

# Mine Resistant Ambush Protected (MRAP) Family of Vehicles

## Executive Summary

- The program procured 250 Navistar Dash Ambulances to fulfill an urgent need to provide protected transport and urgent medical treatment for Army units in Afghanistan.
- The Army Test and Evaluation Command (ATEC) completed the Limited User Test (LUT) of the Dash Ambulance with the Independent Suspension System (ISS) in November 2011 at Yuma Proving Ground, Arizona, in accordance with the DOT&E-approved test plan.
- DOT&E provided an Operational Assessment of the Dash Ambulance in August 2012.
- The Dash Ambulance is not operationally effective and not operationally suitable.
  - The patient compartment of the vehicle is small and the litter births are not long enough to safely accommodate litter patients taller than 5 feet 11 inches. A unit equipped with the Dash Ambulance cannot provide safe emergency medical care and transport for tall casualties in close proximity to enemy forces.
  - The small interior of the Dash Ambulance does not provide sufficient space for medical equipment and inhibits the ability of the medic to maneuver within the compartment to properly treat patients.
  - Loading patients in the Dash Ambulance is hampered due to difficulty aligning and securing the litter onto the litter rail system.
- The Dash Ambulance is reliable. During the Dash Ambulance LUT, the vehicle demonstrated 796 Mean Miles Between Operational Mission Failure (MMBOMF) versus its operational requirement of 600 MMBOMF. The vehicle can be maintained by Soldiers and is recoverable.
- The Dash Ambulance is survivable. The vehicle met the MRAP Capabilities Document version 1.1 threshold underbody and under-wheel blast requirements.
- The MRAP program procured 2,071 Caiman Multi-Terrain Vehicle (CMTV) rolling chassis with ISS and Caiman Underbody Blasts Kits to address crew vulnerability and mobility deficiencies. This variant is undergoing developmental testing. Underbody blast testing of an early version of the CMTV showed a significant reduction of the crew to injuries over the baseline Caiman.
- The Joint Program Office MRAP will transfer management responsibilities to the Services on October 2013.

## System

- MRAP is a family of vehicles designed to provide increased crew protection and vehicle survivability against current battlefield threats, such as IEDs, mines, and small arms. The DoD initiated the MRAP program in response to an urgent



**NAVISTAR Dash Ambulance**



**BAE Caiman Multi-Terrain Vehicle Category II**

- operational need to meet multi-Service ground vehicle requirements. MRAP vehicles provide improved vehicle and crew survivability over the High Mobility Multi-purpose Wheeled Vehicle (HMMWV). The MRAPs are employed by units in current combat operations in the execution of missions previously accomplished with the HMMWV. This report covers two MRAP vehicles:
- Navistar Dash Ambulance with ISS
  - BAE CMTV Category II
  - The Navistar Dash ISS Ambulance variant is designed to transport up to two litter patients or four ambulatory casualties.
  - The BAE CMTV Category II is designed to transport 10 persons plus 1 gunner.
  - MRAP vehicles incorporate current Service command and control systems and counter-IED systems. MRAP vehicles have gun mounts with gunner protection kits capable of mounting any one of 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 CMTV conduct small unit combat operations such as mounted patrol, convoy security, troop, and cargo transportation. The unit equipped with the MRAP Dash Ambulance variant supports the conduct of medical treatment and evacuation.

## Major Contractors

- BAE Tactical Vehicle Systems (TVS) – Sealy, Texas
- Navistar Defense – Warrenville, Illinois

## Activity

- The MRAP program continued to acquire and test enhanced capabilities to integrate across the MRAP family of vehicles. In FY12, the major capability insertions include the ambulance kits for the Navistar Dash and the ISS for the BAE CMTV.
- The MRAP program procured 2,071 CMTV rolling chassis with ISS and Caiman Underbody Blasts Kits to address crew vulnerability and mobility deficiencies. This variant is undergoing developmental testing. Live Fire testing of the CMTV will commence in 2QFY13.
- The program procured 250 Navistar Dash Ambulances.
- In November 2011, ATEC completed a LUT of the Dash Ambulance with ISS at Yuma Proving Ground, Arizona, in accordance with the DOT&E-approved test plan.
- DOT&E provided an Operational Assessment of the Dash Ambulance in August 2012.
- The program is developing, procuring, and integrating the Army network capabilities onto MRAP vehicles.
- The Joint Program Office MRAP will transfer management responsibilities to the Services in October 2013.

## Assessment

- The Dash Ambulance is not operationally effective and not operationally suitable. The patient compartment of the vehicle is small and the litter berths are not long enough to safely accommodate litter patients taller than 5 feet 11 inches. A unit equipped with the Dash Ambulance cannot provide safe emergency medical care and transport for tall casualties in close proximity to enemy forces. This problem should have been corrected prior to the LUT.
- The small interior of the Dash Ambulance does not provide sufficient space for medical equipment and inhibits the ability of the medic to maneuver within the compartment to properly treat patients.
- Loading patients in the Dash Ambulance is hampered due to difficulty aligning and securing the litter onto the litter rail system.
- The Dash Ambulance is reliable. During the Dash Ambulance LUT, the vehicle demonstrated 796 MMBOMF versus its

- operational requirement of 600 MMBOMF. The vehicle can be maintained by Soldiers and is recoverable
- The Dash Ambulance is survivable. The vehicle met the MRAP Capabilities Document version 1.1 threshold underbody and under-wheel blast requirements.
- Based on performance during developmental testing, the CMTV cannot stop following sustained operations in muddy terrain. The program suspended developmental testing until the program identifies and implements a materiel solution to fix the brake system.
- Endurance testing of the CMTV is ongoing at Yuma Proving Ground, Arizona, in all conditions except wet off-road. Underbody blast testing of an early version of the CMTV showed a significant reduction of the crew to injuries over the baseline Caiman. The CMTV experienced problems associated with air conditioner, tire, and new cab mount cracking failures. The program should resolve these problems prior to conducting FOT&E.
- Planning for Live Fire testing of the CMTV is ongoing and testing will commence in FY13.

## Recommendations

- Status of Previous Recommendations. The Army has not addressed the recommendation to improve the cross-country mobility and system reliability of the Navistar MRAP Recovery Vehicle.
- FY12 Recommendations for the Dash Ambulance and the CMTV. Prior to conducting FOT&E, the program should:
  1. Redesign the Dash Ambulance to accommodate litter patients taller than 5 feet 11 inches. Review the installed medical equipment with the objective of providing additional internal space and reducing patient loading time.
  2. Fix the CMTV brake system to allow the vehicle to stop in muddy conditions and improve the overall reliability of the CMTV.