



# Department of Energy

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93-TPA-014

Mr. Paul T. Day  
Hanford Project Manager  
U.S. Environmental Protection Agency  
Region 10  
712 Swift Boulevard, Suite 5  
Richland, Washington 99352

Mr. David B. Jansen, P.E.  
Hanford Project Manager  
State of Washington  
Department of Ecology  
P.O. Box 47600  
Olympia, Washington 98504-7600

Dear Messrs. Day and Jansen:

## WASTE RETRIEVAL DEMONSTRATION

You are cordially invited to attend a Retrieval Technology Development demonstration planned for 9:00 a.m., Thursday, November 12, 1992, in the 337 building high bay at the Hanford Site. This demonstration will formally exhibit single-shell tank waste retrieval technologies being developed by the Robotics Technology Demonstration Program (RTDP) and the Underground Storage Tank Integrated Demonstration (USTID) in collaboration with the Waste Management Program, (EM-30). It will roughly parallel the demonstration which met the requirements for Interim Milestone M-06-02, Initiate waste retrieval testing in a scale model tank, completed on September 24, 1992. The media has been invited to attend this session.

The demonstration will include the remote deployment and operation of waste characterization sensors, dislodging tools, and conveyance systems. After the demonstration there will be time to allow the attendees to get a closer look at the equipment and to talk with the developers. A poster session and exhibits of related technologies are scheduled for that date at the Hanford House.

The demonstration will run just under 60 minutes and will include the following:

The results of a task to develop control system algorithms for flexible manipulators will be demonstrated.



Messrs. Day and Jansen  
93-TPA-014

-2-

The results of the structured light sensor system used to map the surface of the storage tanks will be exhibited. The surface maps generated by this system provide information to the operators and the computer control system.

An in-situ characterization sensor package (Mini-Lab) will be deployed by the robotics arms into a sludge stimulant to measure the simulated waste viscosity, and the hydrogen and oxygen gas levels at the waste surface.

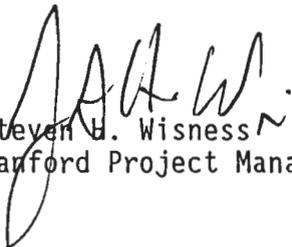
A hydraulic shear will be remotely deployed by the robotics manipulators to cut two inch diameter schedule 40 steel pipes that simulate in-tank riser pipes. The ability of the manipulator to automatically position the cutter to cut the pipe, using remote sensors, will be demonstrated. A larger unit capable of cutting four inch diameter schedule 40 steel pipe will also be exhibited.

A hard waste rubblizer tool used to fracture hard salt cake will be demonstrated under remote deployment. The rubblizer fires short bursts of 40,000 psi water that fractures hard salt cake on impact.

In the final sequence, a tool for retrieving sludge will be demonstrated. The tool will be deployed by the robotics manipulator into a tank of soft waste stimulant. The tool will dislodge the sludge and the attached air conveyance hose will convey the waste to a waste collection hopper. The air conveyance hose will be held 55 feet in the air to simulate the lift required to retrieve waste from the bottom of the waste storage tanks.

If you should have any questions regarding this, please contact me on (509) 376-6798, or Mr. Bruce Nicoll, on (509) 376-6006.

Sincerely,

  
Steven H. Wisness  
Hanford Project Manager

cc: S. McKinney, Ecology  
D. Nylander, Ecology  
D. Sherwood, EPA  
B. A. Austin, WHC



