TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

REMOTE VIEWING FOR HOT CELLS AND ASSOCIATED AREAS IN BUILDINGS 324 AND 327

Identification No.: RL-DD047
Date: November 2001

Program: 300 Area Facility Transition
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-RC06
Waste Stream: N/A
TSD Title: N/A
Operable Unit (if applicable): N/A
Waste Management Unit (if applicable): N/A
Facility: Buildings 324 and 327

Priority Rating:

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" Priority:

____ 1. Critical to the success of the ACPC.
_X_ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high life-cycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays).
____ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: Remote Viewing for Hot Cells and Associate Areas in Buildings 324 and 327

Need/Opportunity Category: *Technical Opportunity* – The Site desires an alternative to the current baseline technology.

Need Description: Technologies, techniques, and methods are needed to provide low-cost upgrades to improve the remote visibility in hot cells, ventilation ducting, piping and other difficult to reach areas. Upgrades would provide hot cell operators with improved control and the ability to expedite work activities. Equipment for remote deployment in tanks, ducts and piping would also provide useful data for assessing waste deposit/heel location, physical characteristics and remediation options.

Schedule Requirements:

Earliest Date Required: (10/01/03)
Latest Date Required: (09/30/07)

Problem Description: The presently deployed remote camera systems in hot cells provide medium-resolution, black and white or color imaging and do not reach all hot cell regions. Improved optics could ease the planning and execution of hot cell dismantlement activities. Systems offering a combined wide/narrow field could prove useful.

Also, a number of tanks within the 324 Facility have no vertical riser access. If commercially available, visual inspection of the tank internals may be possible by "snaking" very small diameter (i.e. < ½inch) cameras/scopes through roughly 50 feet of piping with ells and tees along the routing. Negotiation of small radius ells and tees present a challenge.

Potential Life-Cycle Cost Savings of Need (in $000s) and Cost Savings Explanation: Improved visibility should allow for remotely controlled cleanup activities to be accomplished at a higher rate and with finer control. A ROM estimate for LCCS simply based on task efficiencies from improved viewing capability alone would likely exceed $250K. Additional savings would most certainly be realized from application of better knowledge on location and visual/physical characteristics of waste holdup.

Benefit to the Project Baseline of Filling Need: As noted above, benefits would be gained from increased deactivation task efficiency, possibly from better waste segregation and the resulting decrease in waste disposition costs, and minimize risk/exposure to workers from better knowledge of holdup location.

Relevant PBS Milestones:

TRP-06-921	324 Deactivation Complete	September 22, 2006
TRP-07-930	327 Deactivation Complete	September 7, 2007

Functional Performance Requirements: It is desired to upgrade the existing systems to a high-resolution, color imaging system and to provide visibility to all areas within a hot cell. The system must be able to function in an environment containing high levels of radiation (2,000 to 5,000 R/hr) and chemical contamination, and provide remote viewing from up to 75 feet outside of hot cells.

Work Breakdown Structure (WBS) No.: 1.04.10, 324/327 Buildings Stabilization/Deactivation

TIP No.: N/A

Justification for Need:

Technical: Operational improvements are needed to support hot cell cleanout.

Regulatory: Tri-Party Agreement Milestone M-89-00: Complete Closure of the Non-permitted MW Units of the 324 REC, HLV and LLV by October 2005. The 327

Building contains no TSD units; only the generating facility requirements of RCRA apply.

Environmental Safety and Health: Enhanced visibility into the 324/327 hot cells will enable better identification of materials within individual cells. Knowledge of the contents will enable personnel to better plan for the safe, efficient remediation of these areas. Improved visibility will also help to reduce the chances of exposure to personnel.

Cultural/Stakeholder Concerns: Stakeholders are concerned about releases to the environment. The 324 and 327 buildings are located within 1,000 ft of the Columbia River.

Other: Improved camera systems can be transferred to other facilities and applications**.**

Current Baseline Technology: The hot cells currently use a minimal number of black and white and color, radiation hardened, video cameras. No systems are yet known to be commercially available and able to negotiate the small diameter piping with ells and tees along its routing.

End User: EM-60.

Contractor Facility/Project Managers: Malcolm S. Wright, Director - 324 Facility Deactivation Project, Fluor Hanford (FH) (509) 373-5864, Fax: (509) 373-0139, Malcolm_S_(Mal)_Wright@rl.gov; William A. Hoober, Director - 327 Facility Deactivation Project, Fluor Hanford (FH), (509) 376-9717, Fax: (509) 376-5420, William_A_Hoober@rl.gov

Site Technical Point-of-Contact: Gregory T. Berlin, Fluor Hanford (FH), (509) 376-2389, Fax (509) 376-1045, Gregory_T_Berlin@rl.gov.

DOE End-User/Representative Point-of-Contact: David T. Evans, U.S. Department of Energy, Richland Operations Office (DOE-RL), (509) 373-9278, Fax: (509) 372-3508, David_T_Evans@rl.gov.