

## Armored Tactical Vehicles – Naval

### Executive Summary

- The Marine Corps has developed a special purpose kit to improve protection from under-vehicle attacks for the Logistics Vehicle System Replacement (LVSР) truck. For the wrecker variant, the Underbody Improvement Kit (UIK) has several unique design features to accommodate the self-recovery winch.
- The Marine Corps completed two LVSР system-level underbody blast tests in June 2014 at Aberdeen Test Center, Maryland; the data indicate that the UIK increases crew protection.
- The ballistic test phase addressed the crew/occupant vulnerabilities of the Medium Tactical Vehicle Replacement (MTVR) Engineering Change Proposal (ECP) vehicles against specific underbody threats. These events were selected for the MTVR ECP vehicles based on the previous live fire testing of the MTVR, and designed to provide comparative data for evaluation of seating performance and crew force protection.
- The Marine Corps completed two of the three planned MTVR ECP test events in March 2014 at Aberdeen Test Center, Maryland, before the test series was stopped for assessment and redesign.



**LVSР - Logistics Vehicle System Replacement**



**MTVR - Medium Tactical Vehicle Replacement**

### System

- The Marine Corps Armored Tactical Vehicle Programs include the LVSР and the MTVR trucks.
- The LVSР is a family of heavy trucks, including the LVSР Cargo and Tractor platforms and the LVSР Wrecker variant. LVSРs are capable of transporting 18 tons off-road and 22.5 tons on-road. The LVSР Wrecker has several unique design characteristics to accommodate the self-recovery winch. To improve the vehicles' survivability against underbody blast threats, a UIK is being designed by the Marine Corps, though not currently planned for procurement.
- The MTVR is a family of medium trucks, equipped with armor protection kits, which are capable of transporting 6 tons off-road and 12.2 tons on-road. Other ECPs include energy-absorbing seats and floor mats, emergency egress windshields, and an automatic fire extinguishing system.

- The LVSР is the heavy lift transport capability within all elements of the Marine Air Ground Task Force, which includes transporting bulk fuel and water, ammunition, cargo, tactical bridging, containers, combat engineer vehicles, and heavy wrecker capability.
- The MTVR is the prime mover for the howitzer, fuel and water assets, troops, and a wide variety of equipment.

### Mission

The Marine Corps employs truck systems as multi-purpose transportation and unit mobility vehicles in combat, combat support, and combat service support units.

### Major Contractor

LVSР and MTVR: Oshkosh Defense – Oshkosh, Wisconsin

### Activity

- Developmental and system-level testing of the LVSР Wrecker UIK integration concluded in 3QFY14. These tests included

two underbody blast events conducted at Aberdeen Test Center, Maryland. The LVSР Program Office provided

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two surrogate wrecker assets to test and characterize the force protection capabilities and vehicle vulnerability against underbody blast threats.

- The Program Manager Medium and Heavy Tactical Vehicles (PM M&HTV) started an effort to evaluate ECP components for the MTRV. This test phase is designed to demonstrate blast performance of candidate MTRV energy-absorbing seats and floor mats, and verify blast-induced shock resistance and safety of other integrated changes, including:
  - Command, Control, Communications, Computers, and Intelligence equipment
  - The selected emergency egress windshields
  - An automatic fire extinguishing system
- The Marine Corps conducted two of the three planned MTRV underbody blast test events at Aberdeen Test Center, Maryland, in 2QFY14.

## Assessment

- Testing and analysis confirm that the LVSR Wrecker UIK increases crew protection against some under-vehicle mine strikes. The program manager has no plans to procure and field the LVSR UIK.
- Designs of the UIK have been refined and qualified through the recent LVSR UIK testing, and the Cargo, Tractor, and

Wrecker vehicles with UIKs added have shown improved crew survivability against underbody blast events.

- Results from the initial MTRV ECP testing in 2QFY14 indicated no noticeable improvement in crew survivability and therefore testing was stopped. PM M&HTV is currently considering a redesign of the legacy survivability kit and ECP (seat and floor mat) components and will notify DOT&E if it plans to proceed with further changes to the vehicle.

## Recommendations

- Status of Previous Recommendations. The Marine Corps addressed the previous recommendations by conducting live fire testing of armor upgrades and design changes.
- FY14 Recommendations.
  1. As the Marine Corps has decided to delay procurement of the LVSR UIKs, future missions requiring LVSR vehicles with UIK should evaluate expected threats for changes prior to fielding.
  2. PM M&HTV should reevaluate MTRV energy-absorbing seat upgrade options and plan for additional tests of these options when ready.