FINDING SOLUTIONS AT THE WEST VALLEY DEMONSTRATION PROJECT

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ABSTRACT

The United States Department of Energy Office of Environmental Management (DOE-EM) faces a number of sizeable challenges as it begins to transform its mission from managing risk to reducing and eliminating risk throughout the DOE Complex. One of the greatest challenges being addressed by DOE-EM as this transformation takes place is accelerating the deactivation and decommissioning of thousands of facilities within the DOE Complex that were once used to support nuclear-related programs and projects. These facilities are now unused and aging. Finding solutions to complete the cleanup of these aging facilities more safely, efficiently, and effectively while reducing costs is critical to successfully meeting DOE-EM's cleanup challenge.

The Large-Scale Demonstration and Deployment Project (LSDDP) of Hot Cells at the West Valley Demonstration Project (WVDP) is a near-term project funded through the DOE's National Energy Technology Laboratory (DOE-NETL) for the specific purpose of identifying, evaluating, demonstrating, and deploying commercially available technologies that are capable of streamlining the cleanup of hot cells in unused facilities while improving worker safety. Two DOE project sites are participating in this LSDDP: the WVDP site in West Valley, New York and the Hanford River Corridor Project (RCP) site in Richland, Washington. The WVDP site serves as the host site for the project.

Technologies considered for demonstration and potential deployment at both LSDDP sites are targeted for application in hot cells that require the use of remote and semi-remote techniques to conduct various cleanup-related activities because of high radiation or high contamination levels. These hot cells, the type of cleanup activities being conducted, and technologies selected for demonstration are the main topics discussed in this paper. The range of cleanup-related activities addressed include in-situ characterization, size-reduction, contamination control, decontamination, in-cell viewing, and various types of handling, retrieval, and dismantlement tasks.

The primary focus of the LSDDP of Hot Cells is on demonstrating technologies capable of reducing cost and schedule baselines for work scopes involving in-situ characterization (including nondestructive examination to access in-cell areas), size-reducing equipment and piping, contamination control, and decontaminating surfaces (including equipment surfaces). Demonstrations of technologies that can streamline these tasks are scheduled for the WVDP site. Demonstrations scheduled for the Hanford RCP site focus on work scope activities involving remote-inspection and viewing. Each demonstration conducted will be assessed using evaluation criteria established by the participating sites to determine if selected technologies represent a significant improvement over current baseline technologies being used to perform work. If proven to be effective, each of the commercially available technologies demonstrated has the potential to be quickly deployed at other sites, resulting in improved worker safety, reduced cleanup costs, and accelerated schedule completion for many of the most challenging cleanup efforts now underway throughout the DOE Complex.

PROJECT BACKGROUND AND OBJECTIVES

The LSDDP of Hot Cells at the WVDP is a near-term effort being conducted to demonstrate and deploy commercially available technologies that can significantly improve high risk/high cost baselines associated with cleaning up highly contaminated areas such as radioactive hot cells. Through this LSDDP, technologies will be demonstrated at two sites within the DOE Complex where hot cells are being characterized, decontaminated or dismantled as part of site deactivation, decommissioning, or closure: the host site, the WVDP in West Valley, New York, and the 300 Area hot cell facilities at Hanford in Richland, Washington. Specific locations where technologies will be demonstrated are representative of many facilities within the DOE Complex where operations must be performed remotely or semi-remotely because of high radiation or contamination levels. Hot cells targeted for demonstration and deployment are in locations that account for some of the highest levels of radiological risk and associated cleanup costs at each site.

Locations targeted for demonstrations at the WVDP site include a series of hot cells in the Process Plant Building where mechanical, chemical extraction and product refinement phases of the spent nuclear fuel reprocessing cycle were once carried out: the Process Mechanical Cell (PMC), General Purpose Cell (GPC), Extraction Cell 1 (XC-1), Extraction Cell 2 (XC-2), and Product Purification Cell-South (PPC-S). Work scope established for PMC and GPC decontamination involves the removal of highly radioactive and contaminated equipment, piping, and debris from these two canyon-type cells where the mechanical stage of the fuel reprocessing cycle was once carried out. Work scope planned for XC-2 and PPC-S decontamination involves decontaminating, dismantling and packaging valves, piping, vessels and tanks remaining in these cells which were once used to conduct the product extraction and purification stages of the reprocessing cycle.

