TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

ITEM TRANSFER METHOD TO REPLACE CURRENT SEALOUT TECHNIQUES

Identification No.: RL-01-020-NM
Date: September 2000

Program: Nuclear Materials Stabilization
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-CP03
Waste Stream: N/A
TSD Title: N/A
Operable Unit (if applicable): N/A
Waste Management Unit (if applicable): N/A
Facility: Plutonium Finishing Plant

Priority Rating:

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

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

Need Title: Item Transfer Method to Replace Current Sealout Techniques

Need/Opportunity Category: *Technology Opportunity*

Need Description:

- Description: The PFP stabilization and D&D activities in gloveboxes and other contaminated environments result in a large number of sealout tasks, to remove waste, samples, product, or other materials from the contamination zone into a bag that is clean on the outside. These sealout activities are inherently risky, in that contamination can be incurred from errors in the process or material defects in the plastic bags used. Contamination control practices in place to mange this risk result in inefficient operations in many instances due to common airspaces and competing activities.

- Background: The sealout method has been in use for decades, and in general provides a safe and effective transfer technique to remove material from a contaminated to an uncontaminated environment. However, the method requires significant operator attention

and skill, at a low frequency results in contamination events. Recent development of a glovebox panel change containment device showed that for specialized cases, a technology to effect transfers with less risk and better control could be implemented. Similar development for the more frequent sealout type tasks is highly desirable.

- Technology to transfer materials from gloveboxes without using plastic bags and sealout techniques could have wide applicability at other Hanford Site D&D projects and throughout the DOE complex.

Schedule Requirements: This technology is needed as soon as possible to maximize benefits.

Earliest Date Required: 10/2000
Latest Date Required: 09/2014 (end of D&D activities)

Problem Description: The PFP stabilization and D&D activities in gloveboxes and other contaminated environments result in a large number of sealout tasks, to remove waste, samples, product, or other materials from the contamination zone into a bag that is clean on the outside. These sealout activities are inherently risky, in that contamination can be incurred from errors in the process or material defects in the plastic bags used.

Potential Life-Cycle Cost Savings of Need (in $000s) and Cost Savings Explanation: Assuming that a technology to effectively transfer material from a glovebox would be less complex than the current sealout technology, which uses at least 3 personnel and requires an airspace analysis before the area can be released for normal use, a 50% operational cost reduction could be forecast. A conservative figure for sealouts would be on the order of 2 per day, for the next 10 years at 220 working days/yr, and a cost of $500 per sealout, resulting in a projected cost savings of $1.1 million. This would be partially offset by any capital cost of the technology used.

Benefit to the Project Baseline of Filling Need: Resolution of potential hazard during sealout, avoiding contamination events that adversely affect schedule, cost savings due to simpler operation with fewer personnel.

Relevant PBS Milestones:

TRP-05-500, Complete stabilizing and packaging of oxides, 5/31/04
TRP-14-401, Complete PFP deactivation, 9/30/16

Functional Performance Requirements: The technology must provide a simpler means to move material in an uncontaminated environment with free surface contamination release limits meeting the Hanford RadCon manual. It should be easily fitted to existing gloveboxes without extensive modifications.

Work Breakdown Structure (WBS) No.:	***TIP No.:***
1.04.05.01.13	N/A.

Justification For Need:

Technical: The current method for transfer of contaminated material into an uncontaminated environment has inherent risks that should be minimized, and there are potential cost savings associated with a simpler method.

Regulatory: None.

Environmental Safety & Health: None.

Cultural/Stakeholder Concerns: None.

Other: N/A

Current Baseline Technology: None.

End-User: Fluor Hanford, Inc., Nuclear Materials Stabilization Project

Contractor Facility/Project Manager: George W. Jackson, Director, Nuclear Materials Stabilization Project, Fluor Hanford, Inc. (509) 373-6622

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