June 2007

NUCLEAR WASTE

DOE Should Reassess Whether the Bulk Vitrification Demonstration Project at Its Hanford Site Is Still Needed to Treat Radioactive Waste

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Highlights

Highlights of GAO-07-762, a report to congressional committees

Why GAO Did This Study

The Department of Energy (DOE) is demonstrating a technology called bulk vitrification, in parallel with the Hanford waste treatment plant, to treat a portion of the radioactive waste stored in 177 tanks at its Hanford site in southeastern Washington state. DOE faces technical and management problems that have affected the original objectives to justify demonstrating the bulk vitrification technology.

This report discusses the extent to which DOE (1) has managed the bulk vitrification demonstration project consistent with DOE management guidance and (2) continues to need a supplemental technology, such as bulk vitrification, to treat a portion of the low-activity tank waste. To assess DOE's management of the project, GAO reviewed reports by DOE and others and discussed the project with DOE and contractor officials.

What GAO Recommends

GAO recommends that DOE (1) reassess the need for a supplemental technology and the costs and benefits of bulk vitrification compared with other viable technologies and (2) report to Congress the results of the reassessment. In addition, Congress should consider withholding additional funding for the project until DOE does so. DOE disagreed with several of the report's findings but did not comment on GAO's recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-07-762.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Gene Aloise at (202) 512-3841 or aloisee@gao.gov.

What GAO Found

DOE did not follow its management requirements during the first 2 years of the demonstration project in an effort to accelerate tank waste cleanup. This decision contributed to a nearly fourfold increase in estimated costs from $62 million to $230 million and a 6-year delay on the project. DOE did not conduct key internal and external reviews and did not fully develop or update key project planning documents as required. Without these management tools, DOE initially overlooked a number of technical and safety problems facing the project, such as uncertainties about the quality of the glass formed using the bulk vitrification technology and inadequate systems to shield radioactive material from workers and the environment. In late 2005, largely because of these problems, DOE began taking steps to implement its management requirements on the project.

DOE's need for a supplemental technology to treat a portion of the low-activity tank waste at Hanford is no longer clear, but DOE does not plan to reassess the need for the project before completing the demonstration. Originally, DOE justified the bulk vitrification project as a relatively low-cost, rapidly deployable supplemental technology to assist the department to complete tank waste treatment at Hanford by 2028. However, none of the key components to this justification remains today (see table). First, the price of a full-scale bulk vitrification facility has risen to $3 billion or more, about the same cost as adding a second low-activity waste treatment facility to the waste treatment plant. Second, the technology is no longer rapidly deployable because, as discussed above, the project faces at least a 6-year delay. Finally, it is now apparent that completing tank waste treatment at Hanford by 2028 is not possible under any reasonable scenario and that the waste treatment plant must operate for longer than DOE previously planned. This is significant since longer operating periods may reduce the need for a supplemental technology. Given the plant's estimated treatment capacity, more of the low-activity waste could be treated in the waste treatment plant facilities. Although DOE's management guidance specifies that when conditions have significantly changed DOE should reassess the mission need of a project, DOE does not intend to conduct this reassessment because DOE officials said they want more information about the technology. Proceeding with the demonstration project before reaffirming the need for the project increases the risk that DOE will spend an additional $137 million or more to develop a technology that may not be needed.

Original Objectives and Current Conditions of DOE's Demonstration Project

Original objective	Current condition
Rapid demonstration of the technology by 2006	Not achievable; current estimated completion by 2012 or later
Rapid deployment of full-scale facility by 2011	Not achievable; current estimated deployment by 2019
Full-scale facility costing about $1.3 billion	Not achievable; current estimated life-cycle cost is $3 billion or more
Complete waste treatment by 2028	Not achievable; current estimated completion date unclear but ranges from 2039-2074

Source: DOE.