

Cost Savings Report Summary Page

Title: Overview Video System (OVS)

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Summary Description:

Surplus video inspection systems and equipment were identified for use and successfully deployed in support of the Canyon Disposition Initiative (CDI) resulting in significant cost and schedule savings.

In order to assess the present configuration of the drainpipe outfall into Cell #10, initial visual examination and evaluation (Phase I) was needed for design and development of suitable methods for satisfaction of the Sampling and Analysis Plan for the 221-U Facility(SAP), DOE/RL-97-68 requirements.

An existing technology, the Overview Video System (OVS) was selected to collect Phase I characterization data. The OVS was slightly modified for use in the 221-U Facility and deployed from the canyon deck to obtain a video record of the drainpipe outfalls into the canyon sump. The OVS obtained Phase I surveillance data without the need for significant capital expenditures, and minimal engineering and/or operations resources. Data collected using the OVS satisfied project objectives by providing information necessary for design of systems and equipment for further characterization of the drainpipe.

Initial Capital Investment (C)	\$	15,000
Implementation Cost (E)	\$	12,430
Total Project Start Up Cost (C+E)	\$	27,430
Termination Cost (D)	\$	-
Annual Recurring Cost Before (B)	\$	42,430
Annual Recurring Cost After (A)	\$	-
Net Annual Recurring Cost (B-A)	\$	42,430
* Useful Project Life in Years (L)		1
Total Savings $[(B - A) \times L] - (C + E + D)$	\$	15,000
Annualized Savings	\$	15,000
Return on Investment		55 %

* This Cost Savings Report was developed based on a one-time deployment of the technology. The technology will also be considered for future needs.

1. Baseline Description (Brief description of current baseline technology and/or methods)

The traditional baseline methods for obtaining visual data equivalent to that obtained by the OVS include physical entry into the cell and/or deployment of remote viewing equipment.

Physical entry would require extraordinary efforts to ensure personnel safety. This would include the development of detailed special-purpose work procedures, the erection of scaffolding and fall protection, rigorous characterization and possible removal of Cell #10 contents, extensive measurements, and analysis of vapors/gases radiological surveys and/or protective measures.

Remote viewing equipment available in the 221-U canyon area is limited to optical and video equipment installed on the overhead bridge crane. The existing remote viewing equipment does not provide acceptable fields of view and/or resolution necessary for evaluation of the mechanical arrangement of equipment and components in the vicinity of the drainpipe outfalls.

2. Improved Technology Description (Brief description of improved technology and/or methods)

The OVS is a completely enclosed, remote, color camera system that was originally designed for and deployed in underground waste storage tanks at the Hanford Site. The system includes camera and lights, deployment mechanism, and control electronics in two control consoles. The OVS is deployed from a hand-truck and is man-portable. A cable reel mounted to the hand-truck holds roughly 50 ft of umbilical cord, allowing the camera head to be deployed nearly 50 ft below the level at which the hand-truck is parked. A motor in the camera head provides a panning degree of freedom, and the lights in the side of the video head provide off-axis lighting.

3. Description of Benefits (List of benefits expected from deployment of improved technology)

DIRECT COSTS

Using the OVS minimized costs by eliminating the need to design and engineer a system from scratch. OVS was deployed in a routine manner without special entry or work requirements. The deployment was within the regular work scope of facility personnel, eliminating the need for specially trained workers.

SAFETY

Risks to workers are reduced when using the OVS. Potential risks avoided by using the OVS include the following:

- Exposure to unknown or unsafe air space in the equipment under examination.
- Contact with unknown materials (contents).
- Exposure to potentially pressurized piping or equipment.
- Fall hazards associated with working from scaffolding.
- Heat stress concerns caused by much greater physical exertion.
- Radiological dose exposure to personnel due to closer proximity and extended contact with the equipment subject to examination.

Worksheet 1: Operating & Maintenance Annual Recurring Costs

Expense Cost Items *	Before (B) Annual Costs	After (A) Annual Costs
1. Equipment **	\$ 30,000.00	\$ -
2. Purchased Raw Materials and Supplies	\$ 1,000.00	\$ -
3. Process Operation Costs:		
Utility Costs	\$ -	\$ -
Labor Costs	\$ 10,230.00	\$ -
Routine Maintenance Costs for Processes	\$ -	\$ -
Subtotal	\$ 10,230.00	\$ -
4. PPE and Related Health/Safety/Supply Costs	\$ 1,200.00	\$ -
5. Waste Management Costs:		
Waste Container Costs	\$ -	\$ -
Treatment/Storage/Disposal Costs	\$ -	\$ -
Inspection/Compliance Costs	\$ -	\$ -
Subtotal	\$ -	\$ -
6. Recycling Costs		
Material Collection/Separation/Preparation Costs:		
a) Material and Supply Costs	\$ -	\$ -
b) Operations and Maintenance Labor Costs	\$ -	\$ -
Vendor Costs for Recycling	\$ -	\$ -
Subtotal	\$ -	\$ -
7. Administrative/other Costs	\$ -	\$ -
Total Annual Cost:	\$ 42,430.00	\$ -

* See attached Supporting Data and Calculations.