Locations targeted for demonstration in the 300 Area at Hanford are in the 327 Building and the High Level Vault of the 324 Building where radiological, radiochemical and metallurgical research conducted over the course of several decades.

Technologies being considered for demonstration are those that have the potential to increase project efficiencies by reducing personnel exposure, contamination levels, duration of operations, or the amount of secondary wastes generated during cleanup work. Common activities being addressed by demonstrations include:

- In-situ characterization to identify the type and extent of in-cell contamination and determine packaging options for contaminated materials to be removed;
- Applying fixatives to prevent the spread of contamination;
- Remote-viewing to identify and assess hot spots or other factors that complicate cleanup work;
- In-cell size reduction to containerize and remove highly contaminated components, equipment and materials from hot cells; and
- Surface decontamination to eliminate or reduce contamination levels.

Specific tasks associated with these activities, technologies of greatest interest, and factors for selecting technologies for demonstration are briefly described first, followed by a discussion of demonstrations conducted to test technology capabilities in non-radioactive and radioactive settings. These discussions are followed by a brief review of demonstrations in progress and a summary of activities conducted as part of the LSDDP.

TECHNOLOGY SELECTION AND DEMONSTRATION

Technology selection has been accomplished by following a simple screening and evaluation process developed to identify technologies capable of safely completing specific cleanup tasks with greater efficiency. Identification of technologies capable of being demonstrated and deployed at the WVDP and RCP involved using a step-wise screening, selection, and evaluation process developed by members of the Integrating Contractor Team (ICT) responsible for making final selections. After developing screening criteria for selecting technologies, the ICT used these criteria to identify interested vendors capable of providing technologies that meet site-specific project needs. Following identification of potential technology vendors, a request for cost information was sent to potential vendors that met screening and evaluation criteria. The final phase of the selection process involved awarding subcontracts to selected vendors.

WVDP: In-Situ Characterization

Technology Selection: A considerable volume of debris, equipment, piping, and components need to be removed and packaged for off-site disposal to complete facility decontamination. All of the material to be removed needs to be characterized before packaging it for off-site disposal. Standard baseline methods for characterizing waste involve a multi-step process that includes developing sampling plans; preparing to access locations where samples need to be taken; setting up radiological controls to ensure As Low As Reasonably Achievable (ALARA) exposures during sampling; taking smears and samples to meet sampling objectives; analyzing samples; and validating results. Technology selection to help accelerate this process focused on evaluating instrumentation that can be used in real-time and in-situ to identify radiological source terms in hot cells with high dose fields like the PMC and GPC. After evaluating several different units with similar capabilities, a gamma detection unit was selected for technology demonstration. Selection was based on the unit’s ability to locate and characterize gamma radiation on building surfaces, debris, or equipment, and to show the origin of measured radiation using radiometric data and real-time color video images. Specific advantages associated with using this unit included the ability to gather and view data in real-time from a remote operating station and to move and position the unit’s detachable detection (scanning) head with the system used for remote-handling inside the PMC, the Bridge Mounted Manipulator System (BMMS). Another key feature is the ability to use the unit to detect specific radionuclides in very high radiation fields.

Technology Demonstration: The main objective for demonstrating the RadScan®:700 unit was to perform in-cell measurements of highly contaminated debris and material in the PMC, use these measurements to minimize the amount of sampling and analysis required, and to quantify residual radioactivity after completing debris collection.

