

Stryker Family of Vehicles – Double V-Hull (DVH)

Executive Summary

- The Army initiated the Stryker Double V-Hull (DVH) program in response to an Operational Needs Statement from Afghanistan, noting the commander’s concerns regarding Stryker force protection/survivability shortfalls against underbody Improvised Explosive Devices (IEDs) and blast threats.
- The Army plans to pre-position Stryker vehicles with the double V-hulls for Operation Enduring Freedom (OEF) beginning in 3QFY11.
- Multi-phase operational and LFT&E programs, meant to demonstrate the Stryker DVH’s improved capability against the aforementioned threats while maintaining needed cross-country mobility, are being conducted to support decisions to continue production and to field the systems in January and June 2011, respectively.

System

- The Army intends for the Stryker DVH to provide improved survivability against IED and blast threats, beyond the protection provided by current Stryker vehicles with OEF kits.
- The Stryker DVH Infantry Carrier Vehicle (ICV) is the base variant for seven additional configurations: the Anti-Tank Guided Missile (ATGM) Vehicle, the Commander’s Vehicle (CV), the Engineer Vehicle Squad (ESV), the Fire Support Vehicle (FSV), the Mortar Carrier (MC), the Medical Evacuation Vehicle (MEV), and the Reconnaissance Vehicle (RV).
- At present, the Army does not plan to field Stryker DVH versions of the Mobile Gun System (MGS) and the Nuclear, Biological, Chemical Reconnaissance Vehicle (NBCRV) in the OEF theater of operation.
- The DVH configuration consists of a redesigned lower hull, energy attenuating seats, and an up-armored driver’s station. An upgraded suspension and driveline are incorporated because of the additional weight associated with the changes.

Mission

The DVH-equipped Stryker Brigade Combat Team (SBCT) has the same mission profile as a non DVH-equipped SBCT. The SBCT conducts operations across the depth and breadth of an area of operations, against both traditional and asymmetric



M1134 Anti-Tank Guided Missile Vehicle



M1132 Engineer Squad Vehicle



M1127 Reconnaissance Vehicle



M1129 Mortar Carrier Vehicle



M1130 Commanders Vehicle



M1131 Fire Support Vehicle



M1133 Medical Evacuation Vehicle



M1126 Infantry Carrier Vehicle

adversaries. Though optimized for small-scale contingencies, the Army intends the SBCT to engage in all types of military conflicts, including Major Theater Wars when augmented or when operating as part of a larger force.

Major Contractor

General Dynamics Land Systems – Sterling Heights, Michigan

Activity

- DOT&E approved the Army’s Operational and LFT&E Concept Plan for the Stryker DVH program on June 28, 2010. The plan outlined the Army Test and Evaluation Command’s (ATEC) proposal for a three phase (Phase 0, I, and II) test

program. The intent of this three-phased program is to characterize the effectiveness, suitability, and survivability of the Stryker DVH in comparison to the baseline vehicle with OEF kits.

ARMY PROGRAMS

- In July 2010, the Army began executing system-level ballistic testing against baseline Stryker vehicles equipped with OEF kits to characterize the capability of kitted baseline vehicles against underbody threats.
- Testing against two DVH Infantry Carrier Vehicle (ICV) structures, (rolling chassis), began in August of 2010. ATEC continues to refine the LFT&E program based on demonstrated performance and emerging threat information.
- The Army will begin operational testing of DVH Strykers in January 2011 to characterize any degradation to reliability, availability, and maintainability and cross-country mobility.
- The Army is currently developing a surrogate for the OEF Home-Made Explosive (HME) threat, to use in multiple armored vehicle test programs, including Stryker DVH.
- The Stryker DVH system should be evaluated to determine the protection it affords against the HME threat. The HME surrogate needs to be fully characterized – to include the establishment of net explosive weight equivalence factors – prior to incorporating HME into any test programs.
- Due to limited test resources, Stryker DVH post-damage repair may result in significant LFT&E program schedule delays. This may compromise the amount of information available to support critical acquisition and deployment decision points.

Assessment

- For the purposes of the LFT&E program, DOT&E expected both rolling chassis structures to be similarly configured with production seating, floor plates, engine bulkhead panels, hatches, suspension, and driveline components. The two rolling chassis were neither structurally the same, nor were they consistently configured with the expected production hardware. Although this increased the limitations associated with this test phase, testing is still expected to provide useful information and insights regarding the system's response to and protection afforded against underbody threats.

Recommendations

- Status of Previous Recommendations. This is the first annual report for this program.
- FY10 Recommendations. The Army should:
 1. Complete Phase 0, I, and II test and evaluation programs, to include the comparison of the DVH to the baseline Stryker vehicles, prior to deployment.
 2. Incorporate the HME threat into the LFT&E system-level program following adequate characterization and establishment of net explosive equivalence factors.
 3. Address the vulnerabilities revealed in the Phase 0 portion of the LFT&E program against the OEF-kitted baseline Strykers to improve the protection afforded to personnel against underbody threats by the vehicles currently deployed.