

Stryker Armored Vehicle

SUMMARY

- By 2QFY04, the Army completed Initial Operational Test and Evaluation (IOT&E), developmental testing, the operational evaluation, and Live Fire Test & Evaluation (LFT&E) for the eight of the Stryker Family of Vehicles.
- DOT&E assessed the Anti-Tank Guided Missile Vehicle (ATGMV), Commander's Vehicle (CV), Fire Support Vehicle (FSV), Infantry Carrier Vehicle (ICV), Medical Evacuation Vehicle (MEV), and Reconnaissance Vehicle (RV) as operationally effective, suitable, and survivable with limitations for use in small scale contingencies.
- DOT&E assessed the Engineer Squad Vehicle (ESV) as survivable with limitations for use in small-scale contingencies, but not operationally effective and not operationally suitable.
- DOT&E assessed Mortar Carrier B (MC-B) as operationally effective and survivable with limitations in small-scale contingencies, but not operationally suitable.
- In October 2004, the Defense Acquisition Executive approved low-rate initial production (LRIP) for the Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV) and Mobile Gun System (MGS).



Stryker is a family of medium armored vehicles for the Army's Stryker Brigade Combat Team.

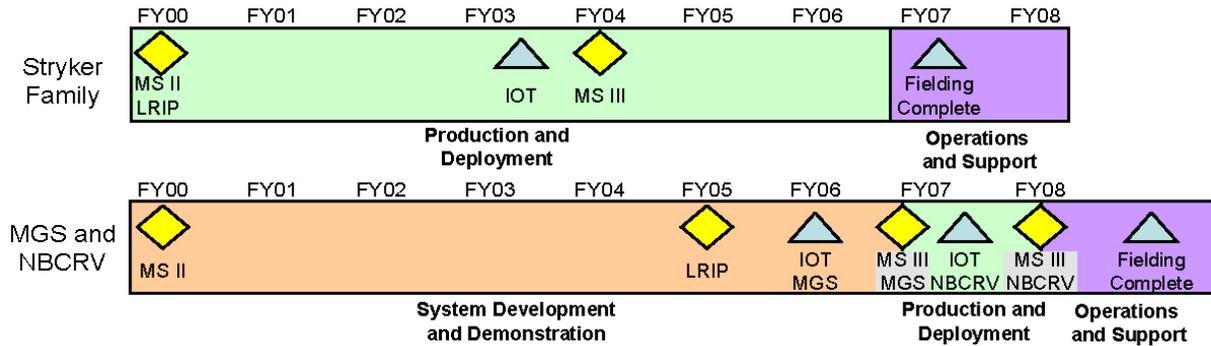
SYSTEM DESCRIPTION AND MISSION

Stryker is a family of medium armored vehicles for the Army's Stryker Brigade Combat Team (SBCT). The Stryker Family of Vehicles consists of two basic variants: the ICV and the MGS. The ICV is the baseline vehicle for eight additional configurations. These configurations are the ATGMV, the CV, the ESV, the FSV, the MC, the MEV, the NBCRV, and the RV.

The SBCT is a combined arms team with enhanced strategic deployability capable of immediate employment upon arrival in the area of operations and at the same time, maximize commonality among the vehicle configurations. The SBCT is more strategically deployable than current Army heavy forces, but with greater tactical mobility than current light forces. The Army has designed the SBCT to conduct operations across the depth and breadth of an area of operations, against both traditional and asymmetric 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.

ARMY PROGRAMS

TEST AND EVALUATION ACTIVITY



Stryker Family of Vehicles

The Stryker IOT&E took place at Fort Knox, Kentucky, from March-September 2003. Two Stryker companies participated in this evaluation; a third company participated through simulation. Battalion and brigade level assets including reconnaissance, engineer, and anti-tank elements participated in this event. A brigade tactical operations center provided the command and control for this evaluation through the Army Battle Command System. A light infantry battalion was the baseline unit used for comparison. Both the light infantry battalion and the Stryker battalion executed the same scenarios and missions during the IOT&E.

All Stryker configurations, except the MGS and NBCRV, participated in an IOT&E in FY04. During the IOT&E, the MC had a dismounted mortar (designated MC-A). A soft-recoil 120mm mounted mortar vehicle (designated MC-B) underwent developmental testing from June 2003 to January 2004 and an IOT&E in January 2004. Based on lessons learned from a congressionally directed operational evaluation, IOT&E, and LFT&E, the Army initiated a series of improvements before the first SBCT was deployed to Operation Iraqi Freedom. Enhancements included adding FBCB2 to wingmen, adding M1 tanks and an aviation task force, and adding additional contractor logistics support. To enhance survivability, the Army developed an add-on slat armor package as an interim measure because the planned reactive add-on armor was not ready. The Army equipped the first SBCT with slat armor when it deployed in support of Operation Iraqi Freedom.

The Army conducted the LFT&E program on the Stryker family of vehicles (except the MGS and NBCRV) from 1QFY02 through 2QFY04. The program consisted of thousands of firings at armor coupons, hundreds of firings at production-representative Stryker ballistic hulls, and 66 full-up system-level test events. Follow-on testing to qualify additional Modular Expandable Armor System configurations and address Automatic Fire Extinguishing System performance issues has yet to be completed.

