

Long-Range Precision Fires

Future considerations for the employment of Marine multiple launch rocket capabilities

by Col Joe Russo

The re-drafted capstone document, the *Marine Corps Operating Concept (MOC)*, (Washington, DC: HQMC, September 2016), and concurrent *Marine Corps Force 2025* initiatives have challenged the Service to develop innovative equipment and structural operating solutions to MAGTF requirements in an increasingly complex and dispersed operating environment. The pace of technological advancements and the nature of both traditional and non-nation state actors have narrowed, and in some cases eliminated, many of our historically assumed battlefield advantages. Revolutionary capabilities and emergent peer and near-peer competitors have both redefined the operational reach of our forces and simultaneously challenged our ability to support the full range of military operations with 24/7, all-weather, surface-to-surface fires.

In 2008, the Marine Corps completed its new equipment transition of the M142 High Mobility Artillery Rocket System (HIMARS), establishing HIMARS battalions at 2d Battalion, 14th Marines (2/14) and 5th Battalion, 11th Marines (5/11). Introduced to enhance the triad of fire by providing organic MLRS (multiple launch rocket system) capabilities to the Marine Corps, the M142 HIMARS was initially tied to legacy cannon tactics, techniques, and procedures—as well as U.S. Army MLRS concepts for the employment of traditional grid-square clearing and massed rocket fires. The introduction of the GMLRS (guided MLRS), ATACMS (Army Tactical Missile System), and distributed operational requirements in

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both Iraq and Afghanistan drove adaptations to tables of equipment, organization, and methods of employment by both Marine Corps and U.S. Army HIMARS units. Since its introduction, interest in the M142 HIMARS and its capabilities has grown exponentially. As the Marine Corps continues to assess and develop its organizational requirements in support of the future operating environment, it is essential that operational commanders, staffs, and future force planners fully understand the capabilities, limitations, and require-

ments of the M142 HIMARS, as well as consider the innovative possibilities which HIMARS, and, as importantly, its suite of munitions, offer to the future force.

MLRS Development

Modern MLRSs can trace their origins back to the 1930s and 40s, during which the United States, Germany, and Russia developed basic, truck-mounted launchers designed for mobility and large volumes of fire. In 1983, at the height of the Cold War, the M270 MLRS made its debut with the U.S. Army. Built on an extended Bradley Fighting Vehicle chassis, the M270 series launcher was fielded in order to provide massed volumes of rapidly fired ballistic rockets on large troop



A Katyusha rocket launcher. (Ref for "BM 13 ref" chicomiranda.wordpress.com.)

