# Guided Multiple Launch Rocket System (GMLRS )

## SUMMARY

- The Army determined that the Dual Purpose Improved Conventional Munition (DPICM) variant of the Guided Multiple Launch Rocket System (GMLRS) rocket was ready for operational testing based on developmental and live fire testing.
- On August 26, 2004, DOT&E approved the Army's initial operational test and evaluation (IOT&E) plan as adequate to assess the effectiveness, suitability, lethality, and survivability of GMLRS DPICM.
- The Army conducted the IOT&E from September to November 2004, in conjunction with the High Mobility Artillery Rocket System (HIMARS) IOT&E.
- The Army currently plans to begin fielding the unitary variant of GMLRS in FY08, but the FY05 Defense Appropriations bill allocated funds to accelerate fielding to forces in high-risk locations by FY06.
- The Army currently intends to buy 140,004 GMLRS rockets. The ratio of DPICM to Unitary rockets is yet to be determined.

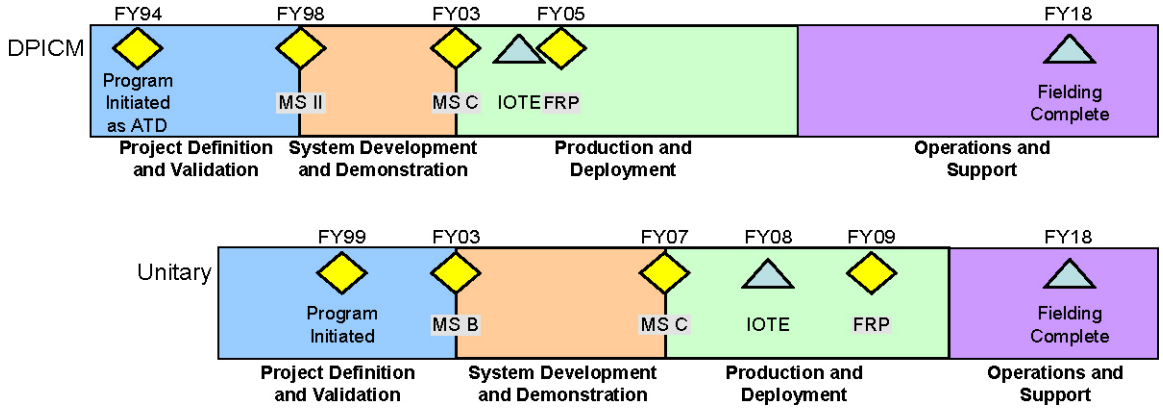
*GMLRS consists of two variants of rockets fired from M270A1 MLRS or HIMARS launchers.*

## SYSTEM DESCRIPTION AND MISSION

GMLRS consists of two variants of rockets fired from M270A1 MLRS or HIMARS launchers. The GMLRS DPICM variant carries 404 submunitions, while the GMLRS unitary rocket will have a single, 200-pound, high explosive warhead. Both variants have enhanced accuracy due to the addition of GPS-enabled guidance and control elements. They have increased range due to a new rocket motor and other extended flight capabilities provided by modified canards.

Maneuver divisions and corps will primarily use GMLRS in a general support role. GMLRS DPICM will attack lightly armored, stationary targets such as personnel, artillery, air defense, and communication sites. GMLRS Unitary will have three fuze settings. It will have a proximity fuze for use against personnel in the open, a delayed fuze for lightly fortified bunkers, and a point detonating fuze for use against single, lightly armored targets. With the planned capabilities of the new rockets, a unit equipped with GMLRS will shoot farther (60 km versus 30 km) and achieve desired effects with fewer rockets due to the improved accuracy. The Army intends the GMLRS DPICM rocket to have fewer dud submunitions than current MLRS rockets. The Army also wants GMLRS Unitary to limit collateral damage.

## TEST AND EVALUATION ACTIVITY




The Army completed all production qualification testing of the GMLRS DPICM rocket in accordance with the Test and Evaluation Master Plan (TEMP). DOT&E approved that TEMP in May 2003. The Army fired five GMLRS DPICM rockets in December 2003 and January 2004 as part of a System Integration Test to ensure that the GMLRS rockets were interoperable with the HIMARS system.

In February of 2004, the Army fired six GMLRS DPICM rockets at the Cold Regions Testing Center (CRTC) in Alaska to test performance in extreme cold weather. Due to the extreme conditions, four of the six rockets did not acquire enough satellites to fly GPS-aided. The project office replicated the problem in its hardware-in-the-loop facility at Redstone Arsenal, Alabama, and modified the software for subsequent firings. The Army plans to conduct a CRTC test for GMLRS Unitary in FY07 to confirm this correction.

The Army conducted developmental test/live fire (DT/LF) events in April and May 2004 at White Sands Missile Range, New Mexico. These tests included firing 15 GMLRS DPICM rockets from HIMARS against three threat-representative targets at short-range (18.4 km), mid-range (35 km), and long-range (66.3 km). The Army testers arrayed the targets according to anticipated threat tactics and emplaced passive countermeasures, including sandbags and berms. Two of the three DT/LF events also included GPS jamming.

The Army executed a logistics demonstration in April to test the validity of the system support package and to evaluate the maintenance concept to support GMLRS. Similarly, they performed a maintainability demonstration in May to verify that crews can use hardware and software tools to detect critical failures within the GMLRS rocket.

Contractor testing for the GMLRS Unitary is just beginning. The warhead failed to detonate in the first of three tests. The contractor quickly fixed the fuze design problem, and the remaining two tests were successful. All three rockets met the accuracy requirement. These early tests did not use the final warhead and fuze configuration. Subsequent contractor tests will include the final system design.

## TEST AND EVALUATION ASSESSMENT

The Army's developmental testing, including the DT/LF in April and May, indicates that the GMLRS DPICM rocket meets the user's range requirement. Additionally, the DT/LF suggests that the rocket meets the accuracy requirement and that GPS jamming does not adversely affect rocket accuracy. Finally, damage assessment of the surrogate targets indicates that rocket lethality is satisfactory if the target is accurately located. The GMLRS DPICM IOT&E included the firing of 24 GMLRS DPICM rockets at three threat-representative targets. We will use results from developmental testing and the IOT&E to assess range, accuracy, lethality, and overall operational effectiveness of the GMLRS DPICM rocket.

Overall, the GMLRS DPICM production qualification tests have been successful. Based on actual firings of the current rocket configuration, we estimate the rocket reliability to be 0.96, which exceeds the requirement of 0.92. The JROC amended the GMLRS dud rate requirement in November of 2003. The current requirement is to have a submunitions dud rate of less than two percent at ranges between 20 and 60 kilometers and less than four percent at all other ranges. The DT/LF had dud rates of 3.5 percent at 18.4 kilometers, 1.9 percent at 35 kilometers, and 7.9 percent at 66.3 kilometers. The Army believes the high dud rate for the long-range mission was due to a dispensing problem with a single rocket. The IOT&E results will provide another estimate of the dud rate at long ranges, as well as an assessment of the operational impact of the higher dud rate. After reviewing the results of the IOT&E, we will update the reliability rating and the dud estimate to assess the suitability of the DPICM rocket.

The Army is incorporating a self-destruct fuze into the submunitions to meet the dud requirement of less than one percent at all ranges required by DoD policy. The Army is holding flight competitions to select the vendors, but the self-destruct fuze will not be available until after the GMLRS DPICM full-rate production decision in May 2005. The fielding of the self-destruct fuze will require follow-on testing to ensure the fuze has not adversely affected the effectiveness or suitability of the rocket.