Testing Unit Performance: Testing was performed in two phases to evaluate the scanning and detection capabilities of the gamma scanning unit. The first phase of testing involved calibrating the unit and conducting a series of operational tests to confirm unit function in a non-radioactive (cold) environment, a small stand-alone test facility at the WVDP site. After completing unit calibration and operational testing, arrangements were made to transfer the unit into the PMC through an existing point of access (a hatch) and attach it to the BMMS used to move and position the unit within the cell. A general scan of the entire cell was taken to determine background radiation levels, followed by a series of scans taken to identify gamma emitters present on specific items including the fuel shear, fuel cut-off saw and vent pipe near the shear. In total, 11 different locations were scanned as part of the second (hot) phase of unit testing.

Summary Results: Analysis of the data collected during demonstration confirmed process knowledge-based characterization of debris inside the PMC. The unit identified fission and activation product radionuclides in known locations. (Details on RadScan®:700 unit performance are provided in a separate paper presented at WM 03, "Characterization of the Process Mechanical Cell at the West Valley Demonstration Project," - Abstract #243.)

WVDP: Embedded Component Identification

Technology Selection: New wall-penetrations (openings) need to be created in a number of areas to support facility decontamination and dismantling. Components or piping that may be embedded in concrete shield walls must be identified before the concrete can be cut by core boring or other methods to avoid cutting into energized or contaminated systems. At the WVDP, all systems in the hot cells identified are de-energized. Therefore methods such as thermograph do not work. Other methods for locating components or piping involve reviewing drawings or using an electric-signal tracer to find metal embedded in concrete. The degree of accuracy associated with using either of these methods is often insufficient.

Technology selection to support concrete shield wall core boring focused on a non-invasive technique frequently used to identify objects in the subsurface or concrete structures: ground penetrating radar (GPR). Devices considered for selection included several units that produce real-time, cross-sectional images of survey areas by transmitting pulses of ultra high frequency radio waves (microwaves) through a range of materials and sending received signals to a digital control unit used in conjunction with application software to produce computer-based images of the materials (areas) being surveyed. GPR has been used extensively to locate components and voids in concrete in highways and bridges up to 0.6m (2-ft). The unit selected for demonstration is a subsurface interface radar (SIR®) system used commercially to detect components embedded in concrete walls up to 0.6m (2-ft) thick.

Technology Demonstration: The main objective for demonstrating GPR was to identify the potential for improving the safety of core boring operations at the WVDP by using it to detect components embedded in hot cell shield walls from 0.91m (3-ft) to 1.5m (5-ft) thick. A number of test areas were identified for demonstrating GPR, including various points along 0.91m (3-ft) thick shield walls of two hot cells formerly used to conduct chemical extraction and product purification stages of the reprocessing cycle, XC-2 and PPC-S. Both of these hot cells account for more than 19,000 linear feet of piping associated with system operations once conducted inside them, including piping lines used to support operation of eight different services in XC–2 and piping lines used to support operation of the final purification of uranium-nitrate and plutonium-nitrate product streams in PPC-S. The vendor selected to demonstrate GPR at all selected locations provided the radar survey equipment, a trained technician to perform GPR surveys, and a Professional Geologist (P.G.) to interpret radar data and report survey results.

Operating Unit: The portable, self-contained SIR® system used to demonstrate GPR in selected test locations, known as the SIR®-2, includes an antenna capable of transmitting microwave signals with frequencies from 2000 megahertz to 16 megahertz, a digital control unit, and a VGA liquid crystal display that can be set to show data in real-time or playback mode.

Testing Unit Performance: Unit testing involved performing preliminary surveys at the vendor's facility, conducting a series of surveys in various locations within a facility under construction at the WVDP, and conducting series of surveys at multiple points along the exterior walls of hot cells selected for survey testing. Preliminary surveys performed at the vendor's facility were done on 46cm (18-in) thick concrete flooring with an intermediate layer of subsurface soil with a clay base beneath it. During these surveys, personnel operating the SIR®-2 unit were able to identify rebar and embedded piping in the concrete as documented in vendor, manufacturer and published scientific literature regarding the use of GPR technology. Following this preliminary off-site demonstration, arrangements were made to perform on-site demonstrations in locations where non-contaminated (cold) and contaminated (hot) embedded piping is known to exist. A total of 19 test sites were examined during on-site demonstrations, eight in the cold facility under construction and 11 in cold locations external to WVDP hot cell shield walls. On-site test locations listed in Table I and Table II provide a brief overview of areas and features examined during on-site GPR demonstrations. Demonstration of the SIR®-2 unit at one of the on-site test locations (test location 9) is shown in Figure 3.

