

Why GAO Did This Study

Decades of nuclear materials production at the Department of Energy's (DOE) Savannah River Site in South Carolina have left 37 million gallons of radioactive liquid waste in 49 underground storage tanks. In December 2008, DOE entered into a contract with Savannah River Remediation, LLC (SRR) to close, by 2017, 22 of the highest-risk tanks at a cost of \$3.2 billion. GAO was asked to assess: (1) DOE's cost estimates and schedule for closing the tanks at the Savannah River Site, and (2) the primary challenges, if any, to closing the tanks and the steps DOE has taken to address them. GAO visited the Savannah River Site and reviewed tank closure documents, as well as conducted an analysis of the construction schedule of the Salt Waste Processing Facility (SWPF), which is a facility vital to successful tank closure because it will treat a large portion of the waste removed from the tanks.

What GAO Recommends

GAO is making five recommendations to DOE to, among other things, clarify how cost increases should be requested by a contractor, as well as reviewed and approved by DOE and to ensure the SWPF construction schedule conforms to best practices. Although DOE generally agreed with two of our recommendations, they disagreed on the necessity of additional clarity on how cost increases should be requested by a contractor and that the SWPF construction schedule did not conform to best practices. We continue to believe our recommendations are valid.

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NUCLEAR WASTE

Actions Needed to Address Persistent Concerns with Efforts to Close Underground Radioactive Waste Tanks at DOE's Savannah River Site

What GAO Found

Emptying, cleaning, and permanently closing the 22 underground liquid radioactive waste tanks at the Savannah River Site is likely to cost significantly more and take longer than estimated in the December 2008 contract between DOE and SRR. Originally estimated to cost \$3.2 billion, SRR notified DOE in June 2010 that the total cost to close the 22 tanks had increased by more than \$1.4 billion or 44 percent. Much of this increase is because DOE's cost estimate in the September 2007 request for proposals that formed the basis of the December 2008 contract between DOE and SRR was not accurate or comprehensive. For example, DOE underestimated the costs of labor and fringe benefits. DOE also omitted certain other costs related to equipment and services needed to support tank closure activities. Moreover, more than \$600 million of this increase is due to increased funding needed to make up for significant losses suffered by Savannah River Site workers' pension plans as a result of the recent economic crisis. Closing the tanks may also take longer than originally estimated because of persistent delays and shortcomings in the construction schedule for SWPF. According to SRR, construction delays that have already occurred will result in between 2 and 7 fewer tanks being closed by 2017 than agreed to in the contract. Furthermore, the SWPF construction schedule does not fully meet GAO-identified best scheduling practices. For example, the schedule had problems with excess float time between activities, indicating that the schedule's activities may not be sequenced logically. DOE is exploring ways to mitigate the effects of construction delays by deploying new technologies to treat radioactive waste. However, additional research and development on these new technologies is still required and, therefore, it will be several years before they are deployed.

DOE officials identified three primary challenges to closing the liquid radioactive waste tanks at the Savannah River Site:

- on-time construction and successful operation of SWPF;
- increasing the amount and speed at which radioactive waste is processed at the Savannah River Site's Defense Waste Processing Facility, which prepares the waste for permanent disposal by mixing it with molten glass and then pouring it into large metal canisters where it hardens; and
- successful implementation of an enhanced chemical cleaning process that will remove residual waste from the tanks with minimal creation of additional waste that must be treated.

DOE officials identified steps the department is taking to ensure these challenges are met. However, several factors raise concerns about whether DOE will be able to resolve them. For example, the enhanced chemical cleaning process that is a cornerstone of SRR's ability to close tanks on time has never been used in liquid radioactive waste tanks and, according to SRR officials, DOE has not consistently funded additional research and development on the technology. Most experts GAO spoke with were generally confident of DOE's ability to successfully overcome these challenges, although some of them identified additional concerns. For example, some experts suggested that DOE has not engaged in sufficient contingency planning in the event that the department's chosen waste removal, treatment, and tank closure strategies are unsuccessful.