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DOE COMPLETES MILESTONE FOR STUDYING PLUTONIUM SLUDGE IN UNDERGROUND TANK

After studying potential threats posed by plutonium sludge in an underground tank near the Plutonium Finishing Plant (PFP) at Hanford, the U.S. Department of Energy (DOE) is recommending to the U.S. Environmental Protection Agency (EPA) a non-time-critical removal of the sludge. The non-time-critical recommendation means removal of the sludge would not begin within six months, but in the future as plutonium stabilization work continues at the PFP.

The recommendation to the EPA also completes a milestone under the Tri-Party Agreement - the legal pact between DOE, EPA, and Washington State that guides the ongoing cleanup of Hanford.

"Our studies provided important information about the tank and sludge," said Pete Knollmeyer, DOE's Assistant Manager for Nuclear Materials and Facility Stabilization. "Cleaning the sludge out of the tank can be scheduled in a manner to make the best use of our resources and expertise."

The 45,000-gallon underground tank received dilute liquids from the PFP from 1949 until 1973, when it was taken out of service. Most of the remaining liquids were pumped from the tank and the pipes were cut and capped in 1975. About seven feet (approximately 20,000 gallons) of plutonium-bearing sludge remains in the bottom of the tank.

Although the tank was out of service for years, it was included in a site-wide survey of potential chemical and radiological vulnerabilities following a 1997 chemical explosion at a Hanford facility. Potential hazards for the tank included structural integrity, flammable gas buildup, plutonium solubility, and criticality.

Over the past two years the strength of the tank was tested, a vapor sample was collected, the tank was visually inspected with a video camera, two sludge core samples were collected, and nondestructive testing was performed to collect information on the amounts and locations of plutonium in the tank.

Results of the testing show the tank does not pose as serious of a threat as was first postulated in 1997. The quantity of plutonium in the tank is below concentrations where criticality indicates that the risk of a

criticality - an uncontrolled nuclear reaction - is a concern. The amount of flammable gas in the tank is low, and there is no imminent danger from structural failure. Samples show the sludge in the tank to be the consistency of toothpaste, limiting the mobility of the plutonium.

"Although the possibility of past leakage cannot be ruled out, analysis of soil from below the tank showed no radioactive contamination," said Knollmeyer. "There is no evidence of leaks from this tank."

Depending on the regulatory path decided upon by the EPA, the next phase of work at the tank will be either an engineering evaluation and cost analysis for a non-time critical action, or a focused feasibility study for an interim cleanup action. The processes and technology to be used to clean the sludge out of the tank will be selected during this next phase.

DOE and its contractors are transitioning Hanford's central plateau to long term waste management and stewardship by stabilizing and deactivating the PFP, storing spent nuclear fuel, shipping transuranic waste offsite for disposal, disposing of low level radioactive wastes, and demolishing old buildings.

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Historical Note: The U.S. Department of Energy's Richland Operations Office manages the Hanford Site in southeastern Washington State. Hanford was established during World War II as part of the top secret Manhattan Project to produce plutonium for nuclear weapons. Weapons material production was halted in the late 1980s. The Hanford Site is now engaged in the world's largest cleanup effort to deal with the legacy of radioactive and hazardous wastes that resulted from the plutonium production era. The U.S. Environmental Protection Agency and the Washington Department of Ecology regulate Hanford's cleanup program under a long-term compliance contract called the Tri-Party Agreement. This agreement sets the framework and timelines on the cleanup work so that Hanford meets environmental standards. Hanford cleanup is focused on three outcomes: restoring the Columbia River Corridor for other uses, transitioning the Central Plateau to long term waste treatment and storage, and putting Hanford resources to work for future opportunities.

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