Table I. On-Site Cold Test Surveys Using GPR Technology

On-Site Test Location		***Remote-Handled Waste Facility under Construction***	
Test Area		**Component Examined**	**Location Features**
1)	Work Cell Floor	Drain line in floor.	5.08cm (2-in), double walled steel drainpipe embedded .91m (3-ft) concrete floor.
2)	Work Cell Floor	Near drain line exit point	Area near end of 77m (55-ft) long floor where drain line descends to lower level.
3)	Work Cell Pre-filter Plenum	Front face of plenum	33.02cm (13-in) diameter light gauge metal vent duct embedded 0.609m (2-ft) from edge of duct into concrete wall.
4)	Work Cell Pre-filter Plenum	Side face of plenum	33.02 cm (13-in) diameter light gauge metal vent duct embedded 1.22m (4-ft) from edge of duct into concrete wall.
5)	North Airlock Wall	2-ft wide area on wall	0.91m thick concrete wall with penetrations at 0.304m (1-ft) and 0.609m (2-ft) intervals.
6)	2nd Floor Operating Aisle	Wall area 4-ft from shield window	1.22m shield wall test
7)	3rd Floor Airlock Wall	Wall area 1.5-ft from penetration	50.80cm (20-in) thick "edge effect" test
8)	Outdoor Block	Outer wall	Section with .457m (2.5-ft) wall depth

Table II. On-Site Hot Surveys Using GPR Technology			
On-Site Test Location		***External Shield Walls***	
Test Area		**Component Examined**	**Location Features**
1)	Pulser Aisle (Bldg Level 5)	Ceiling of XC-2	Area adjacent to XC-2 and XC-2 hatches where baseline method failed to identify embedded piping.
2)	XC-1 Shield Hatch (Level 5)	Shield hatch	5-ft thick shield hatch
3)	XC-2 Shield Hatch (Level 5)	Shield hatch	0.91m (3-ft) thick shield hatch
4)	Extraction Sample Aisle at PPC north wall (Level 3)	Near sample lines enclosed in metal box	0.91m (3-ft) thick shield wall
5)	Extraction Sample Aisle at XC-2 north wall (Level 3)	Near sample lines enclosed in metal box	0.91m (3-ft) thick shield wall
6)	Extraction Sample Aisle Airlock, upper north wall (Level 3)	Wall area	0.91m (3-ft0 thick shield wall
7)	Extraction Sample Aisle Airlock lower north wall (Level 3)	Wall area	0.91 m (3-ft) thick shield wall
8)	Acid Recovery Cell - Off-gas Cell Aisle passage/XC-1 north wall (Level 3)	Wall area	1.52m (5-ft) thick shield wall
9)	Upper Warm Aisle/XC-1 south wall (Level 2)	Wall area	1.52m (5-ft) thick shield wall
10)	Upper Warm Aisle pump niche/XC-2 south wall (Level 2)	Above pump niche cover	0.91m (3-ft) thick shield wall
11)	Upper Warm Aisle pump niche/XC-3 south wall (Level 2)	Above pump niche covers, above structural I Beam	0.91m (3-ft) thick shield wall

Fig. 3 Demonstration of the SIR®-2 unit

Summary Results:
GPR performance on WVDP Hot Cell shield walls generally exceeded expectations. Based on review of the vendor's report on demonstration of GPR and comparison of reported results with site knowledge and prints, the following conclusions can be made:

GPR used to survey 0.91m (3-ft) thick concrete shields:

C Clearly identified areas free from embedded components in concrete shield walls 0.91m (3-ft) thick.
C Identified known embedded components in the concrete.
C Identified areas with anomalies such as steel plate that are not shown on the "As-Built" prints.
C Identified anomalies near the interior of the shield walls at depths from 0.762m (2.5-ft) to 0.91m. (3-ft). (Identified anomalies appear to be pipe hanger anchors and plates that support hot cell process piping, tanks, and equipment.)

