

# SUCCESS STORIES

## M2A3/M3A3 BRADLEY FIGHTING VEHICLE SYSTEM

### ENVIRONMENTAL QUALITY LIFE-CYCLE COST ESTIMATE



M2A3/M3A3 BRADLEY FIGHTING VEHICLE SYSTEM

The Environmental Quality Life-Cycle Cost Estimate (EQLCCE) for the M2A3/M3A3 Bradley Fighting Vehicle System (BFVS), completed in February 2001, represents the Army's continuing effort to identify and quantify environmental quality costs over the entire life-cycle for this weapon system. The EQLCCE was prepared in accordance with the U.S. Army Cost and Economic Analysis Center's (CEAC's) *Cost Analysis Manual*, July 1997. The EQLCCE information can be used to identify areas of improvement such as material substitution, process changes and/or recycling, and potentially reduce the overall cost of the weapon system. An environmental Work Breakdown Structure (WBS) format was used to compile individual environmental quality cost elements and total costs for the entire Bradley program. The WBS includes all weapon system cost elements associated with environmental and regulatory compliance.

### BENEFITS

The significant benefits of performing an EQLCCE for a weapon system are:

- ◆ Improving the visibility of proven and potential environmental impacts and the costs of the weapon system
- ◆ Providing opportunities for the Program Manager (PM), developer and fielding installations to identify and reduce environmental quality costs and determine alternative options associated with the weapon system
- ◆ Reducing the potential risk of remediation/restoration of environmental impacts with potential cost savings to the Army
- ◆ Assisting the PM in defining compliance issues related to federal environmental regulations and DoD acquisition requirements.

The EQLCCE for the Bradley program identified \$237.5M (\$FY01) in environmental quality costs. Of this total, \$87.7M were previously identified in the Army Cost Position. As a result of conducting the EQLCCE, an additional \$149.8M of environmental quality costs were identified associated with installation operations, demilitarization and disposal. By integrating these costs into the weapon system Program Office Estimate, the PM will be able to plan for and better manage environmental risk.

The Bradley Environmental Management Team indicated that the EQLCCE also provided the following benefits:



- ◆ Guidance for identifying opportunities to reduce environmental impacts and the need to continue evaluating production and support activities
- ◆ Identification of direct operations and maintenance costs, including hazardous material and waste disposal management at the installation level
- ◆ Identification of costs associated with demilitarization and disposal
- ◆ A valuable resource for identifying cost data that can be used to support funding proposal development; update Pollution Prevention, Environmental Management, and Hazardous Material Management Plans; and prepare National Environmental Policy Act documentation.

### WEAPON SYSTEM BACKGROUND

The M2A3/M3A3 BFVS is the Army's full-tracked light armored combat fighting vehicle designed to accompany the M1 Abrams Main Battle Tank into battle. Since its initial production in 1981, the M2A3/M3A3 BFVS has been continually improved to meet and exceed the requirements of the changing battlefield. The latest addition to the Bradley family of vehicles, the M2A3/M3A3 BFVS can travel across both land and water with a maximum land speed of 38 mph (61 km/h) and a maximum waterspeed of 4 mph (6.4 km/h) with track. The M2A3/M3A3 BFVS is also equipped with a 360-degree, continuous traverse turret. The system also features automatic dual target tracking, automatic gun target adjustment, automatic sighting and hunter/killer capabilities. The M2A3/M3A3 BFVS communications enable digital information displays for the commander, driver and squad leader. The M2A3/M3A3 BFVS will also feature improved driver's vision for better maneuverability and a 360-degree Commander's Independent Viewer.

### EQLCCE DRIVERS

In response to the 1995 Defense Appropriations Act requirements, the DoD was tasked to develop methodologies and databases for the analysis of environmental quality costs of major defense acquisitions/ programs. Responsibility for performing environmental quality costs analysis of Major Defense Acquisition Programs in the Army is borne by the responsible Program Manager's Office, CEAC and various DoD agencies. PMs who acquire, fund, produce and maintain weapon systems must, in accordance with DoD 5000.2-R, determine environmental quality costs and impacts of weapon systems from conception through disposal.

Because of rising concerns about hidden environmental quality costs associated with Army weapon systems, a number of studies, including audits performed by the DoD Inspector General and the Army Audit Agency, have examined the Environmental, Safety and Health

aspects of weapon systems acquisition. An Office of the Assistant Secretary of the Army (OASA) for Installations, Logistics and Environment briefing to OASA Research, Development and Acquisition on 9 September 1997 stated that over 75 percent of all Army pollution is caused directly or indirectly by weapon systems. Approximately 1.8 percent of the Army's Total Obligation Authority is spent annually on restoration, conservation, compliance and pollution prevention. Consequently, every effort should be made to reduce the various costs when possible.

### EQLCCE HANDBOOK

The U.S. Army Environmental Center (USAEC) Acquisition Support Team is working with CEAC and PMs to develop and verify environmental quality life-cycle costs for various Army weapon systems. The team is developing a systematic approach, or methodology, to calculate these costs. The information will be compiled in an EQLCCE handbook for materiel acquisition that provides guidance for applying the methodology and conducting an EQLCCE for weapon systems. The handbook will also serve as a guide for PMs to estimate their program's environmental quality life-cycle costs.

In addition to the M2A3/M3A3 BFVS, USAEC has completed EQLCCEs for the RAH-66 Comanche, AH-64D Apache and CH-47F Chinook helicopter programs. The results from these EQLCCEs will be incorporated into the EQLCCE handbook.