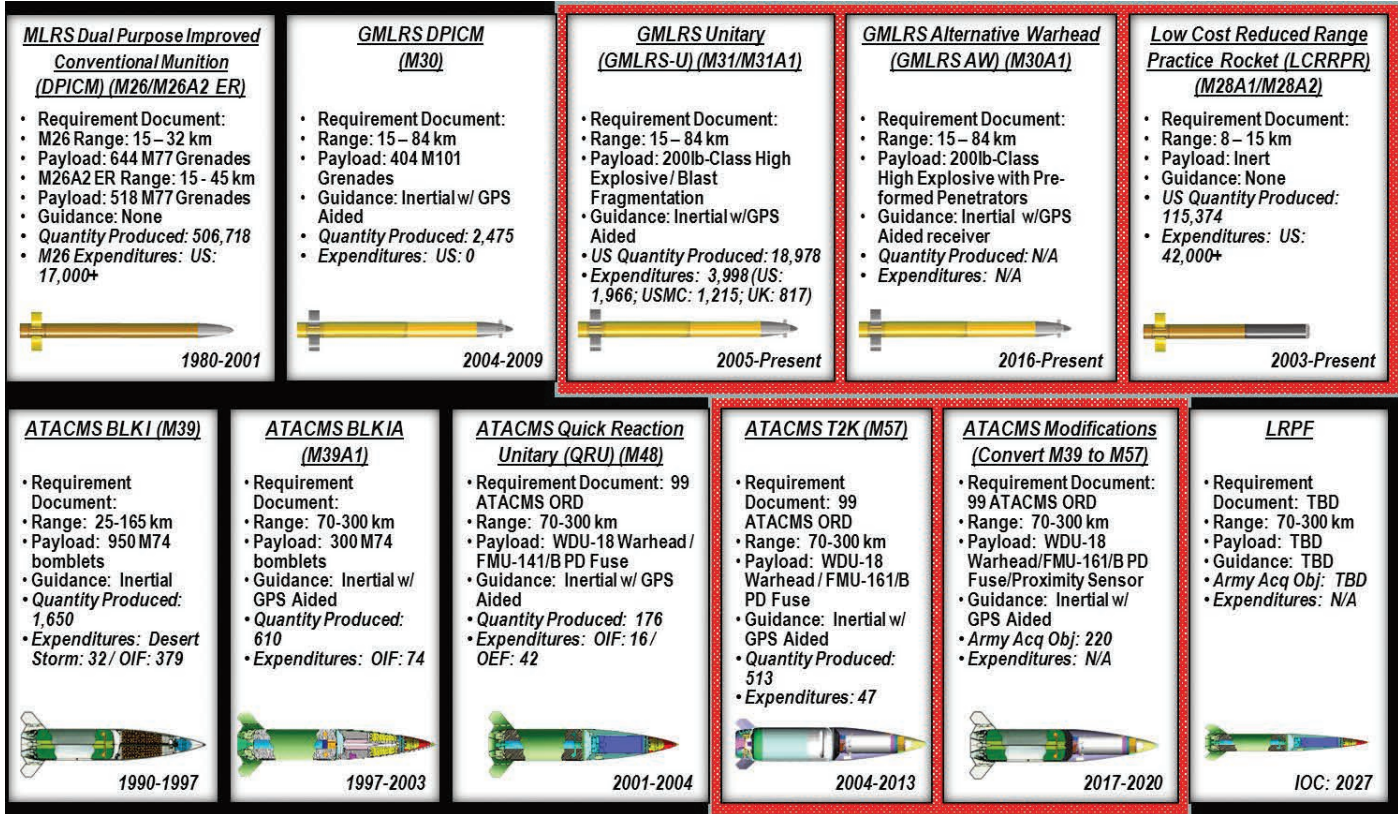


Figure 1. MFOM chart. (Image provided by author.)

and equipment formations. Known as the “grid square clearer,” its dual pod, twelve rocket launcher module (LM) was built to support the requirements of a large-scale conventional conflict with the Soviets in Western Europe. Capable of rugged, off-road employment and responsive delivery of the M26, M26A1, and M26A2 Dual Purpose Improved Conventional Munitions (DPICM) rockets at ranges in excess of 45 kilometers (and later the full suite of precision missiles), it was a responsive and highly effective supplement to the division or corps commander’s general support fires requirements. At 55,000 pounds, dual podded, tracked, and armored, its tactical lethality, mobility, and survivability were as notable as its limited strategic mobility and significant logistical footprint.¹

The M142 HIMARS is a C-130/C-17 deployable, all-weather, persistent fire support platform capable of delivering precision fires in excess of 300km with ATACMS, or in excess of 84km with GMLRS. Ongoing munitions developments envision ranges in

excess of 150km with GMLRS and over 450km with ATACMS.

The GCE is currently faced with an indirect fires gap of between 27 and 70km. The gap is defined as that area in which our ground-based cannon systems are both outnumbered and out-ranged by peer and near-peer indirect fires capabilities and concurrently unable to deliver fires on targets within that gap. GMLRS and ATACMS missiles delivered from HIMARS are among the few surface-to-surface indirect fire munitions that can currently service targets between 27 and 70km and beyond. The development of long-range, precision MLRS munitions have introduced revolutionary capabilities, previously available only through air-delivered precision ordnance, which now provide the division and MAGTF commanders with significantly enhanced options to provide deep shaping fires in conjunction with aircraft-delivered munitions or in circumstances in which aerial-delivered fires are impractical because of threats or unavailability. (See Figure 1.)

The use of HIMARS-delivered GMLRS and ATACMS to support the GCE has, therefore, become a solution to the 27 to 70km gap, but it is not an optimal one when considering the logistical and C2 challenges of precision fires employment and the limited number of available GMLRS/ATACMS in the MLRS family of munitions (MFOM). The issue, therefore, is not whether the M142 HIMARS should support the GCE or the MAGTF as a whole. It should, in fact, support both. Rather, the discussion must next move to an awareness and optimization of the munitions it can deliver.

