

Mine Resistant Ambush Protected (MRAP) Family of Vehicles (FoV)

Executive Summary

- DOT&E delivered the classified Live Fire Test and Evaluation Assessment of the Mine Resistant Ambush Protected (MRAP) All-Terrain Vehicle (M-ATV) with Underbody Improvement Kit (UIK) to Congress in March 2013. The UIK-equipped M-ATV provided protection beyond its required level and is a significant improvement over the baseline M-ATV.
- The Services will retain approximately 43 percent (12,092) of the 27,701 MRAP Family of Vehicles (FoV) produced.
- The Special Operations Forces (SOF) M-ATV User Demonstration focused on verifying fixes to deficiencies identified in the SOF M-ATV IOT&E. The results from the User Demonstration indicate that the most significant deficiencies were not resolved.
 - The crews operating the SOF M-ATV continued to possess poor situational awareness due to the small rear windows and the limited field-of-view of the Common Remotely Operated Weapon Station II (CROWS II).
 - No improvements were made to the limited field-of-view of the CROWS II for target acquisition.
 - The crews operating the CROWS experienced the same weapon-firing and ammunition jamming failures identified during the IOT&E, which degraded the vehicle's reliability.
- The SOF M-ATV had improved vehicle acceleration while maneuvering over primary, secondary, and cross-country terrain during the User Demonstration. The addition of a muffler has reduced the loud aural signature.

System

- The MRAP program is a FoV designed to provide increased crew protection and vehicle survivability against current battlefield threats, such as IEDs, mines, and small arms. The MRAPs are employed by units in current combat operations in the execution of missions previously accomplished with the High Mobility Multi-purpose Wheeled Vehicle. This report covers four MRAP variants:
 - M-ATV Capability Set 13 (CS-13) Point of Presence (PoP) with UIK
 - M-ATV CS-13 Soldier Network Equipment (SNE) with UIK
 - SOF M-ATV with UIK
 - NAVISTAR Dash with MaxxPro Survivability Upgrade (MSU)
- The M-ATV with UIK is designed to provide improved underbody blast protection.
- The CS-13 M-ATV PoP vehicle is integrated with the Warfighter Information Network – Tactical (WIN-T) Increment 2 communications networking equipment and



Special Operations Forces MRAP All-Terrain Vehicle (M-ATV) with Underbody Improvement Kit (UIK)



M-ATV with UIK



NAVISTAR Dash with MaxxPro Survivability Upgrade (MSU)

mission command applications. The vehicle is designed to provide command and control on-the-move capability at division, brigade, and battalion levels.

- The CS-13 M-ATV SNE vehicle is integrated with the WIN-T Increment 2 communications networking equipment and mission command applications. The vehicle is designed to provide command and control on-the-move capability down to the company level.
- United States Special Operations Command required modifications to the Army M-ATV to support SOF missions. The modifications included five passenger positions including a gunner, protection for the cargo area, and rear area access.
- The Dash variant with MSU is designed to provide improved underbody blast protection.

Mission

Multi-service and special operations units equipped with the MRAP FoV 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.

Major Contractors

- Oshkosh Corporation – Oshkosh, Wisconsin
- Navistar Defense – Warrenville, Illinois

Activity

MRAP FoV

- In anticipation of the end of major hostilities in the Afghanistan theater, the Services determined their enduring force requirements and divestment plans for the MRAP FoVs.

M-ATV

- The program developed, procured, and integrated the Army CS-13 network equipment and mission command applications onto M-ATV vehicles to support brigades deploying to Afghanistan.
- The M-ATV CS-13 PoP and SNE vehicles participated in the WIN-T Increment 2 FOT&E during Network Integration Evaluation (NIE) 13.2 at Fort Bliss, Texas, in May 2013.
- The Army conducted a blast test on the CS-13 equipped M-ATV to assess what impact the mission equipment had on the vulnerability mitigation features of the M-ATV.

SOF M-ATV

- United States Special Operations Command completed a User Demonstration of the SOF M-ATV at Yuma Proving Ground, Arizona, in June 2013 to verify fixes to deficiencies found during the SOF M-ATV IOT&E.
- The program conducted a design review of an M-ATV Tube-Launched, Optically-Tracked, Wire-Guided (TOW) missile variant and contracted for two engineering prototype M-ATV TOW variants to be developed and tested.

Dash

- The Army completed live fire testing of the Dash equipped with the MSU kit.

Assessment

MRAP FoV

- The Services will retain approximately 43 percent (12,092) of the 27,701 MRAP FoV produced.

M-ATV

- DOT&E delivered the classified Live Fire Test and Evaluation Assessment of the M-ATV with UIK to Congress in March 2013. The UIK-equipped M-ATV

provided protection beyond its required level, and is a significant improvement over the baseline M-ATV.

- Based on the WIN-T Increment 2 FOT&E, the CS-13 M-ATV PoP and SNE vehicles provide an increased operational capability over the WIN-T NIE-configured M-ATV.
 - The addition of the Smart Display Unit and rear-mounted Multi-Domain Atlas platform contributed to increased situational awareness between commander and crew.
 - The Multi-Domain Atlas and integrated bridge software allowed the commander to distribute tasks to the crew reducing his workload.
- During the WIN-T Increment 2 FOT&E, the NIE-configured M-ATV experienced numerous air conditioner, water pump, and water pump belt failures due to the vehicles running continuously during operations to provide power to WIN-T and other communications equipment.
- The integration of the CS-13 mission equipment onto the UIK-equipped M-ATV does not adversely affect the performance of the vulnerability reduction features of the M-ATV during an underbody blast event.

SOF M-ATV

- The results from the SOF M-ATV User Demonstration indicate that the most significant deficiencies were not resolved. The crews operating the SOF M-ATV continued to possess poor situational awareness due to the small rear windows and limited field-of-view of CROWS II. The program did not make improvements to the limited field-of-view of the CROWS II for target acquisition. The crews operating the CROWS experienced the same weapon-firing and ammunition jamming failures identified during the IOT&E, which degraded the vehicle's reliability.
- The SOF M-ATV had improved vehicle acceleration while maneuvering over primary, secondary, and cross-country terrain during the SOF M-ATV User Demonstration. The addition of a muffler reduced the loud aural signature.

DOD PROGRAMS

Dash

- The MSU-equipped Dash provides increased occupant protection over the baseline Dash. LFT&E of the MSU-equipped Dash revealed problems with kit integration that the program will address during reset of the vehicles. Testing and evaluation of solutions to address these problems are ongoing.

Recommendations

- Status of Previous Recommendations. The program is making progress implementing the previous recommendations.
- FY13 Recommendations.
 1. The CROWS Program Office should investigate and determine the cause of CROWS weapon-firing failures and ammunition jamming problems and conduct additional operational testing of CROWS on tactical vehicles to verify fixes.
 2. The program should improve the visibility of the SOF passenger by installing larger rear windows in SOF M-ATV as previously recommended.

DOD PROGRAMS