Initial Rocket Propelled Grenade (RPG) add-on armor engineering development tests began in FY02. Initial Production Qualification testing began in FY03, resulting in poor armor performance. The SBCT program manager is currently modifying Stryker RPG-level add-on armor to address user concerns. The Army plans to make a limited production decision on the add-on armor in December 2004, and execute adequate testing against the modified add-on armor to support an evaluation of its ballistic performance prior to a full-rate production decision.

MGS and NBCRV

Since the MGS and NBCRV require additional development, the Army separated the MGS and the NBCRV from the main Stryker Test and Evaluation Master Plan (TEMP). Both vehicles are undergoing their own separate acquisition programs and have separate TEMPs.

A preliminary evaluation of the MGS took place in a Limited User Test (LUT) in April and May 2004 at Fort Knox, Kentucky, while developmental testing continued at Aberdeen Proving Grounds, Maryland and Yuma Proving Grounds, Arizona. In October 2004, the MGS developed its own TEMP and began LRIP to support operational testing in 2006. The Army conducted a LUT of the NBCRV configuration from October to November 2003.

ARMY PROGRAMS

The Army also conducted NBCRV Production Qualification Test II (PQTII) from June to August 2004 to validate corrections discovered in the LUT and PQT I conducted in 2003 and to support an LRIP decision. Key tests included sensor performance; automotive safety and performance; environmental testing; electro-magnetic interference; system overpressure testing; and human factors effects. This configuration contains a variety of chemical and biological sensor systems. A side-by-side evaluation of the performance of the Joint Serviced Standoff Chemical Agent Detector and the M21 Remote Sensing Chemical Agent Alarm also took place. This evaluation will support strategies to integrate the appropriate standoff chemical detection system.

The Army intends to complete all MGS and NBCRV LFT&E activity to support their respective Milestone III decisions. The MGS LFT&E program includes 19 system-level test events, and the NBCRV LFT&E program includes 8 system-level test events. Data from the Stryker Family of Armored Vehicles LFT&E program and sub-system-level test phases (integral armor coupon and characterization tests, mission equipment package off-line tests, and Automatic Fire Extinguishing System tests) will complement the dedicated MGS and NBCRV LFT&E programs in evaluating system-specific vulnerabilities.

TEST AND EVALUATION ASSESSMENT

Stryker Family of Vehicles

DOT&E published a classified beyond LRIP (BLRIP) report on the Stryker Family of Vehicles in 2QFY04 based on results for the Stryker Family of Vehicles IOT&E, developmental testing, operational evaluation, and LFT&E. We concluded that the ICV, MC-A, ATGMV, RV, FSV, and CV were operationally effective, suitable, and survivable with limitations for use in small scale contingencies. We assessed the ESV as survivable with limitations for use in small-scale contingencies, but not operationally effective and not operationally suitable. During the IOT, the ESV could not maintain pace with the other Strykers when equipped with the mine plow or mine roller. The mine plow, lane marking system, and mine roller performed poorly, and the overall system is prone to failures. The Army is conducting follow-on operational testing for the ESV. DOT&E will monitor these tests to verify the ESV is operationally effective and suitable. The ATGMV was assessed as not operationally effective as a substitute for the MGS. DOT&E cited 24 recommendations that the Army should consider in order to increase the effectiveness, suitability, and survivability of the vehicles in the family. The Army is currently addressing solutions for 20 of the 24 recommendations.

DOT&E published a classified BLRIP report on the MC-B configuration in September 2004. This evaluation assessed MC-B as operationally effective and survivable with limitations for use in small-scale contingencies, but not operationally suitable due to reliability and safety concerns. The Army has proposed a series of fixes to the problems noted in the BLRIP report. The Army will conduct and DOT&E will monitor a follow-on operational test and evaluation in FY05 to demonstrate that these fixes will work.

MGS and NBCRV

During the LUT, the MGS demonstrated the capability to destroy bunkers and breach concrete walls. The MGS demonstrated poor reliability, excessive weapon system dead-space, and other issues associated with gun sights, main gun fire control, and soldier-machine interface. Based on the initial design tested during the Engineering, Manufacturing, and Development phase, DOT&E identified MGS survivability issues that must be corrected. Survivability concerns include ballistic protection to the crew and the system's mission equipment package.

During the LUT and PQT I, the primary NBC sensors comprising the Mission Equipment Package of the NBCRV configuration demonstrated poor detection performance. There were numerous Human Factors Engineering faults, several survivability issues, and the reliability of the system failed significantly to meet requirements. Based on this performance, the Army Test and Evaluation Command rated the NBCRV as not effective, not suitable, and not survivable. Based on PQT II, Human Factors Engineering issues and survivability have improved to the point that further production and testing is warranted. Likewise, two of the three primary NBC sensors have shown improvement in the developmental testing environment since last year, and the Army should continue testing in the NBCRV configuration.

The Stryker MGS and NBCRV LFT&E programs are extremely aggressive, given plans to execute a majority of the component-level and system-level test phases concurrently. A lack of detailed system design, schedule, and resource information introduced additional risk into the development of both the MGS and NBCRV LFT&E strategies.

