

Mine Resistant Ambush Protected (MRAP) Family of Vehicles (FoV) Egress Upgrade – Marine Corps

Executive Summary

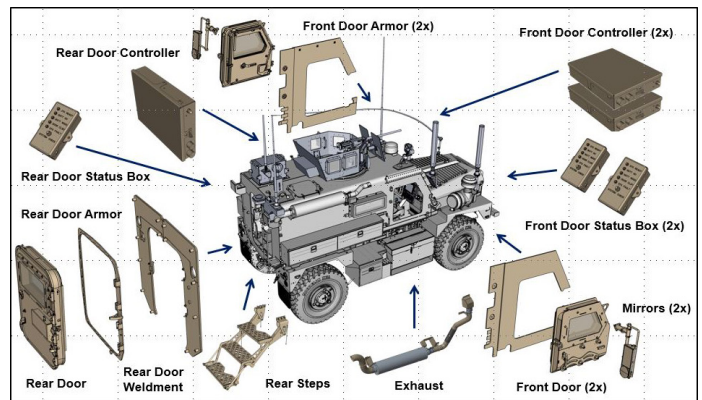
- The Marine Corps has made progress to retrofit all retained Mine Resistant Ambush Protected (MRAP) Cougar variants with egress upgrades to include power-assisted front and rear doors, redesigned rear steps, and a reconfigured exhaust system. These upgrades address crew egress deficiencies identified in Cougar live fire testing in FY16 and operational rollovers in Operation Enduring Freedom.
- In March 2017, the Marine Corps completed live fire testing of the Cougar MRAP upgraded with egress kits. The upgrades demonstrated improved ability of the crew to egress the vehicle post-attack as compared with the legacy system, while maintaining the required force protection and vehicle survivability performance.
- Automatic Fire Extinguishing System tests confirmed that the egress upgrades did not adversely affect the existing fire extinguishing performance.

System

- The MRAP Family of Vehicles (FoV) consists of medium-armored, all-wheel drive, tactical wheeled vehicles designed to provide protected mobility for soldiers and marines in a combat environment. Relative to the High Mobility Multi-purpose Wheeled Vehicle, MRAPs provide improved crew protection and vehicle survivability against IEDs, mines, small arms fire, rocket-propelled grenades, and explosively formed penetrators.
- The Marine Corps identified the need for an egress upgrade for its MRAP Cougar FoV through FY16 live fire testing and operational rollovers seen in Operation Enduring Freedom. The Marine Corps developed two Urgent User Needs Statements which were validated by the Marine Corps Requirements Oversight Council.

Activity

- In March 2017, the Marine Corps Operational Test and Evaluation Activity (MCOTEA) completed the LFT&E of the Cougar MRAP upgraded with egress kits in accordance with the DOT&E-approved test plans.
- The test program, executed at Aberdeen Proving Ground, Maryland, included:
 - Developmental and system-level live fire testing to evaluate crew survivability and vehicle performance against underbody mine and side IED threats
 - Exploitation testing to identify vulnerabilities in the new door design against small arms and simulated fragments
 - Performance testing of the Automatic Fire Extinguishing System on the CAT I A1 and CAT II A1 variants.



- The Marine Corps has made progress to retrofit all retained MRAP Cougar variants with egress upgrades. The egress upgrades for the category (CAT) I and II variants consist of new power-assisted front and rear doors, redesigned rear steps, and a reconfigured exhaust system. The Marine Corps funded design and production of 1,732 egress kits to be retrofitted on the MRAP Cougar enduring fleet. This purchase also includes kits for the Navy and Air Force.

Mission

Commanders will employ Marine units equipped with the MRAP Cougar to conduct mounted patrols, convoy protection, reconnaissance, communications, and command and control missions to support combat and stability operations in highly restricted rural, mountainous, and urban terrain.

Major Contractor

General Dynamics Land Systems – Ladson, South Carolina

Assessment

- The Cougar egress upgrade demonstrated improved door functionality following objective blast mine events as compared with the legacy system, increasing the ability of the crew to egress the vehicle, post-attack:
 - Live fire testing revealed door vulnerabilities in the initial design.
 - The Marine Corps mitigated the vulnerability by correcting the design deficiency, and demonstrated, through additional tests, the effectiveness of the system design changes.
- The Cougar egress upgrade did not adversely affect existing force protection and vehicle survivability performance; more specifically the Capability Production Document (CPD) 1.1

FY17 NAVY PROGRAMS

threshold-level protection for direct fire, indirect fire, and side IED threats and objective-level protection for underbody blast mines.

- The Cougar egress upgrade did not include any changes that adversely affected the effectiveness of the Automatic Fire Extinguisher System. The Automatic Fire Extinguishing System provided the required fire suppressant concentrations in the crew compartment.

Recommendations

- Status of Previous Recommendations. The program has addressed the previous recommendation regarding egress shortfalls identified in FY16.
- FY17 Recommendations. None