Rockets and Missiles

A rocket, by definition, flies on a ballistic trajectory (like a cannon projectile) and is aimed by the LM. Its airspace integration/deconfliction requirements are similar to that of a cannon projectile as well, and as such are responsive to emergent, time-sensitive area targets. A missile, on the other hand, has a terminal guidance system. GMLRS and ATACMS are, in fact,

missiles. A rocket is best suited for responsive, massed effects and is not impacted by the effects of a GPS-denied/degraded operating environment. A missile is optimal for planned, long-range, high-value precision targets in which neither mass nor rapid responsiveness is imperative. In order to optimize the use of HIMARS in support of both GCE and MAGTF requirements, it is essential that a long-range, ballistic trajectory rocket capability—in addition to long-range precision missile capability—be added to the existing MFOM.

Currently, beyond a diminishing stockpile of legacy M26 series DPICM munitions which exist in excess of their projected shelf lives, there are no rockets in the MFOM beyond our reduced range practice rockets which have a range of approximately thirteen kilometers and contain no warhead. Notably, MLRS rockets of any type beyond the reduced range practice rockets have not been in production since 2008.

The development of long-range ballistic rockets (high explosive, DPICM, or alternate warhead variants) in conjunction with mobile, extended range cannon capabilities, are, therefore, arguably essential to mitigating the current GCE fires gap—one which against a peer/near-peer competitor will require rapid emplacement and displacement capability, responsiveness, and massed volumes of fire. With the introduction of long-range ballistic rocket capabilities, GMLRS/ATACMS may then be further, and arguably more optimally, weighted toward MAGTF-level deep shaping targets.

Future Force Employment Considerations

Over the past sixteen years, the Marine Corps has routinely operated at ranges in excess of 600 to 800 miles and beyond from the littorals. Concurrently, the decrease in available amphibious shipping has created gaps which have been partially mitigated by the creation of special purpose MAGTFs as well as split/disaggregated MEU formations. In doing so, logistical challenges and gaps in fire support capabilities have likewise emerged.



HIMARS/C-130 embarkation. (Photo by LtCol John Lehane.)

An air-transportable platoon (two to three launchers) of M142 HIMARS provides a capability which partially mitigates the gaps that have been identified in support of disaggregated or distributed MEUs and throughout the geographic combatant commanders' areas of operations. Given the ranges of munitions both available and emergent, HIMARS, while not always optimal, is capable of supporting company landing teams, special operations forces, vertical assault elements, and others operating in a distributed manner, while providing the advantage of being able to offset the delivery platform. While developments in maritime-/amphibious-based GMLRS fires offer a degree of flexibility to the force in support of niche requirements, they likewise produce significant challenges to mobility, range, and, notably, to logistical management. The air-transported HIMARS option enables speed of deployment, the introduction into an operating area, and flexible precision fires to forces operating at distances and depth to the battlefield—beyond the current reach of sea-based platforms or beyond the limits of combatant command-based tactical aircraft—and facilitates a means of the rapid resupply of munitions and other maintenance sustainment items when operating in

the vicinity of airfields and other expeditionary landing areas.

If positioned on a rotational basis in the EUCOM (European Command) area of operations, a HIMARS platoon supported by C-130 aircraft, or other strategic lift capable aircraft, is capable of responding to the requirements of transiting MEUs and participating in steady-state theater security cooperation and other joint exercises throughout the EUCOM and Africa Command areas of operations. The deployment of 5/11 HIMARS to Okinawa in the spring of 2016 has established a similar, forward deployed HIMARS capability to III MEF/PACOM (Pacific Command), enabling rapid employment and further development of coastal defense and sea control long-range precision fires initiatives in the PACOM area of operations. This concept may be further enhanced by the forward staging of HIMARS support equipment and munitions to storage locations in EUCOM/PACOM. While there are few scenarios in which battalion-sized formations of HIMARS would be realistically employed in a centralized manner, it is in proximity to those few potential geographic locations that the pre-staging of HIMARS support equipment is optimal, reducing the time and lift requirements necessary to support the sustainment and other lo-



HIMARS platoons from 11th and 14th Marines have shown themselves capable of conducting raid and airlift operations. (Photo by Cpl Dallas Johnson.)

gistical requirements of HIMARS fires in support of high-end conventional operations. HIMARS, when desired, can additionally provide a very visible signature and demonstration of commitment to allies and NATO partners.

HIMARS platoons within the 11th and 14th Marine Regiments have demonstrated a proven capability to conduct raid and airlift-delivered operations, in conjunction with supporting C-130/C-17 aircraft, and affect C2

with narrowband and broadband satellite communications and HF voice and digital communications. A total of three batteries (nine HIMARS platoons of 3x2 launchers per battery) are organic to the 14th Marine Regiment. A total of four batteries are organic to 11th Marines, and additional HIMARS structure and capabilities are envisioned at 10th Marines and elsewhere.

