

SOLUTIONS

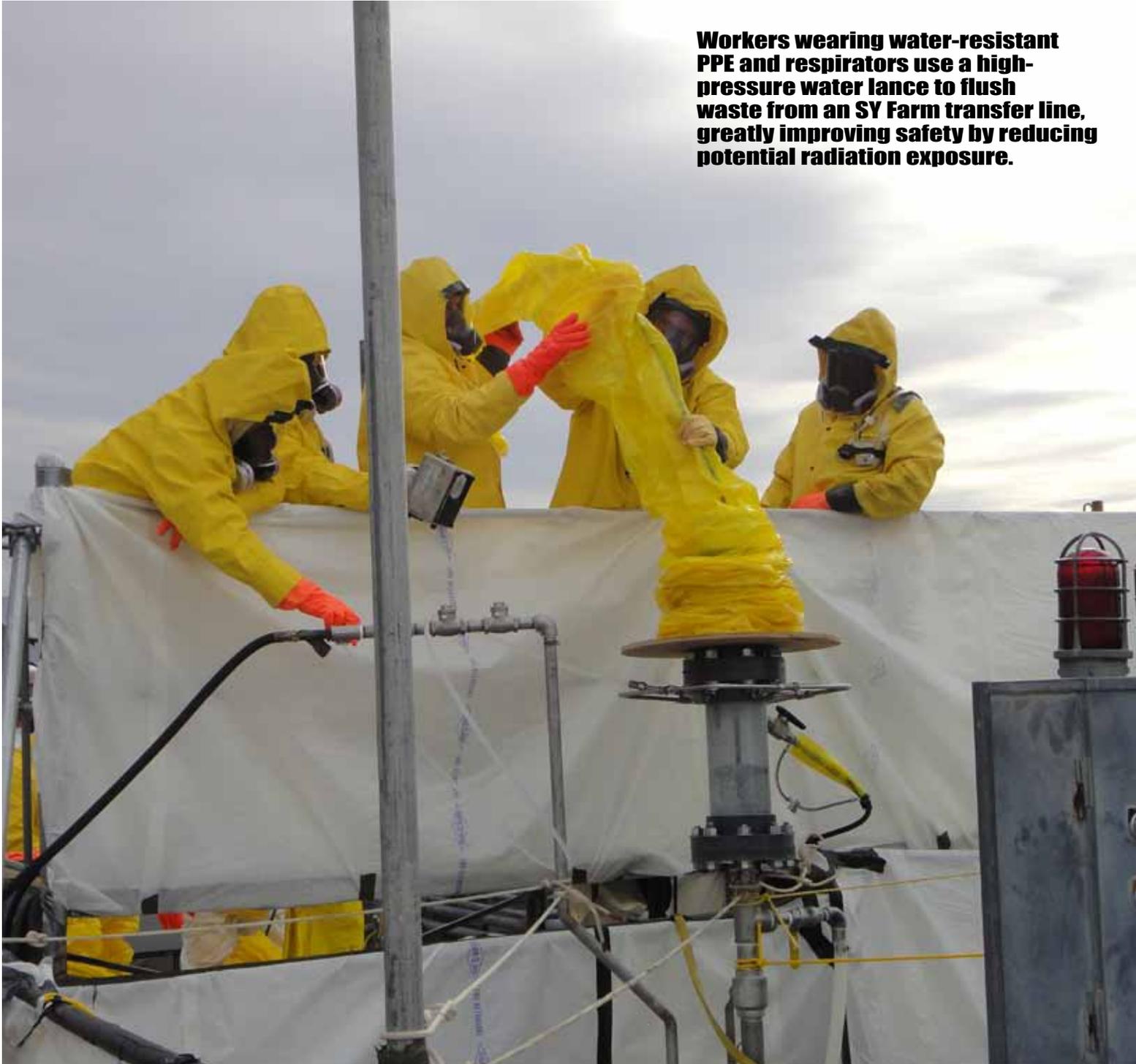
washington river
protection solutions

A weekly publication of highlights and progress of the Hanford Tank Operations Contractor

Issue 108/ February 7, 2011

SY transfer line flush leads to safer work conditions

Workers wearing water-resistant PPE and respirators use a high-pressure water lance to flush waste from an SY Farm transfer line, greatly improving safety by reducing potential radiation exposure.



SY transfer line flush

Construction crews for Washington River Protection Solutions (WRPS) braved last week's bitter cold to perform a high-pressure lancing of one of the transfer lines that will be removed from Hanford's SY Farm. The flush will significantly improve safety in the farm by removing waste build-up from a pipe-in-pipe transfer line that will be replaced in the coming months.

"The waste lodged inside the lines contributes to a high dose to our workers," said WRPS Project Manager Jim Kelly. "By flushing the lines, we can reduce the risk."

Workers wearing water-resistant PPE and respirators used a high-pressure pump feeding water into a small, flexible hose fitted with a tip that sprays forward and backward, which helps guide and propel the lance down the line. The lance is then fed into the transfer line through a specially designed nozzle attachment and through the 107-foot-long line at 8,000 psi to break up any waste buildup. It's then retracted at 4,000 psi, essentially "raking" the remaining contaminants backwards so it can be washed down the pit drain and into the tank.

Special protective measures were taken prior to the start of the project to ensure success. Project Support Engineer Jeremy Whitcomb initiated a special tool evaluation to assess the water lance and other assemblies used to flush the transfer lines. A technical evaluation was also conducted to investigate potential leaks.

Cold weather threatened to delay the lancing, which requires a temperature greater than 35 degrees to prevent the possibility of freezing, which could create hazardous backups in line and prevent its completion.

