



U.S. Department of Energy
Office of Inspector General
Office of Audits and Inspections

AUDIT REPORT

Cost and Schedule of the Mixed Oxide Fuel
Fabrication Facility at the Savannah River Site

DOE/IG-0911

May 2014



Department of Energy
Washington, DC 20585

May 22, 2014

MEMORANDUM FOR THE SECRETARY

FROM: 
Gregory H. Friedman
Inspector General

SUBJECT: INFORMATION: Audit Report on "Cost and Schedule of the Mixed Oxide Fuel Fabrication Facility at the Savannah River Site"

BACKGROUND

In September 2000, the United States and Russia signed a Plutonium Management and Disposition Agreement for the disposal of surplus weapon-grade plutonium. This agreement called for each country to dispose of at least 34 metric tons of plutonium by converting it into mixed oxide (MOX) fuel¹ that can be used in commercial nuclear power reactors. Once irradiated, the plutonium in MOX fuel is no longer readily usable in nuclear weapons. To carry out this program, the Department of Energy decided to construct the Mixed Oxide Fuel Fabrication Facility (MOX Facility) at the Savannah River Site near Aiken, South Carolina. The Department based its MOX Facility design on processes and facilities already operating in France, but modified the designs to meet U.S. requirements and regulations.

Shaw AREVA MOX Services, LLC (MOX Services), the current MOX Facility contractor, has been working on the design of the facility since 1999. The Department formally approved a project baseline in April 2007, and started construction on the MOX Facility in August 2007. At that time, the MOX Facility project had an estimated total project cost of \$4.8 billion and a scheduled completion date of September 2016. Through October 2013, about \$4 billion had been spent on the MOX Facility project and latest available project estimates show that the project was about 60 percent complete. However, design work is still underway in a number of areas including software, instrumentation and control systems, as well as fire suppression and various mechanical systems.

The objective of this audit was to determine if the Department's National Nuclear Security Administration (NNSA) had managed the design and construction of the MOX Facility in an efficient and effective manner. Since initiation of the audit, concerns with MOX Facility progress have received wide-spread public attention and the Department has announced plans to reassess project alternatives.

RESULTS OF AUDIT

NNSA and MOX Services have been largely unsuccessful in controlling the cost and schedule for the MOX Facility. A March 2012 construction project review conducted by NNSA

¹ Mixed oxide fuel is produced by mixing plutonium with depleted uranium.

concluded that the MOX Facility had a very low probability of being completed according to the approved baseline. NNSA directed MOX Services to develop a baseline change proposal with updated project completion, cost and schedule projections. Under the revised baseline, it was estimated that total project costs would grow to about \$7.7 billion and that completion would slip to November 2019.² This represents cost growth of about \$2.9 billion and project schedule slippage of over 3 years.

The anticipated cost and time required to complete the MOX Facility were significantly underestimated due to a number of factors. This included, most prominently, the Department's 2007 approval of a project baseline that was developed from an immature design, understating the level of effort to install various construction commodity items, and high personnel turnover rates. Prior to approval, the Department's own independent review of the project baseline found that the design review of the MOX Facility was incomplete. In fact, the review was performed on only the construction package for the MOX Facility structure and did not include all the integral systems, structures and components. Furthermore, the independent review found that the design reviews conducted by NNSA and MOX Services did not meet the intent of Department Manual 413.3-1, *Project Management for the Acquisition of Capital Assets*, for the approval to start construction. Specifically, project construction is to begin when design and engineering activities are essentially complete and final design review and environmental and safety criteria are met. The timing of initiating construction of the MOX Facility violated this basic principle.

We noted that additional work scope added at NNSA's direction caused some of the cost growth in the baseline change proposal developed by MOX Services. Specifically, NNSA is considering adding a plutonium oxidation capability for providing feed material to the MOX Facility, because it cancelled the construction of a \$4 billion standalone facility. MOX Services estimated that adding a 1.5 metric ton-per-year plutonium metal oxidation capability to the MOX Facility would increase the total project cost by about \$262 million, bringing total project cost to about \$7.7 billion. That addition is not expected to be completed until June 2023. However, MOX Services expressed its belief that adding a plutonium metal oxidation capability would have no adverse impact on the construction schedule.

