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HANFORD CLEANUP

Condition of Tanks May Further Limit DOE's Ability to Respond to Leaks and Intrusions

GAO Highlights

Highlights of GAO-15-40, a report to the Honorable Ron Wyden, U.S. Senate

Why GAO Did This Study

DOE recently reported that nuclear waste is leaking from two of its underground storage tanks (T-111 and AY-102) at Hanford and that water was intruding into AY-102 and other tanks. Also, DOE has been experiencing delays in the construction of the WTP, a collection of facilities that are to treat the tank waste for disposal. These recently reported leaks and intrusions, combined with construction delays, have raised questions among regulators, the public, and Congress about the risks posed by continuing to store waste in the aging tanks.

GAO was asked to report on the tank waste cleanup program. This report examines: (1) the condition of the tanks, (2) actions DOE has taken or planned to respond to the recent tank leaks and water intrusions, and (3) the extent to which DOE's tank management plans consider the condition of the tanks and the delays in completing construction of the WTP. GAO obtained and reviewed relevant reports concerning the leaks, the status of the tanks, and the volumes of waste and available space in the tanks. GAO toured the site and interviewed DOE officials and responsible contractors.

What GAO Recommends

GAO recommends that DOE assess the extent to which other DSTs have corrosion factors similar to AY-102, update its schedule for removing waste from the tanks, and assess the alternatives for creating additional DST space. DOE agreed with this report and its recommendations.

View GAO-15-40. For more information, contact David C. Trimble at (202) 512-3841 or trimbled@gao.gov.

What GAO Found

From 2012 to 2014, the Department of Energy (DOE) assessed the physical condition of the 177 storage tanks at its Hanford, Washington, site in which it stores about 56 million gallons of nuclear waste and found them to be in worse condition than it assumed in 2011 when developing its schedule for emptying the tanks. For the 149 single-shell tanks (SST), DOE previously pumped nearly all of the liquid waste out of the SSTs into the 28 newer double-shell tanks (DST) to reduce the likelihood of leaks. However, after detecting water intruding into several SSTs, DOE reexamined them all and found that water was intruding into at least 14 SSTs and that 1 of them (T-111) had been actively leaking into the ground since about 2010 at a rate of about 640 gallons annually. Regarding the DSTs, in 2012, DOE discovered a leak from the primary shell in tank AY-102. DOE determined that the leak was likely caused by construction flaws and corrosion in the bottom of the tank. DOE found that 12 DSTs have similar construction flaws but has not determined the extent to which the other 27 DSTs are subject to the same corrosion that likely contributed to the leak in AY-102.

In response to the waste leaks and water intrusion, DOE has taken or planned several actions. For SSTs, DOE conducted additional tank inspections and temporarily increased the frequency of monitoring the tank waste levels from annually or quarterly to monthly. In addition, after finding flaws in its methods to monitor for leaks and intrusions, DOE modified its methods, which it believes may lead to more effective monitoring. For DSTs, DOE increased the frequency (from every 5 to 7 years to every 3 years) and scope of its tank inspections and convened a panel of experts to evaluate existing tank monitoring and inspection procedures. DOE also plans an independent assessment of the integrity of the DSTs (scheduled to be completed no later than 2016).

DOE's current schedule for managing the tank waste does not consider the worsening conditions of the tanks or the delays in the construction of the Waste Treatment and Immobilization Plant (WTP), a facility being constructed to treat the waste and prepare it for final, long-term disposal. First, the leak in AY-102 combined with planned waste transfers from SSTs has reduced the available DST tank storage capacity. Future leaks and intrusions, which become more likely as the tanks' condition worsens, would place additional demands on the already limited DST storage space, and it is unclear how DOE would respond. According to DOE, recent efforts to evaporate some of the water from the waste have already freed up 750,000 gallons of DST space. Second, in March 2014, DOE announced further delays in the construction of the WTP and that these delays will affect the schedule for removing waste from the tanks. However, DOE has not estimated the impact of the WTP delays on its schedule to remove the waste from the tanks. As a result, DOE cannot estimate how long the waste will remain in the aging tanks. Also, DOE officials and members of a 2014 expert panel convened to examine the integrity of the DSTs have said that corrosion is a threat to DST integrity, and, according to the panel, that there are deficiencies in DOE's understanding of corrosion in all of the DSTs. DOE lacks information about the extent to which the other 27 DSTs may also be susceptible to corrosion similar to AY-102. Without determining the extent to which the factors that contributed to the leak in AY-102 were similar to the other 27 DSTs, DOE cannot be sure how long its DSTs can safely store waste.