



Environmental Bulletin

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from the Savannah River Site

Savannah River Site Tank 5 Sludge Waste Removal to Begin

In early October 2005, the Savannah River Site (SRS) will begin the process of removing sludge waste from Tank 5, one of 49 underground liquid nuclear waste storage tanks at SRS. Two other storage tanks, Tanks 17 and 20, have had the waste removed and the tanks have been closed. Tank 5 bulk sludge waste removal will include the first deployment of the Waste on Wheels (WOW) technology, a mobile system of pumps and support equipment that can be moved from tank to tank to enable sludge waste removal. This technology is expected to be more efficient and effective at sludge waste removal than current practices.

Tank 5 is nearly empty. It contains about 59,000 gallons of waste, a small percentage of the tank's capacity. The waste consists primarily of sludge with smaller amounts of supernate (liquid containing dissolved salts) and salt cake (moist solid salts). Tank 5 is one of 24 old style tanks that do not have full secondary containment and one of the first to be built at SRS in 1951-1953. Old style tanks, like Tank 5, do not have full secondary containments; therefore, they are classified as non-compliant and must be removed from service (waste removed and tanks closed) as agreed to in the Federal Facility Agreement (FFA) with the South Carolina Department of Health and Environmental Control and the Environmental Protection Agency. In addition, tanks that have known leak sites are prioritized for waste removal to support risk reduction.

Tank 5 has known leak sites above the current level of waste in the tank. Following a transfer of supernate to Tank 5 in 2001, leaks in the primary tank wall were discovered through visual inspections using cameras placed inside the annulus of the tank. Approximately four gallons of liquid accumulated in the 2½-foot-wide by 5 feet high annulus area of the secondary containment pan. The containment system worked as designed preventing a release of liquid waste to the environment. Following discovery of the leaks, the supernate was transferred back out of the tank and the liquid in the secondary pan evaporated.

To mix the sludge waste in Tank 5 so that it can be transferred out, liquid must be added to the tank. This will temporarily raise the waste level in Tank 5 above some of the known leak sites. The waste will remain above the leak sites for approximately 2 weeks during the mixing cycle. Following the mixing cycle, the mixed waste will be transferred to Tank 7, a tank that has no history of leakage. During the sludge waste removal activities for Tank 5, the tank secondary containment will be monitored for leaks and the primary tank walls will be visually inspected with cameras to identify leaks.

Storage of nuclear waste in old style tanks poses human health and environmental risks and the U.S. Department of Energy (DOE) is committed to preventing releases to the environment and to reducing risk by removing waste from aging, non-compliant tanks in a safe, effective manner. Utilization of the Waste on Wheels technology combined with monitoring and visual inspection of tanks during waste removal are the appropriate steps to accomplish this.

Existing permits and safety analyses recognize the need to remove waste from tanks with known leak sites. DOE, the Defense Nuclear Facilities Safety Board, and state regulators agree that the sludge must be removed. Removing waste from Tank 5 supports the goal of risk reduction by moving the sludge to compliant tanks. There it will become part of the next sludge batch for the Defense Waste Processing Facility (DWPF) where it is converted into a stable glass form suitable for final disposition at a national repository. We have considered potential scenarios associated with removing sludge from Tank 5 and we believe we have thoroughly planned for everything that could affect the work, including leaks from the tank.

Removing waste from the tanks is a required step prior to tank closure. Closure of Tank 5 is not expected for several years; however, bulk waste removal is one of the first operational activities toward that end state. After bulk waste removal is completed, heel removal and annulus cleaning will be required. An extensive period of regulatory and public review of the tank closure plan will follow. This review is expected to include the proposed closure methodology and performance assessment of the methodology in order to ensure any remaining risk to public health and the environment is acceptable.

Tanks 4 and 6 are non-compliant like Tank 5 and are scheduled for sludge waste removal utilizing WOW technology later this year and early next year. Tank 6 is known to have leaks and will undergo inspection and monitoring much like Tank 5. Sludge waste removed from Tank 6 will be combined with the sludge waste from Tank 5 and Tank 11 to form the next sludge batch for vitrification in DWPF. Separate *Savannah River Site Environmental Bulletins* will be issued for those tanks.

Stakeholders will continue to be kept informed of significant nuclear waste treatment and disposition activities at SRS.

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