Given the combination of project cost increases, schedule delays and concerns regarding the current budget environment, the Department initiated an assessment of alternative plutonium disposition strategies, while at the same time it requested reduced funding for the project. The Department's Fiscal Year (FY) 2014 budget request reduced funding for the MOX Facility construction project from \$478 million to \$360 million. The FY 2015 budget request proposes placing the project into cold standby status. During recent updates on the project, NNSA informed us that efforts to validate the most recent baseline change proposal have been placed on hold pending the outcome of the disposition alternatives assessment. This assessment and the associated independent review are expected to be completed in the next 12 to 18 months. Also, NNSA plans to develop another baseline change proposal based on the results of the assessment. In the interim, MOX Services developed a project execution plan for focusing on critical path activities, reducing procurement expenditures, and retaining key personnel pending the outcome of the Department's assessment and a decision on how to proceed with the plutonium disposition program.

² According to NNSA, the revised baseline is no longer valid because it assumed more than \$600 million per year in funding, which is no longer supported by the Department's budget for this project.

According to NNSA management, they have taken a series of steps to improve project management performance as a whole. For example, NNSA established a new acquisition and project management organization to oversee projects. Also, NNSA told us that it had strengthened change control procedures to prevent scope creep on projects and adopted a peer review process to provide critical independent assessments. Finally, NNSA stated that senior management is now engaged early when project performance issues are identified and is holding contractors accountable by reducing fees when cost and schedule performance deviates from contract requirements.

Despite project expenditures of about \$4 billion and a proposal to place the MOX Facility construction project into cold standby status in FY 2015, we remain concerned with the project management issues observed during the audit. We are hopeful that the audit results can help to inform the current project reassessment effort. Furthermore, the audit results and related studies by other entities identify lessons learned applicable to the future direction of the MOX Facility and other large Department construction projects.

MANAGEMENT REACTION

Management concurred with the report's recommendations and acknowledged that the MOX Facility design was not sufficiently mature when the project baseline was approved. NNSA is currently working to implement the policies and processes needed to correct legacy problems and deliver projects on time and on budget. A decision on how to proceed with the MOX Facility is expected to be made in the next 12 to 18 months.

Management's comments are included in Appendix 3.

Attachment

cc: Deputy Secretary
Under Secretary for Nuclear Security
Chief of Staff

AUDIT REPORT ON COST AND SCHEDULE OF THE MIXED OXIDE FUEL FABRICATION FACILITY AT THE SAVANNAH RIVER SITE

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COST AND SCHEDULE OF THE MIXED OXIDE FUEL FABRICATION FACILITY AT THE SAVANNAH RIVER SITE

DETAILS OF FINDING

Overall, the National Nuclear Security Administration (NNSA) and Shaw AREVA MOX Services, LLC (MOX Services) have been largely unsuccessful in controlling the cost and schedule for the Mixed Oxide Fuel Fabrication Facility (MOX Facility). In March 2012, NNSA found that MOX Services was unlikely to complete construction of the MOX Facility according to the approved project baseline. NNSA concluded that total project costs were underestimated by up to \$900 million. NNSA directed MOX Services to develop a baseline change proposal with updated cost and schedule projections. MOX Services estimated that completing the MOX Facility would cost about \$7.7 billion and take until November 2019, representing a cost growth of \$2.9 billion and a schedule slippage of over 3 years.

Projected Level of Effort and Material Quantities

The MOX Facility project's cost growth and schedule delays were due in large part to significantly underestimated levels of effort required to install various construction commodity items. According to the baseline change proposal developed by MOX Services, the estimated amount of effort needed to install piping was increased by 26 percent, the estimated amount of effort needed to install valves was increased by 30 percent, duct work installation efforts were increased by 300 percent, and cable installation rates were increased by up to 151 percent.