Recent maturation of HIMARS employment tactics, techniques, and



HIMARS firing from the flight deck of the USS Anchorage (LPD-23). (Photo by PO2 Matthew Dickinson.)

procedures, and rapid innovation in long-range, surface-to-surface precision munitions, including seeker warhead capabilities, will generate additional, relevant opportunities for the operational integration of the M142 HIMARS.

HIMARS Sustainment/Aircraft-Airfield Tethering Concepts

Among the most critical factors when planning for the employment of HIMARS, the recognition of the capabilities and limitations of the M142 LM and chassis and the facilitation of the ability to conduct rapid resupply of the MLRS MFOM are paramount. HIMARS employment requires both staff and commander to give serious consideration to both how a HIMARS unit will be introduced into theater and, most notably, how it will be resupplied, particularly during phases of operation in which munition expenditures are expected to be high.

HIMARS Planning Considerations

- While exercise planning often theoretically includes the movement and offload of HIMARS units and ammunition via amphibious shipping, it must be noted that the resupply systems of a HIMARS battalion alone consume a significant portion of available storage and deck space on an LPD-17. Furthermore, the storage space and special handling requirements of HIMARS munitions make the throughput of ship-to-shore movement challenging. The unique materials handling equipment requirements of GMLRS munitions make the external sling loading of ammunition pods by rotary-wing aircraft undesirable because of damage which may occur during transit and offloading, causing the pods to become unserviceable.
- The HIMARS FMTV chassis, of great expeditious value because of its ability to be internally loaded into a C-130, is conversely over-burdened by the LM and highly susceptible to dead-lining chassis damage when operated aggressively off-road.
- Finally, the expected high volume of ammunition expenditure of HIMARS MFOM in a distributed operating environment, and at the

high end of the range of military operations, will necessitate a speed and complexity of ammunition resupply, which is not common to artillery ALOCs or Marine Logistics Group capabilities. Arguably, unless stockpiled, expenditure rates of MFOM will necessitate the execution of GMLRS/ATACMS resupply actions before the first rockets/missiles are fired.

With each of the above noted factors in mind, and considering the emergent range capabilities of the MFOM, the most operationally supportable and flexible means of initial introduction, employment, and sustainment of HIMARS is arguably in conjunction with aircraft movement and airfield tethering. The ability to operate from existing strategic lift capable airfields and runways facilitates the employment of HIMARS, maximizes the range of its munitions at stand-off ranges, preserves the sustainability and survivability of the M142 chassis, and most notably facilitates the timely resupply of MFOM.

F-35 JSF/M142 Sensor to Shooter Integration

The multi-role F-35 represents a revolutionary leap in air dominance capability with enhanced lethality and survivability in hostile, anti-access airspace environments. The aircraft combines fifth-generation fighter aircraft characteristics—advanced stealth and integrated avionics—with a comprehen-



HIMARS firing during LSE-17, Twentynine Palms. (Photo by Sgt Kassie McDole.)

sive integrated sensor capability. It was designed with the entire battlespace in mind, bringing new flexibility and capability to the 21st century battlefield.² The M142 HIMARS likewise brings a revolutionary surface-to-surface fires capability to the GCE and MAGTF as a whole, delivering precision munitions at ranges and accuracy previously only delivered by aircraft. The potential synergy of F-35/M142 sensor to shooter integration is significant, with immediate applicability throughout the range of military operations to support:

- Naval expeditionary forces capable of supporting establishment of sea control, denying the sea to adversaries,

and conducting operational maneuver from the sea in anti-access/area denial (A2/AD) environments.

- Over the horizon targeting in support of maritime HIMARS employment.
- Phased attrition of A2/AD defenses.
- Deep shaping and counter fires targeting/engagement, distinctly beyond and complementary to current and emerging ground-based sensor capabilities.

The *Marine Corps Operating Concept* and *Marine Corps Force 2025* each challenge the Service to innovate to meet the needs of a dynamic 21st century battlefield. Status quo, however, will not suffice, and the importance of developing innovative solutions to these significant Service-level challenges remains paramount. As the demand for long-range precision munitions increases on today's complex battlefields, innovative employment options for the M142 HIMARS provide a viable option to both GCE and MAGTF commanders, both today and in the years ahead.



HIMARS/F-35. (Photo by LCpl Andrew Huff 4641 Combat.)

Notes

1. See <http://www.tanks-encyclopedia.com>.
2. See <https://www.lockheedmartin.com>.

