

## Why GAO Did This Study

In December 2000, DOE awarded Bechtel a contract to design and construct the WTP project at DOE's Hanford Site in Washington State. This project—one of the largest nuclear waste cleanup facilities in the world—was originally scheduled for completion in 2011 at an estimated cost of \$4.3 billion. Technical challenges and other issues, however, have contributed to cost increases and schedule delays. GAO was asked to examine (1) remaining technical challenges, if any, the WTP faces; (2) the cost and schedule estimates for the WTP; and (3) steps DOE is taking, if any, to improve the management and oversight of the WTP project. GAO reviewed DOE and contractor data and documents, external review reports, and spoke with officials from DOE and the Defense Nuclear Facilities Safety Board and with contractors at the WTP site and test facilities.

## What GAO Recommends

GAO recommends that DOE (1) not resume construction on WTP's pretreatment and high-level waste facilities until, among other things, the facilities' design has been completed to the level established by nuclear industry guidelines; (2) ensure the department's contractor performance evaluation process does not prematurely reward contractors for resolving technical issues later found to be unresolved; and (3) take appropriate steps to determine whether any incentive payments were made erroneously and, if so, take actions to recover them. DOE generally agreed with the report and its recommendations.

View [GAO-13-38](#). For more information, contact David C. Trimble at (202) 512-3841 or [trimbled@gao.gov](mailto:trimbled@gao.gov).

# HANFORD WASTE TREATMENT PLANT

## DOE Needs to Take Action to Resolve Technical and Management Challenges

## What GAO Found

The Department of Energy (DOE) faces significant technical challenges in successfully constructing and operating the Waste Treatment and Immobilization Plant (WTP) project that is to treat millions of gallons of highly radioactive liquid waste resulting from the production of nuclear weapons. DOE and Bechtel National, Inc. identified hundreds of technical challenges that vary in significance and potential negative impact and have resolved many of them. Remaining challenges include (1) developing a viable technology to keep the waste mixed uniformly in WTP mix tanks to both avoid explosions and so that it can be properly prepared for further processing; (2) ensuring that the erosion and corrosion of components, such as tanks and piping systems, is effectively mitigated; (3) preventing the buildup of flammable hydrogen gas in tanks, vessels, and piping systems; and (4) understanding better the waste that will be processed at the WTP. Until these and other technical challenges are resolved, DOE will continue to be uncertain whether the WTP can be completed on schedule and whether it will operate safely and effectively.

Since its inception in 2000, DOE's estimated cost to construct the WTP has tripled and the scheduled completion date has slipped by nearly a decade to 2019. GAO's analysis shows that, as of May 2012, the project's total estimated cost had increased to \$13.4 billion, and significant additional cost increases and schedule delays are likely to occur because DOE has not fully resolved the technical challenges faced by the project. DOE has directed Bechtel to develop a new cost and schedule baseline for the project and to begin a study of alternatives that include potential changes to the WTP's design and operational plans. These alternatives could add billions of dollars to the cost of treating the waste and prolong the overall waste treatment mission.

DOE is taking steps to improve its management and oversight of Bechtel's activities but continues to face challenges to completing the WTP project within budget and on schedule. DOE's Office of Health, Safety, and Security has conducted investigations of Bechtel's activities that have resulted in penalties for design deficiencies and for multiple violations of DOE safety requirements. In January 2012, the office reported that some aspects of the WTP design may not comply with DOE safety standards. As a result, DOE ordered Bechtel to suspend work on several major WTP systems, including the pretreatment facility and parts of the high-level waste facility, until Bechtel can demonstrate that activities align with DOE nuclear safety requirements. While DOE has taken actions to improve performance, the ongoing use of an accelerated approach to design and construction—an approach best suited for well-defined and less-complex projects—continues to result in cost and schedule problems, allowing construction and fabrication of components that may not work and may not meet nuclear safety standards. While guidelines used in the civilian nuclear industry call for designs to be at least 90 percent complete before construction of nuclear facilities, DOE estimates that WTP is more than 55 percent complete though the design is only 80 percent complete. In addition, DOE has experienced continuing problems overseeing its contractor's activities. For example, DOE's incentives and management controls are inadequate for ensuring effective project management, and GAO found instances where DOE prematurely rewarded the contractor for resolving technical issues and completing work.