

Highlights of [GAO-14-231](#), a report to the Subcommittee on Energy and Water Development, and Related Agencies, Committee on Appropriations, House of Representatives

Why GAO Did This Study

NNSA, a separately organized agency within DOE, manages the Plutonium Disposition program to dispose of surplus weapons-grade plutonium by burning it as MOX fuel—a mixture of plutonium and uranium oxides—in specially modified commercial nuclear reactors. In 2012, DOE forecasted cost increases of close to \$3 billion over the previous estimates for the program's two construction projects, the MOX facility and the WSB for disposing of waste from the MOX facility.

GAO was asked to review these cost increases and the life-cycle cost estimate. This report examines: (1) drivers NNSA identified for the cost increases; (2) the extent to which NNSA analyzed underlying causes of the cost increases; (3) steps NNSA took to hold construction contractors accountable for their role, if any, in the cost increases; and (4) the extent to which NNSA's most recent estimates met cost- and schedule-estimating best practices. GAO reviewed NNSA's draft life-cycle cost estimate and contractor estimates of the MOX project's cost and WSB schedule, compared the estimates with cost- and schedule-estimating best practices, and interviewed DOE and NNSA officials.

What GAO Recommends

GAO is recommending, among other things, that DOE conduct a root cause analysis of the Plutonium Disposition program's cost increases and ensure that future estimates of the program's life-cycle cost and cost and schedule for the program's construction projects meet all best practices for reliable estimates. DOE generally agreed with GAO's recommendations.

View [GAO-14-231](#). For more information, contact David C. Trimble at (202) 512-3841 or trimbled@gao.gov.

February 2014

PLUTONIUM DISPOSITION PROGRAM

DOE Needs to Analyze the Root Causes of Cost Increases and Develop Better Cost Estimates

What GAO Found

The Department of Energy's (DOE) National Nuclear Security Administration (NNSA) identified various drivers for the close to \$3 billion increase in the estimated cost of the Plutonium Disposition program's two construction projects—the Mixed Oxide (MOX) Fuel Fabrication Facility and the Waste Solidification Building (WSB). These drivers included DOE's approval of the MOX facility's cost and schedule estimates before design was complete and schedule delays in construction of the WSB. According to NNSA, the cost of critical system components for the MOX facility averaged 60 percent higher than estimated as a result of approval of estimates before design was complete.

NNSA has not analyzed the underlying, or root, causes of the Plutonium Disposition program construction cost increases to help identify lessons learned and help address the agency's difficulty in completing projects within cost and schedule, which has led to NNSA's management of major projects remaining on GAO's list of areas at high risk of fraud, waste, abuse, and mismanagement. DOE's project management order requires that lessons learned be captured throughout a project to, among other things, benefit future endeavors. NNSA officials said that, because the order does not require a root cause analysis of cost increases, NNSA decides on a case-by-case basis whether to conduct one. Unlike a root cause analysis, the cost drivers NNSA identified provided few details about why the drivers existed, such as DOE's reasons for approving the MOX facility's cost and schedule estimates before the design was complete. Without a root cause analysis, it is uncertain whether NNSA will be able to accurately identify underlying causes of the increases to identify and implement corrective measures and identify lessons learned to apply to other projects.

After determining that the performance of the contractors for the MOX facility and WSB contributed to cost increases, NNSA took steps to hold the contractors accountable by withholding fees specified under the contracts. In particular, as of November 2013, NNSA withheld \$45.1 million or close to one-third of the MOX contractor's fees, including fees tied to meeting the MOX project's cost and schedule estimates. In addition, NNSA withheld \$7.7 million or about 40 percent of the WSB contractor's fees tied to various performance measures for the WSB, such as completing construction milestones.

NNSA's most recent estimates for the Plutonium Disposition program did not fully reflect all the characteristics of reliable cost estimates (e.g., credible) and schedule estimates (e.g., well-constructed) as established by best practices for cost- and schedule-estimating, placing the program at risk of further cost increases. For example: (1) NNSA's draft April 2013 life-cycle cost estimate of \$24.2 billion for the overall program was not credible because NNSA did not conduct an independent cost estimate to provide an unbiased test of whether the estimate was reasonable. (2) Because the MOX contractor's September 2012 proposal for increasing the cost of the MOX facility did not include a formal analysis to examine the effects of changing assumptions, it was minimally credible. (3) The WSB contractor's February 2013 monthly update to its schedule estimate was minimally well-constructed in that it contained activities that were not properly tied with the start or end date of other activities, which could potentially obscure the critical path determining the project's completion date.