As the project evolved and designs became more definitive, the estimated quantities of construction commodities also changed significantly. For example, the number of pipe supports was reduced by 40 percent, but the amount of piping to be installed was increased by nearly 33 percent or about 102,000 additional linear feet of piping. The amount of electrical cable needed was also increased by 15 percent, requiring nearly 1 million linear feet of additional cable.

MOX Services also stated that assumptions regarding the availability of qualified equipment fabricators, suppliers and subcontractors capable of working under a nuclear quality assurance environment were incorrect. For example, personnel with nuclear engineering design and manufacturing experience have been in high demand, but in short supply. This in turn led to an employee turnover rate on the project of almost 20 percent in Fiscal Year (FY) 2012. Furthermore, the cost of engineered equipment had been underestimated, with the actual cost of items such as process tanks, glove boxes and furnaces averaging about 160 percent of original estimates.

Plutonium Metal Oxidation Capability

In June 2012, NNSA directed MOX Services to develop a baseline change proposal for adding a 1.5 metric ton-per-year plutonium metal oxidation capability to the MOX Facility. Plutonium oxide is a feed material for the MOX Facility and was originally to have been provided by the Pit Disassembly & Conversion Facility (Pit Conversion Facility), which was to be constructed at the Savannah River Site. However, the Department of Energy (Department) cancelled plans for the Pit Conversion Facility, estimated to cost over \$4 billion. Subsequently, it decided to study

adding a plutonium metal oxidation capability to the MOX Facility and using existing assets at Los Alamos National Laboratory and the Savannah River Site. MOX Services estimated that adding such a capability would increase total project costs by about \$262 million to a total of \$7.7 billion and would not be completed until June 2023. However, MOX Services did not believe that adding a plutonium metal oxidation capability would adversely impact the MOX Facility construction schedule. According to NNSA, the conceptual design for the metal oxidation systems is about 80 percent complete. As of January 2014, no formal decision had been made on whether or not to move forward with a plutonium metal oxidation capability. Also, we noted that MOX Services' FY 2014 Project Execution Plan stated that work related to the plutonium metal oxidation capability would be suspended and staff working on preliminary design activities would be moved to other projects.

Project Design and Baseline Approval

A number of factors contributed to the growth in total project cost and the delay in estimated completion date. In April 2007, the Department approved a project baseline that was developed from an incomplete design. As a result, the baseline contained incorrect assumptions regarding the levels of effort required to install various construction commodity items, the quantities of commodity items needed, as well as the cost of various pieces of engineered equipment and the availability of labor.

We noted that in its request for approving the baseline, NNSA stated that a July 2006 external independent review had validated the project's baseline and its readiness to start construction. However, our examination of the review team's report found that it expressed the following concerns:

- An 85-percent design review, considered a best practice at the time and since increased to a mandatory 90-percent design review policy, was not conducted on the complete MOX Facility design, including all its various components. We found that the design review was limited to the construction package for the MOX Facility structure. NNSA and MOX Services did not intend to conduct a final design review of the complete project prior to the start of construction, and instead chose to conduct design reviews in stages or phases.
- The phased reviews conducted by NNSA and MOX Services did not meet the intent of Department Manual 413.3-1, *Project Management for the Acquisition of Capital Assets*, for the approval to start construction. Specifically, the manual provides that a project is ready to begin construction, implementation, procurement or fabrication activities when design and engineering activities are essentially complete; a critical or final design review is performed; and all environmental and safety criteria are met. The NNSA and MOX Services strategy failed to meet this intent.

The independent review team further cautioned NNSA that project cost and schedule estimates were at a significant risk of increasing when using a phased or incremental approach to completing the MOX Facility design.

In a separate July 2006 memorandum to the NNSA Administrator, NNSA's Associate Administrator for Infrastructure and Environment expressed his concern regarding the MOX Facility project. He expressed the belief that incomplete project planning could lead to an unintended "design-build-design" process similar to that experienced by other major Departmental projects including the Waste Treatment Plant and the Highly Enriched Uranium Materials Facility. The Waste Treatment Plant at the Hanford Site was given the approval to start construction when the design was only about 45 percent complete. Since then, total project costs for that facility have increased significantly and the project is considerably behind schedule. He pointed out that, similarly, a comprehensive design review had not been conducted on the complete MOX Facility project and that the project had high-risk potential for increasing downstream costs and schedule.

