



Highlights of [GAO-10-378](#), a report to the Subcommittee on Energy and Water Development, Committee on Appropriations, House of Representatives

Why GAO Did This Study

The end of the Cold War left the United States with a surplus of weapons-grade plutonium, which poses proliferation and safety risks. Much of this material is found in a key nuclear weapon component known as a pit. The Department of Energy (DOE) plans to dispose of at least 34 metric tons of plutonium by fabricating it into mixed oxide (MOX) fuel for domestic nuclear reactors. To do so, DOE's National Nuclear Security Administration (NNSA) is constructing two facilities—a MOX Fuel Fabrication Facility (MFFF) and a Waste Solidification Building (WSB)—at the Savannah River Site in South Carolina. GAO was asked to assess the (1) cost and schedule status of the MFFF and WSB construction projects, (2) status of NNSA's plans for pit disassembly and conversion, (3) status of NNSA's plans to obtain customers for MOX fuel from the MFFF, and (4) actions that the Nuclear Regulatory Commission (NRC) and DOE have taken to provide independent nuclear safety oversight. GAO reviewed NNSA documents and project data, toured DOE facilities, and interviewed officials from DOE, NRC, and nuclear utilities.

What GAO Recommends

GAO recommends, among other things, that NNSA improve its plans for the maturation of critical technologies related to pit disassembly and conduct additional outreach to potential MOX fuel customers. In commenting on a draft of this report, DOE agreed with GAO's recommendations.

View [GAO-10-378](#) or [key components](#). For more information, contact Gene Aloise at (202) 512-3841 or aloisee@gao.gov.

NUCLEAR NONPROLIFERATION

DOE Needs to Address Uncertainties with and Strengthen Independent Safety Oversight of Its Plutonium Disposition Program

What GAO Found

The MFFF and WSB projects both appear to be meeting their cost targets for construction, but the MFFF project has experienced schedule delays. Specifically, the MFFF and WSB projects are on track to meet their respective construction cost estimates of \$4.9 billion and \$344 million. However, the MFFF project has experienced some delays over the past 2 years, due in part to the delivery of reinforcing bars that did not meet nuclear quality standards. Project officials said that they expect to recover from these delays by the end of 2010 and plan for the start of MFFF operations on schedule in 2016. The WSB project appears to be on schedule.

NNSA is reconsidering its alternatives for establishing a pit disassembly and conversion capability. However, it seems unlikely that NNSA will be able to establish this capability in time to produce the plutonium feedstock needed to operate the MFFF, due to the amount of time and effort needed to reconsider alternatives and construct a facility as well as the amount of uncertainty associated with NNSA's current plans. NNSA had previously planned to build a stand-alone facility near the MFFF construction site to disassemble pits and convert the plutonium into a form suitable for use by the MFFF. However, NNSA is now considering a plan to combine this capability with another project at an existing facility at the Savannah River Site. NNSA officials could not estimate when the agency will reach a final decision or establish more definitive cost and schedule estimates for the project. However, NNSA's new alternative depends on an aggressive, potentially unrealistic schedule. In addition, NNSA has not sufficiently planned for the maturation of critical technologies to be used in pit disassembly and conversion operations, some of which are being tested at the Los Alamos National Laboratory in New Mexico.

NNSA has one potential customer for most of its MOX fuel, but outreach to other utilities may be insufficient. NNSA is in discussions with the Tennessee Valley Authority to provide MOX fuel for five reactors. NNSA plans to offer several incentives to potential customers, including offering to sell MOX fuel at a discount relative to the price of uranium fuel. In interviews with the nation's nuclear utilities, GAO found that while many of the utilities expressed interest in NNSA's proposed incentives, the majority of utilities also expressed little interest in becoming MOX fuel customers. This suggests that NNSA's outreach to utilities may not be sufficient.

NRC is currently reviewing the MFFF's license application and has identified several issues related to construction. However, oversight of the MFFF and the WSB by DOE's independent nuclear safety entities has been limited. For example, DOE's Office of Health, Safety, and Security has not conducted any oversight activities or participated in any project reviews of the WSB, despite the WSB's status as a high-hazard nuclear facility. In addition, NNSA's Chief of Defense Nuclear Safety has not conducted any nuclear safety oversight activities for the MFFF project and has not conducted all oversight activities for the WSB project that are required by DOE order.