Stryker – Mobile Gun System (MGS)

Executive Summary

- The U.S. Army Operational Test Command conducted the Initial Operational Test at Fort Hood, Texas, from October 20, 2007, to November 4, 2007. A Stryker - Mobile Gun System (MGS) platoon executed tactical tasks and missions in a small-scale contingency environment against a representative threat.
- DOT&E found that the MGS is operationally effective for small-scale contingency operations, is operationally suitable with deficiencies, and survivable in some operational scenarios.
- The Secretary of Defense approved the waiver required by Section 117 of the 2008 National Defense Authorization Act on July 15, 2008, stating the expenditure of FY08 funds appropriated for procurement of the Stryker MGS is in the national security interest of the United States. He directed that full-rate production of the MGS will not be approved until the identified deficiencies are corrected.
- The Secretary of the Army declined to certify the program as operationally effective, suitable, and survivable. The Defense Acquisition Executive approved an extended low-rate production.
- Correction of deficiencies identified during the operational and live fire tests are ongoing.

System

- The Stryker Family of Vehicles consists of two variants: the Infantry Carrier Vehicle and the MGS.
- The MGS is a separate acquisition decision because the system needed 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 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 three-man crew with levels of protection against small-arms, fragmenting artillery, mines, and rocket-propelled grenades. Rocket-propelled grenade protection is provided by add-on Slat armor (flat steel stock arranged in a spaced array) not shown in photo.

Mission

- The Stryker Brigade Combat Team uses MGS to create openings in walls, destroy bunkers and machinegun nests, and defeat sniper positions and light armor threats. The primary gunnery systems are designed 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 infantry platoon.

Prime Contractor

- General Dynamics

Activity

- The Army conducted the Initial Operational Test at Fort Hood, Texas, from October 20, 2007, to November 4, 2007. An MGS platoon executed realistic operations and missions in a small-scale contingency environment against a representative threat.
- The Army completed final elements of the LFT&E Strategy in early FY08.
- DOT&E published a Beyond Low-Rate Initial Production (BLRIP) Report for the MGS based on results from the Initial Operational Test, observations from Iraq, and live fire testing in February 2008.
- The Secretary of Defense approved the waiver required by Section 117 of the 2008 National Defense Authorization Act on July 15, 2008, stating the expenditure of FY08 funds appropriated for procurement of the Stryker MGS is in the national security interest of the United States. He directed that full-rate production of the MGS will not be approved until the identified deficiencies are corrected.

- The Secretary of the Army declined to certify the program as operationally effective, suitable, and survivable. The Defense Acquisition Executive approved an extended low-rate production.
- The Army was directed to undertake actions to mitigate all the deficiencies identified during operational and live fire testing of the Stryker MGS.

Assessment

- DOT&E found that the MGS is operationally effective for small-scale contingency operations, is operationally suitable with deficiencies, and survivable in some operational scenarios. DOT&E provided a list of 43 recommendations to improve operational effectiveness, suitability, and survivability. Significant findings are listed below:
- Operational Effectiveness:
  - MGS is operationally effective for small-scale contingency operations.
  - MGS is effective when MGS-equipped crews were able to maneuver in order to provide direct supporting fires to assaulting infantry in open terrain.
  - Operational effectiveness was reduced in urban and in high-threat environments when T-62 tanks and BMP infantry carrier vehicles were present.
  - Direct and supporting fires, transportability, and interoperability Key Performance Parameters were demonstrated:
    - Provides lethal direct fire to assaulting infantry
    - 105 mm main gun and 7.62 mm machine gun are accurate
    - C-130 transportability was demonstrated – labor intensive, arrives with reduced combat capability, second aircraft is needed; this is a costly design trade for a marginal capability
  - MGS has excellent speed on roads, although it does not match the mobility and ride quality of tracked vehicles in wet and soft soils.
  - The vehicle commander is exposed to enemy fire when standing erect in the turret when firing the .50 caliber machine gun.
  - Commander's Panoramic Viewer and the Commander's Display Unit are not effective as they limit crew performance and situational awareness.
  - MGS is not operationally effective in the degraded or manual mode.
- Operational Suitability:
  - MGS is operationally suitable with deficiencies.
  - MGS chassis is reliable. It demonstrated 1,580 Mean Miles Between System Abort (MMBSA) during its mission rehearsal exercise and 1,612 MMBSA during developmental testing (requirement is 1,000 MMBSA).
  - Mission Equipment Package (MEP) is not reliable.
    - MEP reliability has improved
    - Demonstrated 53 Mean Rounds Between System Abort (MRBSA) in the IOT and 63 MRBSA in DT (81 MRBSA required)
    - Continued to discover new MEP failure modes in IOT and developmental testing
    - MEP experiences a high number of Essential Function Failures
  - MGS is supportable and maintainable with Contractor Logistics Support.
    - IOT operational availability was 91 percent.
    - Mean Time to Repair and Maintenance Rate were low.
    - MGS was easily fixed if parts are on hand.
    - Operational Readiness Rate demonstrated in Operation Iraqi Freedom was 69 percent (Non-mission Capable due to Essential Function Failures).
    - Chassis and MEP Essential Function Failures rate remain high and constant.
    - Increases maintenance burden and life-cycle cost.
  - High vehicle temperatures adversely affect crew performance and may contribute to electronic component failures.
  - Commanders Panoramic Viewer failed frequently in Iraq and parts were in high demand.

Recommendations

- Status of Previous Recommendations. There were no previous recommendations.
- FY08 Recommendations. The Army should:
  1. Correct the 43 deficiencies noted in the BLRIP Report to Congress and verify that the corrections are effective.
  2. Improve Mission Equipment Package Reliability.
  3. Increase ballistic protection for the vehicle commander from sniper fire and IED fragmentation/blast while operating the .50 caliber machine gun and increase the basic load.
  4. Improve the Commander's Panoramic Viewer by:
     - Increasing reliability and spare parts availability
     - Making improvements in order to facilitate wide area scanning to allow the vehicle commander to effectively detect and identify targets and improve vehicle commander situational awareness
  5. Improve the Commander's Display Unit resolution so the vehicle commander can effectively identify targets or IEDs
  6. Modify MGS environmental control to allow Soldiers to conduct missions in temperatures above 125 degrees Fahrenheit and to keep electronic components from failing
  7. Improve situational awareness by providing 360-degree day and night observation around the vehicle
  8. Schedule follow-on operational and live fire testing in order to validate solutions to deficiencies.