During testimony to the House Committee on Appropriations in March 2013, NNSA acknowledged that the MOX Facility project was baselined and construction started utilizing methodologies that have since been rejected. Specifically, the design for the facility was not sufficiently complete to develop an accurate and credible cost estimate for the project. He acknowledged that, in large scale projects there is often a tendency towards optimism in developing estimates, assessing risks, and evaluating the cost and schedule impacts. However, he stated that NNSA has since taken a number of actions to improve its project management performance, including the establishment of a new acquisition and project management organization, strengthening of change control procedures to prevent scope creep, and the adoption of a peer review process similar to that used by the Department's Office of Science to provide critical independent assessments.

Our conclusions regarding NNSA's efforts to manage the design and construction of the MOX Facility are similar to those expressed by the Government Accountability Office (GAO) in a February 2014 report on NNSA's Plutonium Disposition Program. GAO concluded that the MOX Facility baseline was set several years before NNSA issued guidance that cost and schedule baselines should not be set until design work is 90 percent complete. GAO reported that a number of factors contributed to a \$3 billion increase in the cost of the program. Specifically, the Department approved the MOX Facility's cost and schedule baseline before the design was complete, the level of effort needed to install equipment was higher than anticipated, staff turnover was greater than expected, and subcontractors experienced problems meeting nuclear quality assurance requirements. Also, NNSA withheld about one-third of MOX Services' fees, including fees tied to meeting the project's cost and schedule estimates. GAO recommended that NNSA conduct a root cause analysis on the Plutonium Disposition Program's cost increases and ensure that future cost and schedule estimates met all best practices for reliable estimates.

Ongoing Efforts

NNSA told Congress that going forward, it will require that nuclear facility project designs be at least 90 percent complete prior to the approval of a baseline. Officials also indicated that NNSA will require that design submittals provide a complete set of drawings and specifications, including a detailed current cost estimate. While this is commendable, considering the problems experienced by NNSA and MOX Services in controlling cost and schedule to date, we remain

concerned as to whether the estimated cost and completion date for the MOX Facility and the plutonium metal oxidation capability are achievable. After spending close to \$4 billion and with final plans in flux, NNSA continues to move forward with the MOX Facility, although with a significantly reduced level of funding, while it assesses alternative plutonium disposition options. MOX Services developed a FY 2014 project execution plan for focusing on critical path activities, reducing procurement expenditures, and retaining key personnel pending the outcome of the Department's assessment of alternative plutonium disposition options. In the absence of an updated approved baseline, MOX Services has been directed to report project progress against the unapproved \$7.7 billion baseline change proposal.

Given the combination of project cost increases, schedule delays and the current budget environment, the Department initiated an assessment of alternative plutonium disposition strategies and reduced funding for the project. The Department's FY 2014 budget request reduced funding for the project by about \$117 million from the FY 2013 level. For FY 2015, the Department plans to further reduce funding for the MOX Facility. It has announced plans to place the project into a cold standby status while continuing to evaluate other more cost efficient plutonium disposition options. During recent status updates on the project, we were informed that efforts to validate the most recent baseline change proposal have been placed on hold pending the outcome of the alternative plutonium disposition strategies. This assessment is expected to be completed in the next 12 to 18 months. NNSA plans to develop another baseline change proposal based on the assessment's outcome.

RECOMMENDATIONS

Although the Department is examining alternative plutonium disposition strategies in light of the MOX Facility's cost growth, schedule delays and budget restrictions, the project continues to receive significant funding, including about \$442 million in FY 2014, which was \$82 million more than the Department originally requested. Despite the proposed change in the project's status for FY 2015, we remain concerned with the project management issues observed during the audit. Managing projects that no longer have an approved cost and schedule estimate is challenging because there is no reliable baseline for measuring progress. In fact, the Department noted in a July 2013 hearing that not having such a baseline is the point of maximum risk for unrestricted cost growth on a project. Therefore, we recommend that the Under Secretary for Nuclear Security:

1. Direct MOX Services to develop a new baseline change proposal that incorporates the results of the alternative plutonium disposition strategies;
2. Request approval of a new MOX Facility project baseline only after all assumptions have been reviewed for reasonableness, the baseline change proposal is independently reviewed, and all necessary corrective actions are taken; and
3. Apply the 90-percent design complete review policy to the plutonium metal oxidation capability if this capability is ultimately added to the MOX Facility.