GPR used to survey 1.22m (4-ft) thick concrete shields:

C Clearly identified areas free from embedded components.
C Survey capability appears to be limited to a depth of 1.22m (4-ft) using a 900-MHZ antennae.

GPR used to survey 1.52m (5-ft) thick concrete shields:

- A 900-MHZ antennae radar is ineffective at depths greater than 1.22m (4-ft).
- A 400-MHZ antenna can be considered for 1.52m (5-ft) thick walls to provide better depth, although resolution may be reduced.

WVDP: Remote Application of Fixatives

Technology Selection: Conditions in two of the hot cells where decontamination activities are scheduled to take place, XC-2 and PPC-S, remain essentially unchanged since reprocessing operations were suspended in these hot cells more than two decades ago. Radiological risks posed by loose (primarily alpha) contamination inside these hot cells must be mitigated by fixing contamination in place before further work scope can be carried out. Standard methods for accomplishing this involve establishing a series of radiological controls before personnel can enter an area to set up equipment used to apply fixative. Typically, several applications of fixative are needed to achieve mitigation. Additionally, many of the fixative coatings commonly used lack durability over time. Therefore, technology selection focused on evaluating durable, nonhazardous solutions capable of being dispersed remotely. Building on previous experience using passive aerosol generator (fogging) technology, a fogging unit capable of dispersing a durable nonhazardous fixative, a linseed oil based polymer, was selected for demonstration in the first hot cell to be decontaminated, the PPC-S, where levels of alpha contamination up to 50M dpm have recently been measured in several locations. A comparison of the expected benefits of using fogging instead of the baseline method of painting in-cell surfaces is shown in Table III.

Table III. Method of Applying Fixatives - Summary Comparison

	Fogging	Painting
Injection Point	1 Penetration	3 Penetrations
Time to Apply	1 day (8 hr)	2 to 3 days per penetration
Drying Time	24 hr	1 day per application
Support Labor	Radiation Protection Tech - 1 D&D Crew - 1	RP Tech - 1 D&D Crew - 3
Coating Area	100% of Surface area	Dependent on Sprayer/Location
Waste Generated	Excess Liquid: Recycled Remaining gas HEPA filtered	Excess Liquid: Collected Allowed to dry

Technology Demonstration: The main objective for demonstrating the fogging unit and fixative was to remotely apply a durable, nonhazardous fixative in one application. The area targeted for demonstration, the PPC-S, is actually an isolated section of a 4.87m (16-ft) (w) by 4.6m (21-ft) (l) by 17.37m (57-ft) (h) hot cell subdivided by a .304m (1-ft) thick internal wall running from floor to ceiling. This isolated area contains legacy equipment and piping (about 27,000 linear feet) once used to purify and concentrate uranium nitrate and plutonium nitrate product streams before final packaging for shipment.

Operating Unit: Planned demonstration of the fogging unit involved dispersing a mist of linseed-oil-based polymer fixative (solution) produced by a passive aerosol generator through a single point (penetration).

Testing Unit Performance: Unit testing involved performing a series of preliminary tests at the vendor's facility using a scale model to simulate in-cell dispersal of the linseed-oil-based fixative. Preliminary tests were conducted using test coupons placed inside the scale model as points of observation. After preparing the scale model, fixative was dispersed as a mist over the period needed to coat the surface area of the model. Since coating of the coupons was not observed during the first test, a second test was performed. During the second test, accumulation of the fixative on coupons was easily observable as droplets of fixative formed on the bottom of the coupons as fogging was taking place. Once fogging was completed, the coupons were left to dry for the standard 24-hour drying period required to set the fixative. Test coupons visually inspected and physically examined (touched) after the drying period was completed appeared to have no actual fixative coating on them. Additional tests performed yielded similar results.

