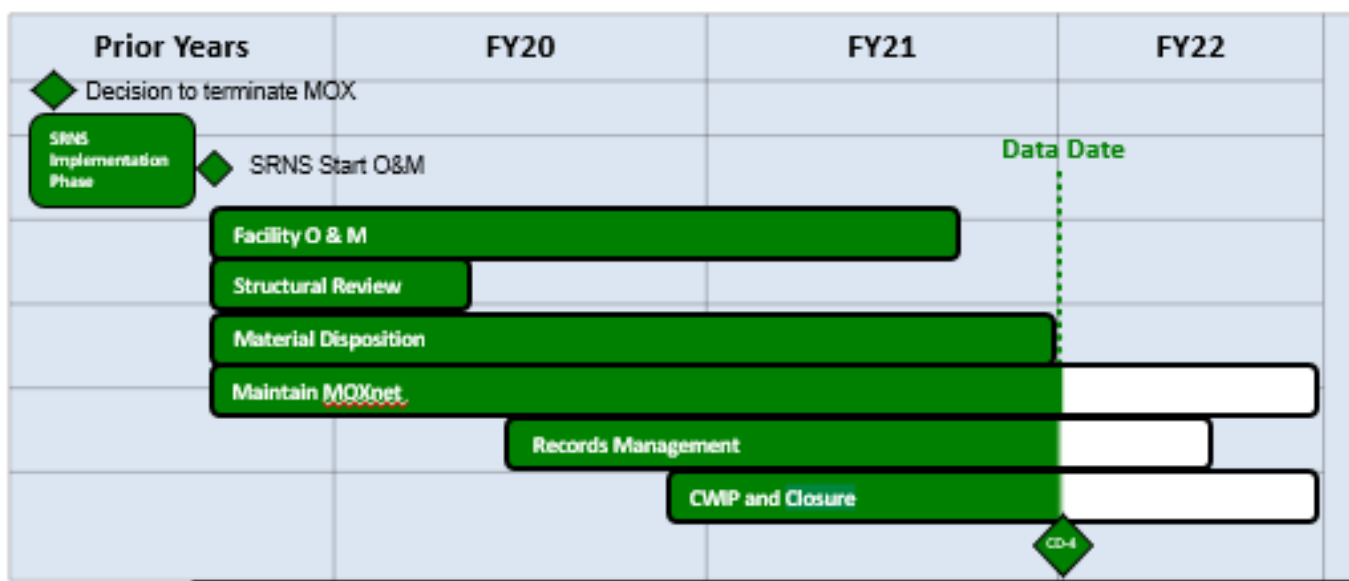
The composition of MOX termination costs is identified in Table 5 below. MS costs were 78% of the total transition and termination cost, with MS settlement costs at nearly half of the total project cost. The government paid 12% in SRNS hotel load and 11% for materials disposition. The NNSA teaming and collaboration effort with the MOXT team is evident in the comparable 4% of total cost (compared to the 5% for SRNS management).

Table 5



The financial data and tables in this report do not reflect final cost data. There is residual work scope following the physical completion. These are items that have been deferred due to unresolved court ordered litigation holds. Work scope continuing in FY22 includes records management, information technology (IT), reduced project support and final financial closeout as identified in Table 6 below:

Table 6



The successful transition and termination of the MFFF Project is predominantly attributed to the following key facets of the project:

- Utilization of the appropriate level of project management principles in managing the work scope and a tailored approach for project closeout submittals.
- Requiring SRNS to develop and manage to an executable schedule.
- Utilizing cost benefit analysis for “first time” materials disposition strategies.
- “Thinking outside the box” vs. following nonapplicable M&O procedures.
- Establishing a teaming and collaborative environment through the Property Screening Working Group with the DOE complex, DOE OPMO, NNSA and SRNS throughout the materials disposition process.

On September 30, 2021, evidence of completion details and photographs were submitted to DOE/HQ via NNSA-APM-21-0013. Those details will be maintained as backup support and evidence of closure. Attached for additional MOXT closure reference is the MOX MFFF Project Closure Report (SRNS-RP-2021-04894).

A complete Lessons Learned document is in development and will be provided under separate cover.

Attachment:

SRNS-RP-2021-04894, Revision A, Mixed Oxide Fuel
Fabrication Facility Project Closure Report, September 23, 2021