MANAGEMENT RESPONSE

Management concurred with the report's recommendations and indicated that corrective actions were planned to address the issues identified. Specifically, regarding Recommendation 1, NNSA stated that a new baseline change proposal and lifecycle cost estimate for the MOX Facility will be developed following completion of the plutonium disposition strategy assessment. In response to Recommendation 2, NNSA will have any subsequent baseline for the MOX Facility independently reviewed and all assumptions assessed, as required by DOE Order 413.B *Program and Project Management for the Acquisition of Capital Assets*. Finally, in accordance with Recommendation 3, NNSA indicated that should the decision be made to include plutonium metal oxidation capability in the MOX Facility, the added scope will be added to the project baseline after design work is 90 percent complete.

Management's comments are included in Appendix 3.

AUDITOR COMMENTS

Management's comments and planned corrective actions are responsive to our recommendations.

OBJECTIVE, SCOPE AND METHODOLOGY

Objective

The objective of this audit was to determine if the National Nuclear Security Administration (NNSA) had managed the design and construction of the Mixed Oxide Fuel Fabrication Facility (MOX Facility) in an efficient and effective manner.

Scope

We conducted this audit from May 2012 through May 2014, at the MOX Facility at the Savannah River Site, near Aiken, South Carolina. The audit scope of our review included costs and activities related to the design and construction of the MOX Facility. The audit was conducted under Office of Inspector General Project Number A12OR032.

Methodology

To accomplish the audit objective, we:

- Analyzed MOX Facility project management and execution plans;
- Analyzed various MOX Facility progress reports and construction reviews;
- Reviewed Congressional budget requests;
- Analyzed the new project baseline change proposal; and
- Discussed project activities with NNSA and MOX Services personnel.

We conducted this performance audit in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our conclusions based on our audit objective. The audit included tests of controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Additionally, we assessed the implementation of the *GPR Modernization Act of 2010* and found that the Department had established performance measures related to the plutonium disposition program. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of our audit. We did not rely on computer-processed data to satisfy the audit objective and therefore did not conduct a data reliability assessment. Management waived the exit conference.

RELATED REPORTS AND TESTIMONY

Office of Inspector General Reports and Testimony

- Audit Report on [*The Use of Staff Augmentation Subcontracts at the National Nuclear Security Administration's Mixed Oxide Fuel Fabrication Facility*](#) (DOE/IG-0887, May 2013). The audit found that Shaw AREVA MOX Services, LLC had not effectively managed temporary living expenses and billed the National Nuclear Security Administration (NNSA) for excessive costs. Since January 2007, NNSA has reimbursed about \$3.7 million in inappropriate temporary living expenses under staff augmentation subcontracts.
- Testimony on [*DOE's Nuclear Weapons Complex: Challenges to Safety, Security, and Taxpayer Stewardship*](#) (July 2012). The Office of Inspector General concluded that in many cases the Department of Energy (Department) and NNSA have not been as thorough as necessary in exercising contract administration responsibilities. Major project management issues, including the delays and cost overruns associated with the completion of the \$5 billion Mixed Oxide Fuel Fabrication Facility (MOX Facility) at the Savannah River plant, require robust Federal oversight to ensure that taxpayer dollars are well spent and national security is protected.
- Audit Report on the [*Procurement of Safety Class/Safety Significant Items at the Savannah River Site*](#) (DOE/IG-0814, April 2009). The audit found that three structural components were procured and installed in the MOX Facility that did not meet the technical specifications for items relied on for safety. The procurement and installation of some of these components resulted in cost increases of more than \$680,000 due to problems associated with the procurement of \$11 million of nonconforming safety-class reinforcing steel. In a worst case scenario, undetected, nonconforming components could fail and injure workers or the public.
- Audit Report on the [*Status of the Mixed Oxide Fuel Fabrication Facility*](#) (DOE/IG-0713, December 2005). The audit found that the NNSA estimate for the design and construction of the MOX Facility was about \$3.5 billion, which is \$2.5 billion more than it had previously estimated. The cost of the MOX Facility significantly exceeded the amounts reported to Congress in 2002. At the time, NNSA reported that the design was approximately 60 percent complete. However, as of July 2005, NNSA spent \$453 million on just design activities and had only completed 70 percent of design work.