** Because the OVS was a one time only deployment there are no annual recurring costs.

Costs for column (A) are accounted for in the implementation costs on worksheet 2.

To prevent the annual cost figures from being skewed the equipment cost for column (B)

represents the cost for new equipment(\$45,000) - cost of surplus equipment(\$15,000)

= \$30,000

Summary Worksheet : Itemized Project Funding Requirements*
(i.e., One Time Implementation Costs)

Category	Cost \$
INITIAL CAPITAL INVESTMENT	
1. Design	\$ -
2. Purchase	\$ 15,000
3. Installation	\$ -
4. Other Capital Investment (explain)	\$ -
Subtotal: Capital Investment= (C)	\$ 15,000
INSTALLATION OPERATING EXPENSES	
1. Planning/Procedure Development	\$ 5,280
2. Training	\$ -
3. Miscellaneous Supplies	\$ 1,000
4. Startup/testing	\$ 4,950
5. Readiness Reviews/Management Assessment/Administrative Costs	\$ -
6. Other Installation Operating Expenses (explain) PPE	\$ 1,200
Subtotal: Installation Operating Expense = (E)	\$ 12,430
7. All company adders (G & A/PHMC Fee, MPR, GFS, Overhead, taxes, etc.)(if not contained in above items)	\$ -
Total Project Funding Requirements=(C + E)	\$ 27,430
Useful Project Life = (L) 1 Years	Time to Implement: 0 Months
Estimated Project Termination/Disassembly Cost (if applicable) = (D)	\$ -
(Only for Projects where L<5 years; D=0 if L>5 years)	
RETURN ON INVESTMENT CALCULATION	
Return on Investment (ROI) % =	
$\frac{(Before - After) - [(Total Project Funding Requirements + Termination)/Useful Life]}{[Total Project Funding Requirements + Project Termination]} \times 100$	
$ROI = \frac{(B-A)-[(C+E+D)/L]}{(C+E+D)} \times 100 = 55 \%$	
O&M Annual Recurring Costs:	Project Funding Requirements:
Annual Costs, Before= \$ 42,430 (B)	Capital Investment= \$ 15,000 (C)
Annual Costs, After= \$ - (A)	Installation Op. Exp= \$ 12,430 (E)
Net Annual Savings= \$ 42,430 (B-A)	Total Project Funds= \$ 27,430 (C+E)
Note: Before (B) and After (A) are Operating & Maintenance Annual Recurring Costs from Worksheet 1.	

* See attached Supporting Data and Calculations.

Table 1. Overview Video System in 221-U Facility Deployment Cost Development		
Common work package preparation	80	m-hrs
Setup of work area and radiation survey per location	12	m-hrs
Training	12	m-hrs
Video equipment setup in canyon per location	6	m-hrs
Video equipment setup in gallery per location	1	m-hrs
Perform video examination (1 location per shift x 2 craftsmen)	8	m-hrs
Radiation control/monitoring support	24	m-hrs
Breakdown and survey of work area	12	m-hrs
Total Time For Initial Performance	155	m-hrs
Labor (at an average rate of \$66.00 per hour)		\$10,230.00
Miscellaneous expendables and non-release equipment		\$1,000.00
Personal protective equipment(\$100.00 per entry x 12)		\$1,200.00
Total Cost For Initial Performance		\$12,430.00
Subsequent deployments may be performed without the need for preparation of new work package		
155 m-hrs – 80 m-hrs = 75 m-hrs per subsequent deployment	75	m-hrs
Modify existing work package	4	m-hrs
Total Time For Subsequent Performance	79	m-hrs
Labor (at an average rate of \$66.00 per hour)		\$5,214.00
Miscellaneous expendables and non-release equipment		\$1,000.00
Personal protective equipment(\$100.00 per entry x 3)		\$1,200.00
Total Cost For Subsequent Performance		\$7,414.00

The OVS should be considered an enabling technology. Current crane deployed optical and video equipment in the facility does not have the capability to gather the information required. Physical entry into the area would require extraordinary efforts as described in the baseline description. Costs related to manned inspection of the area would be far and above the cost of using the remote Overview Video System.

The OVS consisted of surplus equipment purchased from PNNL. Cost savings of this deployment will be recorded as the difference between purchasing new equipment, the baseline, and using the surplus equipment already available.

Estimated cost for design and procurement of new materials: \$45,000