

GAO Highlights

Highlights of [GAO-13-533](#), a report to the Armed Services Committee, U.S. Senate

Why GAO Did This Study

Nuclear weapons are an essential part of the nation's defense strategy. NNSA manages the nation's nuclear weapons stockpile and carries out research to help extend the life of existing weapons. The core of a nuclear weapon requires plutonium—a man-made radioactive element—to create a nuclear explosion. NNSA's LANL in New Mexico houses key plutonium facilities needed for research for nuclear weapons life extension programs and other missions. In 2005, NNSA approved construction of CMRR to replace the aging facility being used. In February 2012, NNSA announced it had decided to defer CMRR nuclear facility construction for at least 5 years, creating a potential gap in plutonium research capabilities from 2019 to the late-2020s. NNSA requested LANL to study options to address this gap. The study was completed in April 2012.

The Senate Armed Services Committee Report accompanying the 2013 defense authorization directed GAO to review the study. GAO examined (1) the options identified in the study for meeting NNSA's plutonium research needs, including costs and health risks, if any and (2) the potential impacts of those options on NNSA's plutonium research for the nuclear weapons stockpile and other plutonium research missions.

What GAO Recommends

GAO is recommending that NNSA continue efforts to assess how plutonium research and capability needs and stockpile requirements have changed, if at all since 2008, and develop a plan for both near- and longer-term needs. NNSA agreed with the recommendation.

View [GAO-13-533](#). For more information, contact David Trimble at (202) 512-3841 or trimbled@gao.gov

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MODERNIZING THE NUCLEAR SECURITY ENTERPRISE

Observations on NNSA's Options for Meeting Its Plutonium Research Needs

What GAO Found

The National Nuclear Security Administration's (NNSA) Los Alamos National Laboratory's (LANL) April 2012 study (1) identified general options for meeting the plutonium research needs of NNSA—a separately organized agency within the Department of Energy (DOE)—during the several-year gap created by the deferral of the Chemistry and Metallurgy Research Replacement (CMRR) nuclear facility and (2) included limited information on costs and health risks. The study noted that the level of plutonium research necessary to support the nuclear weapons life extension programs is affected by the planned schedule of the life extension programs, the number of pits that will be needed under the programs, and the number of pits that will need to be manufactured versus re-used, all of which have uncertainties. According to the April 2012 study, one option for meeting NNSA's plutonium research needs is to relocate analytical chemistry and materials characterization capabilities among facilities at LANL, which will require upgrades costing roughly \$480 million to \$820 million. A second option is to move capabilities to existing facilities at other sites. The study concluded that no single site could provide all the capabilities that might be needed, but that the facilities could be renovated to meet the needs. The study did not include costs for relocating capabilities to other sites. A third option is a combination of these two. The study also indicated some potential health risks to workers from increased plutonium handling if samples need to be transported to other sites. As of July 2013, NNSA officials stated that an option had not yet been selected for meeting plutonium research needs from 2019 through the late-2020s, and no decisions have been made on facilities to address longer-term plutonium research needs. To address its ongoing, longer-term plutonium research needs, NNSA stated it is now considering a modular facility.

The potential impacts of the options identified in LANL's study on NNSA's plutonium research for the nuclear weapons stockpile and other plutonium mission areas are uncertain. If NNSA uses space only at LANL, rather than relocating some capabilities to facilities at other sites, some LANL plutonium research missions could potentially be impacted because space may have to be reconfigured to accommodate nuclear weapons stockpile mission needs. NNSA has tasked LANL with assessing building space to see if it can be repurposed to better support plutonium research. In addition, the study noted that one potential impact of using facilities at other sites could be delays in completing needed analytical chemistry or materials characterization due to time needed to transport samples between sites. Using facilities at other sites will require time for NNSA to plan for and transport materials between LANL and other sites, which could increase the total time needed to complete the analyses for weapon pits. The study also noted that the shortage of trained staff in analytical chemistry could impact the ability to execute the options, which could affect NNSA's ability to meet proposed schedules for the refurbishment of nuclear weapons. The study reported that the analytical chemistry staff at LANL has been reduced by 60 percent in the span of a few years due to retirements and budget cuts. The contractor at LANL recommended that NNSA conduct a detailed risk analysis on staffing needs to better understand and plan for staffing limitations, according to the study.