



## HydroLance

As part of the continuing Hanford Site restoration, K Basin sludge has been containerized under water prior to treatment and ultimate disposal. Each engineered container consists of a number of chambers, which slope to the base, and an outlet connection. The goal is to remove this sludge from either a manifold arrangement that joins all of these connections or by some other means such as pumping or suction through the top of the containers.

The HydroLance is a proprietary technology that is able to mobilize and transfer solids using minimal additional water and offers the potential of being able to retrieve the sludge via access to the top of the engineered containers.

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## HydroLance: Trials for an Alternative Sludge Retrieval Technology

CHPRC and NuVision Engineering have recently completed a series of proof-of-principle and prototypical trials to demonstrate an alternative approach to solids retrieval from the K Basin containers. This approach uses a HydroLance, a proprietary technology from the UK-based business Xago.

Initial trials conducted in mid 2008 confirmed that a basic HydroLance test unit, with the Coanda fluidization head option, was capable of transferring a representative simulant of the basin sand slurry at an acceptable mass dilution ratio of 2 parts water to 1 part sand as well as picking up relatively large particles typical of those present on the basin floor.

Based on these promising results, subsequent prototypical tests were conducted at the Maintenance and Storage Facility (MASF) in April and May 2009 using a purpose-built HydroLance with individual feeds. These tests demonstrated that the HydroLance was able to mobilize and retrieve container sludge simulant at an average of 10.3 volume percent. In addition, the HydroLance was able to mobilize and retrieve Settler Tank sludge simulant at an average of 4.4 volume percent. It is anticipated that this target can be exceeded with minor modifications to the HydroLance in the future.

Throughout both sets of trials, the HydroLance has been simple and reliable to operate and has demonstrated the ability to handle high solid concentrations without blocking or loss of performance. The next phase of this work is to refine the overall mobilization/transfer system design with a view of conducting large scale representative testing in late 2009/early 2010.



Right: HydroLance as tested  
Left: HydroLance in operation

