

## Light Armored Vehicle (LAV) Upgrade

### Executive Summary

- The Marine Corps has developed a special purpose kit to improve protection from under vehicle attacks. This kit (known as the D-Kit) is designed to work with the ballistic protection upgrade package (BPUP) and is installed at the discretion of the operational commander.
- The Marine Corps began system-level underbody blast testing in June 2011 at Aberdeen Proving Ground, Maryland, and they have completed six shots; the data indicate that the D-kit has increased crew protection.

### System

- The Family of Light Armored Vehicles shares a common base platform configuration (eight-wheels, armored hull, suspension, power plant, drive train, and auxiliary automotive subsystem) among eight mission role variants. The LAV-25 personnel carrier is the predominant variant.
- A Service Life Extension Program was initiated by the Marine Corps in FY05 primarily to address obsolescence deficiencies. The Marine Corps undertook the Survivability Upgrade I program based on an Urgent Need Statement from the operating forces. This upgrade became the LAV A2 configuration standard, and involved developing and installing a BPUP, power pack enhancements, upgraded suspension, and other modifications.
- The BPUP system consists of three kits, two of which provide additional protection against threats, while the third provides an internal and external stowage system.
- In 2007, the Program Management LAV Office internally designed an underbody kit (known as a D-Kit) that can be incorporated to counteract under-vehicle strikes. The D-kit has been fielded since 2009.



LAV-25A2 Variant

### Mission

Marine Corps commanders will use LAVs to provide combined arms reconnaissance, security missions, and mobile electronic support.

### Major Contractors

- General Dynamics Land Systems – Canada
- Conversion of a LAV A1 to a LAV A2 is conducted at Marine Corps Logistics Base – Albany, Georgia, and Marine Corps Logistics Base –Barstow, California

### Activity

- DOT&E approved the LFT&E Strategy and the Event Design Plan for the Follow-On System-Level Ballistic Testing of the LAV Survivability Upgrade I in June 2011.
- Follow-on system-level underbody testing began in June 2011 at Aberdeen Proving Ground, Maryland. The LAV program office provided two fully armored LAV-25A2 assets to explore and characterize the force protection capabilities and vehicle vulnerability against underbody blast threats. Mine Resistant Ambush Protected All Terrain Vehicle level threats are also being tested.
- The first test event on each vehicle was a full-up system-level test. The test plan includes eight events with threat placement varying from underbody to under wheel; the Marine Corps has completed four events.
- Damage Assessment Meetings conducted after each event aid the working group in the determination of the next threat size and system-level event. Based on emerging test data, the Army Research Lab, Aberdeen, Maryland, produces a crew casualty report for each meeting.

### Assessment

- The LAV A2 D-Kit is designed to work with the previously installed BPUP system and is a special purpose mission kit used in theatre at the discretion of the operational commander. The BPUP provides armor protection to the sides and roof of the vehicle, whereas the D-Kit provides additional armor protection with a V-shaped hull under the vehicle.

# NAVY PROGRAMS

- Emerging results indicate that the LAV-25A2 D-Kit increases crew protection against under-vehicle strikes.
- The location of the LAV-25A2 fuel cell, which is centered under the rear of the vehicle, increases crew vulnerability to some under-vehicle threats.
- Analysis indicates the D-Kit has the ability to increase crew protection to some IED threats.
- Testing will continue through 2QFY12. DOT&E will publish a report at that time.

## **Recommendations**

- Status of Previous Recommendations. This is the first annual report for this program.
- FY11 Recommendations. The Marine Corps should:
  1. Pursue additional LAV survivability upgrades, particularly blast mitigation seats, 5-point harness seat belts, and advanced suspension designs.
  2. Consider relocating the fuel cell of the LAV-25A2 at the next survivability upgrade.