

**THE ENVIRONMENTAL COST ENGINEERING AND PROJECT MANAGEMENT  
WORKSHOP/PANEL  
Waste Management 2002 Symposia  
February 27, 2002**

This workshop consisted of a series of topics related to the management of projects and cost estimating and cost engineering for environmental and decommissioning projects. Presenters represented DOE Field sites, Headquarters, other Federal Agencies, contractors and private sector firms. Some of the topic areas included the latest developments in environmental project estimating tools; resources that can assist in the implementation of accurate and consistent cost estimating; consideration of cost risk methodologies and tools that can be used both for programmatic risks and risks for individual projects; new standards available to estimate, collect, and categorize environmental costs; work breakdown structure alternatives, resource loaded schedules and implementation of enhanced project management systems. The session included hands-on examples and demonstrations that helped workshop participants share ideas and learn methods to improve skills. The format included questions, answers, and discussions at the conclusion of each panelist's presentation.

Co-Chairs:

Marvin Garcia, Director Office of Project Management

Bryan Skokan, Office of Site Closure, Applied Cost Engineering Tam

**ABSTRACT OF THE ENVIRONMENTAL COST ENGINEERING AND PROJECT  
MANAGEMENT SESSION TOPICS**

***ASTM Standard Effort for the ECES by Pramod Mallick, DOE-HQ, Office of River  
Protection***

Environmental Cost Element Structure (ECES) is a standardized list of elements that may be required to accomplish environmental projects. ECES was developed in cooperation with the Interagency Environmental Cost Engineering Committee (EC<sup>2</sup>), which includes members from the Environmental Protection Agency, Army Corps of Engineers, U.S. Navy, and the Air Force. Currently, the ECES at Level 1 and Level 2 are American Society of Testing and Material (ASTM) Classification Standard. The DOE EM is in a process of making the ECES Levels 3, 4, and 5 as ASTM Standard Adjunct. This presentation and discussion covered a brief overview of the ECES and the process of making ECES an ASTM document.

***Federal Agencies Effort in Collecting and Assessing Technology Cost by John Kingscott,  
Environmental Protection Agency***

For several years, federal agencies have been documenting the cost and performance of full-scale cleanups and large demonstration projects. These case studies have been compiled by the Federal Remediation Technologies Roundtable and are being distributed through their web site (<http://www.frtr.gov>). There are approximately 275 studies presently available, and these served as the primary reference source for an analysis of historical cost information. Six commonly-applied remediation technologies (bioremediation, thermal desorption, soil vapor extraction, on-site incineration, groundwater pump-and-treat systems, and permeable reactive barriers) were

assessed using statistical procedures. Cost curves were developed for four of the technologies showing the correlation between unit cost and quantity of material treated. Results of this work are documented in a Remediation Technology Cost Compendium - Year 2000 (EPA 542-R-01-009). The methodology used to develop this information along with the value that it has to both cost and program managers were discussed.

***Cost Uncertainty Analysis for Environmental Projects* by John Kirch,  
USDOE-NETL/CABE**

The Cost Uncertainty Analysis for Environmental Projects is a systematic method used as a basis to address DOE EM-wide project Life Cycle Cost uncertainty. Included are the details for preparation of conducting the analysis; criteria issued to site offices to use in scoring individual project uncertainty; processes and interaction with site offices; Monte-Carlo simulation to assess uncertainty; and analysis of information and results. This system was developed to address Inspector General concerns, and this approach has satisfied the IG in reviews for the last three years.

***Cost Risk Analysis* by Kin Chao, Legin Group**

Cost Risk is an uncertainty or risk analysis software developed by Department of Energy Applied Cost Engineering Team and U.S. Army Corps of Engineers. Cost Risk is designed to work as a stand-alone tool or for estimates developed in other estimating software such as RACER or PACES to perform Monte Carlo analysis, using the Crystal Ball software. The uses of Cost Risk include establishment of contingency, evaluating alternative design, and understanding causes of risk in an estimate. Earthtech Inc. is writing the codes for the software. This presentation provided a perspective on cost risk assessment and its application to estimate contingencies for environmental restoration projects.

***Use of the Environmental Cost Analysis System (ECAS) for Technology Cost Information* by  
Jake Appetta, NETL**

ECAS (Environmental Cost Analysis System), a WEB based application computer system, has been designed to serve as a repository of cost and technology data for Environmental clean up and containment projects. The system accepts and displays data in the Environmental Cost Element Structure (ECES) developed by the Department of Energy's (DOE) Applied Cost Engineering team. Data for completed DOE projects is being entered into the system for DOE use. The system could be made available for all government agencies to use to develop accurate cost estimates for future projects. The data may also be used to identify what specific technologies were applied to what problems and related costs applicable to the technologies.

***Sharing Environmental Restoration Life-Cycle Cost Models via an XML Library* by Bill  
Hombach, Team Analysis**

The U.S. Navy is pursuing an effort to standardize Internet cost models that any estimating system can potentially read and use. Electronic model standardization along with the use of eXtensible Markup Language (XML) for data definition, transmission, and application is the

cornerstone of this effort. The objective is maximum interoperability between systems, with the end goal to minimize model development and maintenance costs by fostering competition and through free sharing of cost models and cost data.

***Departmental Communication System for Project Management* by Marvin Garcia, EM-6,  
(presented by Bryan Skokan, EM-31)**

A new Departmental Initiative led by the DOE Office of Engineering and Construction Management (OECM) is being developed to communicate to senior management the status (cost, schedule, and technical) of each project at any level of the work breakdown structure. The plan is to utilize Primavera Enterprise on selected EM projects along with Microfusion Millennium, and Winsight to accomplish this. The concept would permit multiple offices to have the ability to read and analyze project performance data, identify WBS elements that breach variance thresholds, and help coordinate early corrective actions to improve the projects chances of meeting the schedule within budget, and achieving the technical requirements. EM has been chosen as the lead Program Office to test and implement the system and the Savannah River Site has been chosen to conduct the pilot study. If successful this system would reduce duplicative project reporting systems while at the same time increase timeliness and accuracy of project management information.