

## Mine Resistant Ambush Protected (MRAP) MaxxPro Long Wheel Base (LWB) Ambulance

### Executive Summary

- In May 2015, the Army Test and Evaluation Command (ATEC) conducted the Long Wheel Base (LWB) Ambulance Limited User Test (LUT) at Yuma Proving Ground, Arizona, in accordance with the DOT&E-approved test plan.
- The LWB Ambulance is operationally effective and operationally suitable. An Army unit equipped with the LWB Ambulance can provide safe, emergency medical care and protected transport for casualties in close proximity to enemy forces.
- The LWB Ambulance has improved capability to carry casualties over the Dash Ambulance:
  - Accommodates litter patients taller than 5 feet 11 inches
  - Holds more mission essential medical equipment
  - Provides sufficient space for medics to maneuver within the vehicle to treat casualties
- The LWB Ambulance is reliable. During the LWB ambulance LUT, the vehicle demonstrated 1,025 Mean Miles Between Operational Mission Failure (MMBOMF) versus its operational requirement of 600 MMBOMF.
- The LWB ambulance meets its required levels of force protection, and, in the case of underbody blast, exceeds the objective-level requirements at some locations. This assessment is based on testing conducted with the LWB ambulance, and leverages test data from the legacy MaxxPro Mine Resistant Ambush Protected (MRAP) and the MaxxPro Dash with MaxxPro survivability upgrade.

### System

- The LWB Ambulance variant:
  - Is an all-terrain MRAP ambulance for evaluating and treating casualties from forward areas
  - Has a rail, trolley, and hoist system for litter loading/unloading and gun mounts with gunner protection kits on which to mount any one of a variety of weapons, such as the M240B medium machine gun, the M2 .50 caliber heavy machine gun, and the Mk 19 grenade launcher

### Activity

- As part of the Army MRAP enduring fleet requirement, the program is producing 301 ambulances to be placed in Army Pre-positioned Stocks and training base in June 2015. The Army procured the LWB Ambulance to resolve deficiencies with the small interior of the Dash Ambulance to effectively care and safely accommodate litter patients taller than 5 feet 11 inches.



**MaxxPro Long Wheel Base (LWB) Ambulance**

- Incorporates current Service command and control systems and counter-IED systems
- Incorporates the MaxxPro Survivability Upgrade kit that is installed on MaxxPro Dash variants
- The ambulance is operated by a crew of three medical Service members and accommodates two patients on litters, four ambulatory patients, or a combination of one litter patient and two ambulatory patients.

### Mission

Army commanders will employ units equipped with the LWB Ambulance to provide safe, emergency medical treatment and protected transport for casualties in close proximity to enemy forces.

### Major Contractor

Navistar Defense – Warrenville, Illinois

- ATEC completed developmental testing at Aberdeen Proving Ground, Maryland, and Yuma Proving Ground, Arizona, in April 2015.
- In May 2015, ATEC conducted the LWB Ambulance LUT at Yuma Proving Ground, Arizona, in accordance with the DOT&E-approved test plan.

# FY15 ARMY PROGRAMS

## Assessment

- The LWB Ambulance is operationally effective and operationally suitable. An Army unit equipped with the LWB Ambulance can provide safe, emergency medical care and protected transport for casualties in close proximity to enemy forces. During the LWB Ambulance LUT, the unit successfully accomplished four out of five medical evacuation missions.
- The LWB Ambulance has improved capability to carry casualties over the Dash Ambulance:
  - Accommodates litter patients taller than 5 feet 11 inches
  - Holds more mission essential medical equipment
  - Provides sufficient space for medics to maneuver and treat casualties within the vehicle
- The LWB Ambulance demonstrated off-road mobility and maneuver capability similar to the Dash Ambulance.
- Although medics can load and unload litter patients with the LWB Ambulance using the rail, trolley, and hoist system, loading patients is hampered due to misalignment of the rails when the system is deployed.
- The LWB Ambulance is reliable. During the LWB Ambulance LUT, the vehicle demonstrated 1,025 MMBOMF versus its operational requirement of 600 MMBOMF. The vehicle can be maintained by Soldiers and is recoverable.
- The LWB Ambulance cannot safely accommodate litter patients taller than 6 feet 5 inches due to the location of medical and vehicle equipment in the patient compartment. The equipment is in close proximity to the patient's head on the litter that may cause additional injury to the litter patient.
- The height of the gunner stand/medic seat is not suitable for shorter Soldiers to effectively provide protective fires. During

the LUT, shorter Soldiers positioned the gunner stand/medic seat in an unsafe manner to raise its height to observe their surroundings and engage threats.

- The LWB Ambulance lacks stabilizing handhold and inertial locking seat belts to allow medics to safely maneuver within the patient compartment and treat patients during transit. Medics required tactical halts to treat patients during the LUT.
- LFT&E conducted in FY14 indicates the vehicle provides underbody protection beyond its required levels. The LWB Ambulance was tested against underbody mines and IEDs to determine potential vulnerabilities introduced by the integration of LWB Ambulance mission equipment. Test data from legacy MaxxPro MRAPs establishing compliance with additional force protection requirements are applicable to the LWB Ambulance. Of the MRAP vehicles the DOD has retained, the MaxxPro MRAP variants set the standard for underbody blast protection.

## Recommendations

- Status of Previous Recommendations. There were no previous recommendations for this variant.
- FY15 Recommendations. The program should:
  1. Relocate the installed medical and vehicle equipment with the objective of providing additional head space to accommodate litter patients taller than 6 feet 5 inches.
  2. Improve the litter rail hoist system to eliminate misalignment of the rail and improve patient loading time.
  3. Redesign gunner stand/medic seat to allow height adjustment to accommodate shorter medics.