Summary Results: Fixative dispersal using a passive aerosol generator was effective in reaching surfaces inside the scale model used. However, use of the linseed-oil-based fixative proved to be ineffective as a coating substance. The preliminary tests conducted at the vendor facility has prompted further investigation of the linseed-oil-based formula as a fixative coating.

Hanford: Remote-Viewing Inspection

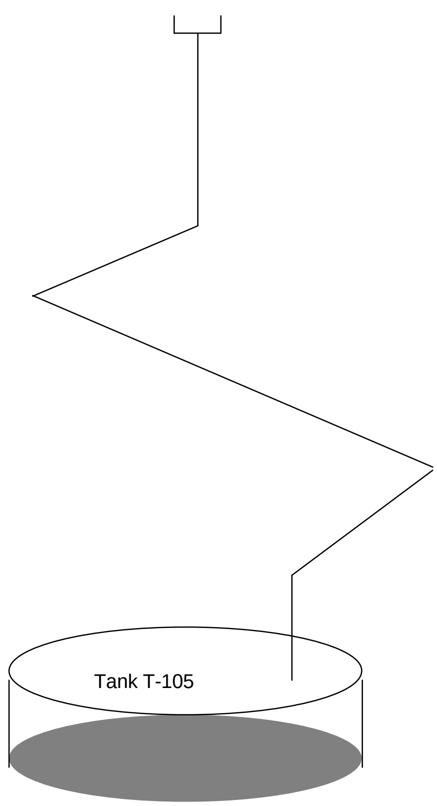

Fig.2 Diagram of T-105 Pipe Line T-36

Technology Selection: Technologies considered for demonstration in the 300 Area of Hanford are those that have the potential to accelerate the process of inspecting difficult to reach or inaccessible areas that account for some of the highest levels of radiological risk in the 324 and 327 Buildings. The location targeted for demonstration is in the High Level Vault (HLV) of the 324 Building. This vault contains four tanks used to hold a wide range of radiochemical and metallurgical wastes related to waste research once conducted in the building. Technology selection to support vault inspection focused on identifying and evaluating several fiber-optic systems that can be used to inspect a tank with recorded dose rates up to 14,000 R/hr without creating new openings (penetrations) to access tank internals or requiring personnel to enter the area.

Technology Demonstration: The main objective for demonstrating a fiber-optic videoscope was to prove whether such a system could be inserted through more than 30 feet of very small diameter piping (i.e., ½-inch-diameter, Schedule 40) that includes multiple 90-degree bends along its length. (See Fig. 2.) If possible, a videoscope system would be purchased for gaining access to numerous difficulty to reach spaces in the 324 Building, including HLV Tank T-105. A mock-up of tank

T-105's access piping was selected because of the access challenges and the need to gain visual characterization of the tank's residual waste source term (approximately 14,000 R/hr) without creating new penetrations/risers for tank access.

Operating Unit: Demonstration of fiber optic technology involved use of a fiber optic system that consists of a very small diameter fiber optic cable contained within a flexible protective sheath connected to a high-resolution charge-coupled device (CCD) camera. Lighting for the camera is provided by several fibers in the cable. Both the camera and the light generator are operated from a control unit that can be set up in a remote location.

Testing Unit Performance: A screening process was used to select units to be demonstrated in a non-radioactive (cold) environment at Hanford. After reviewing information submitted by vendors, including videotaped demonstrations of unit performance, a vendor was selected and a unit brought to Hanford for cold demonstration using a scale model (mock-up) of the tank T-105.

Summary Results: Demonstrations proved that the vendor's fiber optic cable can be threaded through the four 90Eelbows (bends) leading to tank T-105 and advanced through the tank dome to obtain visual images of tank internals.