Government Accountability Office Reports and Testimony

- Report on [*Plutonium Disposition Program – DOE Needs to Analyze the Root Causes of Cost Increases and Develop Better Cost Estimates*](#) (GAO-14-231, February 2014). The Government Accountability Office (GAO) found that NNSA identified various drivers for the \$3 billion increase in the estimated cost of the Plutonium Disposition Program.

These drivers included DOE's approval of the MOX Facility's cost and schedule estimates before the design was complete. Also NNSA had not analyzed the underlying, or root, causes of the increases in construction costs.

- Testimony on the [*Department of Energy and Observations on DOE's Management Challenges and Steps Taken to Address Them*](#) (GAO-13-767T, July 2013). GAO concluded that challenges in the Department's management of major projects and programs resulted in significant cost increases and schedule delays. Regarding the MOX Facility, inadequately designed critical system components such as the gloveboxes for handling plutonium and the infrastructure needed to support these gloveboxes were among the primary reasons for a proposed cost increase and schedule delay. Also, the performance baseline for the MOX Facility was set several years before NNSA issued guidance in 2012 to set cost and schedule baselines only after design work was 90 percent complete.
- Testimony on the [*Department of Energy and the Concerns with Major Construction Projects at the Office of Environmental Management and NNSA*](#) (GAO-13-484T, March 2013). GAO found that even though there have been improvements, the Department still needed to improve contract and project management. For example, the Department is currently forecasting an increase in the total project cost for the MOX Facility from \$4.9 billion to \$7.7 billion and a delay in the start of operations from October 2016 to November 2019.
- Report on [*Nuclear Proliferation, DOE Needs to Address Uncertainties and Strengthen Independent Safety Oversight of Its Plutonium Disposition Program*](#) (GAO-10-378, March 2010). The GAO concluded that the MOX Facility project had suffered delays due to the delivery of reinforcing bars not meeting nuclear quality standards. GAO noted that NNSA is reconsidering alternatives for establishing a pit disassembly and conversion capability. NNSA's alternative depended on an aggressive, potentially unrealistic schedule and NNSA had not conducted all required nuclear safety oversight activities.

MANAGEMENT COMMENTS



Department of Energy
Under Secretary for Nuclear Security
Washington, DC 20585

May 13, 2014

MEMORANDUM FOR GREGORY H. FRIEDMAN
INSPECTOR GENERAL

FROM: FRANK G. KLOTZ *FK 5/13/2014*
UNDER SECRETARY AND ADMINISTRATOR
FOR NUCLEAR SECURITY

SUBJECT: Comments on the Office of Inspector General Draft Report Titled
*"Cost and Schedule of the Mixed Oxide Fuel Fabrication Facility at
the Savannah River Site"* (A120R032/2012-01061)

Thank you for the opportunity to review and comment on the subject Inspector General (IG) draft report. The original objective of this report was to determine if the National Nuclear Security Administration (NNSA) had managed the design and construction of the Mixed Oxide Fuel Fabrication Facility (MOX) efficiently and effectively. Given the number of audits that had already focused on MOX's early cost and schedule problems, NNSA requested that your audit team broaden the scope of their review to also include the adequacy of NNSA's response to these well documented problems and the reforms that NNSA had implemented to prevent these mistakes from reoccurring on new projects.

As we have subsequently conveyed to the auditors, we believe that we have reacted to these legacy problems in a direct and effective manner. The Office of Acquisition and Project Management (NA-APM) was established in February 2011 to address the contract and project management issues that had been previously identified by the IG, the Government Accountability Office, Congress, and our own reviews.

