Mine Resistant Ambush Protected (MRAP) All Terrain Vehicle (M-ATV) and Special Operations Forces (SOF) Variant

Executive Summary

- DOT&E delivered the Special Operations Forces (SOF) Mine Resistant Ambush Protected (MRAP) All Terrain Vehicle (M-ATV) Operational and Live Fire Test and Evaluation Report to Congress in May 2011. The SOF M-ATV is operationally effective for conducting tactical transport missions including Convoy Escort, Protected Detail, and Area Reconnaissance. The SOF M-ATV is not operationally effective for conduct of the unique SOF combat missions of Direct Action, Urban Patrol, and Special Reconnaissance. The SOF M-ATV is not operationally suitable. The SOF M-ATV is survivable.
- U.S. Special Operations Command (USSOCCOM) completed testing in accordance with the DOT&E-approved Test and Evaluation Master Plan and test plans.
- The MRAP program procured the Underbody Improvement Kit (UIK) to integrate on the M-ATV fleet to improve M-ATV blast protection. DOT&E delivered preliminary findings from Live Fire testing of the UIK to Congress in September 2011.
- The MRAP program plans to execute a Limited User Test (LUT) at Yuma Proving Ground, Arizona, to examine a unit's ability to execute missions with the M-ATV UIK in November 2011.

M-ATV with Underbody Improvement Kit (UIK)

Special Operations Forces M-ATV

- The M-ATV UIK is designed to provide improved underbody blast protection to the base M-ATV.
- The M-ATV has the capability to add protection against attacks by explosively formed penetrators (EFPs) and rocket-propelled grenades (RPGs) to support mounted patrols, reconnaissance, security, and convoy protection.
- USSOCOM required modifications to the base M-ATV vehicle to support SOF missions. These vehicles are referred to as the SOF M-ATV variants. The modifications included five passenger positions including a gunner, protection for the cargo area, rear area access, and some other improvements for human factors.

System

- The DoD intends for M-ATV to have the current MRAP level of protection and mobility similar to the High Mobility Multi-purpose Wheeled Vehicle (HMMWV). The vehicle will support combat and stability operations in highly restricted rural, mountainous, and urban terrain with off-road movement conducted greater than 50 percent of the time.
- The M-ATV is designed for five passenger positions including a gunner. The vehicle incorporates current Service command and control and counter-IED systems. The M-ATV includes gun mounts with gunner protection kits capable of mounting a variety of weapons systems such as the M240B medium machine gun, the M2 .50 caliber heavy machine gun, and the Mk 19 grenade launcher.

Mission

- Units equipped with the M-ATV vehicle conduct mounted patrols, convoy patrols, convoy protection, reconnaissance, and communications, as well as command and control missions to support combat and stability operations in highly restricted rural, mountainous, and urban terrain. The M-ATV is reconfigurable to meet mission requirements.
- M-ATV vehicles support multi-Service missions and special operations. The M-ATVs are fielded to units based upon priorities established by the operational commander.

Major Contractor

Oshkosh Defense – Oshkosh, Wisconsin

Activity

- The MRAP program has procured 421 SOF M-ATV variants for USSOCOM.
- USSOCOM completed the SOF M-ATV IOT&E in November 2010 at Yuma Proving Ground, Arizona, in accordance with the DOT&E-approved test plan.
- In March 2011, due to changes in threat, mission, and other factors, the Joint Requirements Oversight Council approved the increase of the M-ATV Key Performance Parameter threshold curb weight to 32,000 pounds to enable critical improvement to the M-ATV survivability.

- As of September 2011, the program purchased 8,011 UIKs to integrate on the M-ATV fleet in Afghanistan to improve M-ATV underbody blast protection.
- In November 2011, the program will execute a LUT at Yuma Proving Ground, Arizona, to examine a unit's ability to execute missions with the M-ATV UIK.
- The M-ATV UIK Live Fire Test program commenced in April 2011 and will be completed by 2QFY12.

Assessment

- The SOF M-ATV is operationally effective for conducting tactical transport missions including Convoy Escort, Protected Detail, and Area Reconnaissance. The M-ATV provides sufficient armored mobility to conduct tactical transport missions over the types of terrain found in Afghanistan.
- The SOF M-ATV is not operationally effective for conducting the unique SOF combat missions of Direct Action, Urban Patrol, and Special Reconnaissance. The vehicle does not provide responsive acceleration to maneuver over terrain and react to changing tactical situations. The vehicle provides poor visibility to SOF operators seated in the rear of vehicle to observe their surroundings and respond to threats. The M-ATV Common Remotely Operated Weapon Station II (CROWS II) sights provide limited field of view for target acquisition. The vehicle's large visual and loud aural signatures negate the SOF need for tactical surprise.
- The SOF M-ATV is survivable, and provides ballistic protection against IEDs similar to that provided by the base M-ATV.
- The SOF M-ATV is not operationally suitable. The vehicle's rear seat configuration is cramped and not comfortable. During the IOT&E, the SOF riding in the vehicle experienced leg cramps and fatigue caused by the uncomfortable seats after 30 minutes. The SOF crew had difficulty moving in the vehicle to transition from seated positions to fighting position. One-half of the SOF operators complained of nausea while occupying the rear seats during the missions. The SOF M-ATV demonstrated automotive reliability similar to the base M-ATV. Weapon and CROWS II failures degraded the vehicle's reliability and should be fixed. These problems should have been resolved prior to the IOT&E.
- Emerging results indicate the M-ATV equipped with the UIK provides increased protection from underbody blasts compared to the baseline M-ATV.

Recommendations

- Status of Previous Recommendations. There are no previous recommendations.
- FY11 Recommendations. Prior to conducting FOT&E, the program should:
  1. Redesign the SOF M-ATV to accommodate larger rear passenger windows improving the visibility of SOF operators in the rear to observe their surroundings.
  2. Fix the firepower related failures and improve the overall reliability of the M-ATV.
  3. Improve the air flow rate within the SOF M-ATV to provide sufficient air circulation for five passenger crews.