

## Stryker - Mobile Gun System (MGS)

### Executive Summary

- DOT&E is concerned that the Army plans to field the Mobile Gun System (MGS) to two Stryker Brigades and deploy Mobile Gun System-equipped units into combat before demonstrating performance in planned developmental, Live Fire, and required operational testing.
- Before operational testing, hardware and software fixes need to be applied to the MGS.
- MGS vehicles in developmental testing have shown significant quality control problems and ongoing design issues.
- The MGS survivability assessment is ongoing. DOT&E is concerned that delays in the current LFT&E schedule will affect the program's ability to adequately support the full-rate production decision scheduled for July 2007.

### System

- The Stryker Family of Vehicles consists of two basic variants: the Infantry Carrier Vehicle and the MGS.
- The MGS is undergoing a separate acquisition program because the system needs additional development.
- The MGS mission equipment includes:
  - M68A1E7 105 mm cannon system with an ammunition handling system
  - Coaxial 7.62 mm machinegun and a secondary M2HB, .50-caliber machinegun
  - Full solution fire control system with two-axis stabilization
  - Low-profile turret designed to provide survivability against specified threat munitions
- The MGS has a three-man crew.



- The system integrates the Driver's Vision Enhancer and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance components as government furnished equipment.
- The MGS provides the crew with levels of protection against small-arms, fragmenting artillery, mines, and rocket-propelled grenades. Rocket-propelled grenade protection is provided by Slat armor (steel flat stock arranged in a spaced array).

### Mission

- The Stryker Brigade Combat Team equipped with the MGS can create openings in walls, destroy bunkers and machinegun nests, and defeat sniper positions and light armor threats. The primary gunnery systems are intended to be effective against a range of threats up to T-62 tanks.
- The MGS operates as a three-vehicle platoon organic to the Stryker infantry company or as a single vehicle in support of a Stryker platoon.

### Activity

- The Army began fielding MGS vehicles, without all required modifications, to its first Stryker Brigade in late FY06.
- The Army made significant design changes to prototype vehicles. These changes included a redesigned ammunition handling system, a redesigned turret drive system, and a survivability upgrade for the gun pod that houses the 105 mm main gun and parts of the autoloader.
- The Army conducted Mobile Gun System Production Verification Testing – Contractor (PVT-C) in FY06 to assess the vehicle's preparation to enter government PVT.
- MGS government PVT began in April 2006 with seven vehicles supporting reliability and performance testing, three supporting Live Fire testing, and two supporting the logistics demonstration.
- OSD approved an updated Test and Evaluation Master Plan to support the IOT&E and LFT&E scheduled for FY06 and FY07, respectively.
- The MGS LFT&E program is currently ongoing:
  - The Army completed MGS unique armor characterization testing and ammunition vulnerability characterization in FY06.
  - The Army began ballistic hull and turret testing in 3QFY06 and full-up system-level testing in 4QFY06. The full-up system-level test program was delayed due to the various design changes to the vehicle. Not all of the design changes can be integrated onto Live Fire full-up system-level assets. As a result, the Army is executing an alternative plan to

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evaluate the impact of design changes on the ballistic vulnerability of the MGS.

- Battle damage assessment and repair exercises will occur concurrently with full-up system-level events.
- Automatic fire extinguishing system testing and controlled damage experimentation will commence in FY07.

## Assessment

- DOT&E is concerned that the Army plans to field the MGS to two Stryker Brigades and deploy MGS-equipped units into combat before demonstrating performance in planned developmental, Live Fire, and required operational testing.
- To date, MGS performance in government PVT has revealed that there are still hardware and software fixes to be applied before operational testing (e.g., adding a brushless motor configuration in the turret drive system). In particular, vehicles in government PVT have shown significant quality control problems and ongoing design issues. Because more than 70 percent of the failure modes identified in government testing are new, the Army suspended government PVT for a short period while the Stryker Program Manager worked with the contractor to address these new failures.
- Demonstrated results from PVT-C showed that the MGS could achieve 47 mean rounds between system aborts, versus a growth expectation of 49 mean rounds between system aborts. Subsequent government PVT results were well below that

level of performance, placing mean rounds between system aborts' performance below its growth curve expectations (approximately 8-10 mean rounds between system aborts).

- Demonstrated performance during PVT shows that the system may not achieve its initial operational test entrance criteria.
- The MGS survivability assessment is ongoing. DOT&E is concerned that delays in the current LFT&E schedule will affect the program's ability to adequately support the July 2007 Milestone III decision.

## Recommendations

- Status of Previous Recommendations. The Army has not taken action on all of DOT&E's FY05 recommendations. FY05 #1: DOT&E recommended that the Army take corrective action on the February 2004 Beyond Low-Rate Initial Production Report recommendations. The Army has taken corrective action on 13 of 24 recommendations (6 are in the process of being corrected; 5 are either partially funded or not funded at all). These recommendations remain valid.
- FY06 Recommendations. The Army should:
  1. Consider a testing program that is event driven as opposed to schedule driven.
  2. Validate fixes identified during testing before deploying the system to combat.