Since its formation, NA-APM has focused on putting the right policies, principles, processes, procedures, people, and partnerships in place to deliver NNSA's projects on time and on budget. Numerous improvements have been made including better upfront planning, establishment of an independent cost estimating capability, strengthened Federal oversight and responsibilities, and increased contractor accountability. Recognizing that MOX's design was not sufficiently advanced when the project's cost baseline was approved, NA-APM issued new policy requiring that the design of nuclear facilities be 90 percent complete before seeking baseline approval. In depth independent reviews are also now required to counter the tendency towards



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unwarranted optimism that too frequently occurs on large scale, technically complex projects.

The April 9, 2014, revision of the IG's report joins with NNSA's other external stakeholders in acknowledging these improvements. While we welcome this acknowledgement, we are fully aware that there are still residual concerns that must be addressed. Last year's House Energy and Water Development Appropriations Subcommittee report language aptly summarizes this situation. It states: "considerable reforms have been implemented to better understand the cost of NNSA programs, to improve project management, and to hold contractors more accountable by enforcing existing contract options and using contract mechanisms that more evenly share risk between the Federal government and its contractors... these fundamental contract and management reforms have been sorely needed and will give NNSA managers tools that are critical for effective Federal oversight." However, "NNSA will only be able to prove it can competently manage its operations through continued and consistent application of these management tools." We agree with this assessment and intend to ensure that we continue to make progress.

I appreciate the audit team's willingness to go beyond simply restating MOX's legacy problems. NNSA concurs with the three recommendations presented in the draft report. Our specific comments on these recommendations are attached for your consideration.

If you have any questions, please contact Dean Childs, Director, Audit Coordination and Internal Affairs, at (301) 903-1341.

Attachment

Attachment

**National Nuclear Security Administration (NNSA)
Response to Inspector General's (IG) Draft Report
"Cost and Schedule of the Mixed Oxide
Fuel Fabrication Facility at the Savannah River Site"**

Recommendation 1: Direct MOX Services to develop a new baseline change proposal that incorporates the results of the alternative plutonium disposition strategies.

Concur

In April 2013, NNSA announced that it would slow down activities associated with the current plutonium disposition strategy while assessing alternative approaches to complete the plutonium disposition mission more cost effectively. Once the NNSA selects a preferred option, an organization external to the Department will conduct an independent assessment of the option, which will include establishment of a revised lifecycle cost estimate. If that preferred option were to continue with the MOX project, then NNSA would subsequently direct the MOX contractor to prepare an appropriate baseline change proposal. The assessment and accompanying independent review is expected to be completed in the next 12 to 18 months.

Recommendation 2: Request approval of a new MOX Facility project baseline only after all assumptions have been reviewed for reasonableness, the baseline change proposal is independently reviewed, and all necessary corrective actions are taken.

Concur

Once the NNSA selects a preferred option and if that option were to continue with the MOX project, then NNSA would request a revised Baseline Change Proposal (BCP) from the MOX contractor and proceed as required by DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets. NNSA would request the conduct of an External Independent Review, including an Independent Cost Estimate and review of assumptions in the BCP, by the Department's Office of Acquisition and Project Management. All corrective actions necessary to close the Major Findings of the External Independent Review will be taken before requesting approval of the BCP by the Secretarial Acquisition Executive. These reviews and any associated corrective actions should require no more than six months.

Recommendation 3:

Apply the 90-percent design complete review policy to the plutonium metal oxidation capability if this capability is ultimately added to the MOX Facility.

Concur

The BCP that would be requested from the MOX contractor if a decision is made to proceed with the project would include scope to advance the design of the Direct Metal Oxidation (DMO) work to 90% complete. After the design of DMO reaches 90% complete, a subsequent BCP would then be processed to add the DMO capability to the MOX project performance measurement baseline.

FEEDBACK

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Office of Inspector General (IG-12)
Department of Energy
Washington, DC 20585

If you want to discuss this report or your comments with a member of the Office of Inspector General staff, please contact our office at (202) 253-2162.