"This is not something we've done very often—maybe three times before," said Tank Farms Projects Construction Manager Steve Chapman. "It's quite unique."

The job was completed successfully last Thursday.

So far, crews have cut and removed six of the eight lines scheduled for replacement in SY Farm because they no longer meet regulatory requirements. Crews will exchange the old lines with new ones, which will carry waste from underground storage tanks to the Waste Treatment Plant (WTP) currently under construction. After removal, workers will cut the lines into segments, place them into grout pour waste containers and send them to the Environmental Restoration Disposal Facility for burial. The eight, old transfer lines will be replaced with four new and four refurbished lines from an earlier project.

The project is funded by the American Recovery and Reinvestment Act and is scheduled for completion by the end of September.



New retrieval technologies sought

The robotic arm known as the Mobile Arm Retrieval System (MARS) is scheduled to begin operation this summer and is expected to dramatically improve our ability to retrieve waste from single-shell tanks. It is the newest tool in the tool box but is just one of a variety of tools that will be needed in order to accelerate retrieval and reduce costs.

“In addition to MARS we are going to need other technologies that will allow us to meet our requirements to move waste out of the single shell tanks to safer storage in double-shell tanks,” said Chris Burke, Technology and Systems Planning Project Manager.

One such technology being pursued is a mechanism to grind up the hard heel that has formed on the bottom of many of the tanks. “We can’t always break up the heel into small enough pieces to pass through the pump screen so we need a way to better pulverize the material so it can be removed,” Burke said. A request for interest has been sent out through a number of industrial channels and responses are coming in. A request for information will soon be posted on the WRPS website. “We have to get the pieces smaller than 3/8 of an inch to pass through the screen or we need a more robust pump that can handle larger chunks,” he said.

Another area of interest is the installation of smaller risers than the one required for the MARS unit. MARS required a 55-inch hole to be cut in tank C-107. “We put the MARS riser in the center of the tank because that was the right place for that type of equipment. In other tanks we can use smaller equipment and the center is not always the best place for a pump due to internal obstacles or tank design. We are doing structural analyses to determine if we can install smaller risers in different locations. Smaller risers are cheaper to install and we can place them where we need them, not where conditions dictate,” said Burke.

When the hole was cut in C-107 it was done with high-pressure water infused with a fine grit of garnet. It was effective but there may be other alternatives and Burke’s team is investigating. “The garnet option was the best available for the 55” cut. Other technologies may prove to be the better for smaller diameter cutting,” Burke said.

Other technologies being investigated include the Raman Spectrometer which could help understand the nature of the waste in the tanks and help make certain retrieval decisions. Right now, to obtain a sample of the waste the tank must be opened and sampling equipment has to be lowered into the tank. The samples are then subjected to laboratory analysis. This is expensive and time-consuming. “The Raman Spectrometer will shoot a laser beam into the waste and analyze the reflection, giving us an indication of the chemical content of the material and telling us whether we can dissolve the waste using water, liquid waste, caustic or acid,” Burke said.



Raman Spectrometer



Mobile Arm Retrieval System

While access to tanks in C Farm has been limited by the 12-inch diameter risers, other farms, such as A and AX have 34-inch risers which greatly expand the opportunities to insert equipment without having to cut new holes. This includes larger pumps. “We know there are pumps out there that can grind up large chunks of material, and we would like to test them in a tank waste environment. Larger risers provide the opportunity to demonstrate these pumps without the cost of cutting large holes,” Burke said.

This is a long shopping list of concepts and ideas that Burke and his team are working on. “We have to keep searching to find the best and most cost-effective technologies available if we are to fulfill our mandate to accelerate tank waste retrieval,” Burke said.

WRPS launches new development program

In an effort to establish professional development as an ongoing TOC cultural practice, Project Manager Chuck Spencer challenged the Human Resources group to develop and implement a WRPS Professional Development program. As a result, WRPS has implemented the TOC STAR Development Program. The STAR program, which stands for Strategic Talent Advancement for Results, consists of a Mentoring program and the TOC STAR's Development program.

The vision for the STAR Development program is to implement a TOC project-specific professional development program that will contribute to successful execution of current work-scope, facilitate future workforce skills development, and identify future project leaders. "The program provides a focal point that will enhance participants' professional career by creating opportunities for mentored learning, on-the-job experiences, networking, teamwork, and formal skill development," said Lois Kauer, STAR Program Co-chair and HR representative.

The STAR Mentoring program was launched in July 2010 and has 26 mentees and 26 mentors. The Mentoring program is targeted at new and early career professionals who have two years of experience or less and the TOC STAR's Development program is targeted at mid-career professionals with more than five years of experience.

The TOC STAR's Development program was launched on Jan. 19, 2011, and has 36 participants. The kick-off sessions had participants engaging in skills training and networking. "These sessions are meant to be a networking opportunity, an arena for members to bounce ideas off of each other and to be a place to get support and guidance from colleagues and mentors," said Mike Latteri, STAR Program Co-chair, and Lead HR representative.

"This program is a great way for participants to network with individuals from across the company we may not otherwise have had an opportunity to meet or work with."

~ James Devere, WRPS Property Manager

Over the next year the participants will continue to attend training sessions and participate in other development activities where they will be putting together a career action plan, creating a professional development portfolio, taking on stretch assignments, and setting career goals for themselves.

WRPS recognizes that professional development is critical to the long-term success of the project mission. An effective professional development program aims to promote organizational learning by providing all levels of the organization the opportunity for joint collaboration, professional development, and the advancement to future leadership roles.



TOC STAR participants met in mid-January for the program's kick-off.