Demonstrations in Progress

One technology demonstration in progress involves an evaluation of technologies capable of reducing or capturing particulate generated during thermal cutting. The objective for demonstrating this technology will be to capture particulate generated during thermal cutting by positioning the dust-collection unit inside an enclosed area like a hot cell, collecting particulate, and packaging it for disposal remotely.
After reviewing currently available cutting technologies, selection efforts focused on filtration technology that can be used and maintained inside a hot cell as cutting takes place. This led to identification of a self-contained, self-cleaning dust collection unit that can capture particulate if positioned near the exit point for the ventilation flowpath. The device selected for demonstration is a nuclear grade unit designed to be manipulated using robotic tools. A bank of filter cartridges inside the unit is equipped with individual pulsing mechanisms that can be back flushed with short bursts of compressed air for periodic cleaning. It is also possible to remove and package the filters using standard waste containers. After the unit is installed, it has the potential to capture particulate that can then be easily disposed using remote techniques already being used to accomplish waste removal.

Another series of demonstrations in progress involves evaluating chemical solutions and processes that can be used to accomplish decontamination in a more efficient, controlled manner that generates less secondary waste. Evaluation of various chemical processes led to the selection of several solutions that have the potential to decontaminate debris and surfaces to desired levels while producing less secondary waste. Two technologies identified for selection and demonstration have been used successfully in the commercial nuclear sector to significantly reduce costs associated with decontamination through re-categorization of the decontaminated waste form. Demonstration and evaluation of these technologies at the WVDP are going to be performed under very challenging radiological conditions likely to be encountered within hot cells. A third decontamination technology identified for selection and demonstration has been developed for robotic application. This technology makes use of an electrochemical decontamination mechanism augmented by a novel secondary waste treatment step that eliminates the need to carry out liquid waste treatment steps which have impeded wide-scale application of electrochemistry as a means for accomplishing decontamination and decommissioning in nuclear facilities. Typically, electrochemical decontamination generates an aqueous waste form that requires treatment for RCRA metals. Demonstration of the selected electrochemical decontamination technology has the potential to eliminate this issue through use of a strippable gel that does not require further treatment after application.

A fourth decontamination technology identified uses liquid nitrogen at very high pressures to remove contamination from surfaces. A key feature associated with this technology is the lack of secondary waste generated when using it to decontaminate a variety of surfaces. Other technology demonstrations in-progress involve devices that can be used to perform work remotely, including a wireless camera; a tool to crimp, shear and seal pipe remotely; a saw with opposing blades; shearing tools; and a robotic arm.

SUMMARY

Technologies considered for selection and demonstration as part of the LSDDP of Hot Cells at the WVDP are commercially available technologies that have the potential to significantly improve risk/cost baselines associated with completing the cleanup of highly contaminated areas such as radioactive hot cells. Specifically, technologies considered for demonstration are those with the potential to perform a range of tasks associated with hot cell decontamination and deactivation remotely, including in-situ characterization and external non-destructive assay techniques, applying fixatives, remote-viewing, size-reduction and surface decontamination. Selection focused on evaluating technologies with the potential to conduct these tasks with greater safety, in less time, or at lower cost.

During the preliminary stages of the selection process, 58 different technologies were evaluated to identify technologies with the greatest potential for successful remote demonstration at each site participating in the LSDDP of Hot Cells, the WVDP and Hanford. Evaluation was conducted by using screening criteria established by these sites. Out of all technologies so far evaluated, 15 have been selected for further evaluation and demonstration. Demonstration of six selected technologies have been completed. Based on specific test objectives developed for each demonstration, five technologies have met established test objectives and yielded positive results in terms of improved safety, performance cycle time, and associated cost. A cost benefit analysis prepared for each demonstration will be used to confirm improved performance over existing baselines for each technology demonstrated. Descriptions of each technology demonstrated, including a discussion of the site facilities where demonstrations were conducted and demonstration results will be provided through various reporting vehicles, including Technology Fact Sheets. As this information is prepared, it will be made available through established reporting mechanisms, including the website for the LSDDP of Hot Cells (www.wvdp.doe.gov/lsddp). Additionally, a summary report prepared at the conclusion of the LSDDP of Hot Cells will be used to document selection, testing, and results for all technologies demonstrated during the LSDDP of Hot Cells at the WVDP.