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The Parthian Defense

Leveraging existing and evolutionary fires technology to enable expeditionary infantry to block armor

by 1stLt Eric T. Myers

>1stLt Myers is a platoon commander with 1st Bn, 8th Marines.

MEUs are quick-response forces for combatant commanders, providing tailorable forces to shape their operational regions. Operating from naval shipping aboard the ARG, the MEU is capable of conducting a battalion-reduced air assault utilizing the 12 MV-22s organic to the MEU.[1] A critical weakness in the capabilities of the MEU's GCE, however, is a lack of organic anti-armor capability. As it stands, the primary killing asset of the MEU against armor is OAS (offensive air support). To counter this, our potential adversaries have demonstrated improved capabilities both in air superiority aircraft and anti-air systems, which restricts our ability to effectively attrite armor. If faced with denied or contested airspace, the GCE is ill-prepared to block mechanized assault in force simply because infantry is a poor weapon-to-target match for enemy armor. If we wish to create the capability to block enemy armor using air assault, we must alter the TTP (tactics, techniques, and procedures) we use to reflect the expeditionary nature of the mission and examine existing and evolutionary technologies that would enable us to achieve the required mobility and fires capability.

Mobility

The first and most glaring issue with the air assault model for company and battalion operations is that they are restricted in their ability to maneuver through the battle area. They are tethered to their aircraft for long-range movement. If air is denied, they are limited to foot march only, operating at risk of penetration and encirclement by mechanized forces. Additionally, their ability to carry heavy weapons is severely restricted by the limitations of foot marches. There is a need for organic mobility for forces in contact with massed armor, and it must be expeditionary enough to move by MV-22.

The solution to this problem is the MRZR UTV (utility vehicle), a lightweight and affordable four-man vehicle currently fielded by Marine units. It is currently fielded by infantry regiments, and it is still being tested for potential uses. With a top speed of over 60 mph and a range in excess of 150 miles, the potential in mobility it provides would allow four-man teams and all their equipment to travel distances quickly over any terrain armor can operate in, arriving unfatigued, ready to perform, and capable of withdrawal as needed.[2] It is designed as a support for dismounted infantry, and it would be used as transportation and not as a "technical"-like assault support platform.

Since infantry cannot use numbers to reliably block armor and small teams are inherently more agile, the carrying capacity of the MRZR is less of a liability than a planning consideration, as long as the teams are appropriately equipped. Designed around the MRZR platform, we can construct a T/O (table of organization) designed to bring as capable an anti-armor force to the fight as efficiently as possible. The primary issue then becomes how to best equip the teams to destroy armor without unduly risking them.

Long-Range Fires: Networkable CLU (Command Launch Unit) and Rocket-Assisted Javelins

The primary risk of using small teams to destroy armor comes from the inherent difficulty of surviving enemy response fire. If using an organic weapons system, the act of firing itself immediately provides the enemy a target to engage, and even if the weapon is fire-and-forget (i.e., the Javelin), outrunning direct fire is difficult. Providing terminal guidance for non-organic systems is our preferred technique currently, requiring merely a targeting laser or a detailed talk-on and the time for the aircraft to acquire the target. However, against a peer opponent, access to the airspace can be denied at critical points by enemy aircraft and surface-to-air missiles. Furthermore, threat armor has advanced to counter our techniques, including laser detection and counter-targeting systems like the Shtora-1 system on the T-90.[3] As peer threats develop, there is no reason to assume any active targeting system will be undetectable or undefeatable simply because active systems by definition create a signature.

There is a system potentially capable of solving both problems. The passive targeting of the CLU could be paired with organic communications assets to provide targeting data to dispersed firing units. With data transmitted from the system, an external agency could

The 81mm mortar will undergo an increase in utility with the introduction of guided munitions. *(Photo by Sgt Ally Beiswanger.)*

then download the data to the missile and fire without seeing the target itself. This prevents the need for the targeting team to produce a weapons launch or active targeting profile and limits the signature to that already generated by organic communications equipment. While signature reduction is a necessary issue facing all Marine units against peer opponents, the networked CLU provides a viable potential solution to the issue of targeting safely.[4]

The hunter teams using the networked CLU would consist of four Marines: a 0302, 0369, or talented squad leader in the team leader role, a 0352 in the CLU gunner role, a 0331 with a M240 for security, and a 0621 or trained 0311 for communications. Using the MRZR, the team would additionally carry light anti-armor rockets, a Stinger, a PRC-150, a PRC-117G with a communications 201B antenna, and potentially satellite communications as well. The teams would operate by stealth, using the vehicles to move long distances, stowing them away from enemy line of sight, then entering a hide site. From there, they would conduct surveillance and provide targeting data for firing agencies as targets presented themselves. If visibility was limited or more agility was desired, the teams could remain mounted.

If the CLU provides targeting data, the issue then becomes how to provide a reliable expeditionary fires platform, which can use the data. Having other personnel fire Javelins would be counterproductive, as the firing unit would be within threat weapon ranges and subject to responsive direct and indirect fires. Similarly, relying on CAS would decrease the reliability of fires against peer opponents capable of denying the airspace with anti-air platforms. One reliable solution would be to pair several networked-CLU-equipped hunter teams with a "missile truck" platform designed to provide fires. The weapon itself could be as simple as the Javelin warhead and guidance system with an unguided rocket motor attached. Upon receiving the target data feed, the system could be fired unguided into a targeting basket above the target vehicle, at which point the Javelin guidance system would activate and guide itself onto the target. Firing into a targeting basket would reduce the level of accuracy required initially, which would permit the vehicle to drive away immediately after each shot, avoiding counterbattery fires. This approach would provide for an affordable and reliable source of anti-armor fires, while ensuring that neither the targeting nor the firing units would be exposed to any increased risk.

The vehicle itself could be a lightly armored HMMWV or JLTV, a light platform modified for endurance and carrying capacity. The vehicle could carry enough missiles to engage an enemy tank company without resupply while still light enough to transport via V-22 externally carried.[5] Each missile truck would be manned by three Marines from the CAAT (combined anti-armor team) platoon, including a vehicle commander, a driver, and a gunner who would be a 0352 or a Marine trained on the system. These vehicles would operate by stealth and mobility, carrying only a M240, several Stingers, and personal weapons for self-defense. Their role would be to operate as a firing platform for the hunter teams, receiving CLU data and moving into a "hot" firing position to fire single or short salvoes of missiles, then immediately driving away. Ideally, the rocket would be able to reach at least 30 kilometers to provide the missile truck standoff from the forward line and the ability to range multiple hunter teams, which would not be prohibitively difficult given the small size of the Javelin warhead.

Mid-Range Fires: UAS (Unmanned Aerial Systems) Targeting Lasers and Guided 81mm HEAT (High Explosive Anti-Tank) Rounds

The 81mm mortar platoon, already organic to the infantry battalion, is about to undergo a dramatic increase in utility with the advent of guided munitions. The PUMA (Precision Urban Mortar Attack) program, designed to improve precision of fires for urban operations, has the added benefit of rendering the 81mm mortar capable of engaging moving targets and potentially even enabling it to generate destruction effects. By adding the Flight-Controlled Mortar guidance kit to ammunition, both GPS and semi-active laser designators can be used in terminal guidance of mortar rounds. With the ACERM (Advanced Capability Extended Range Mortar), the range of the 81mm system would be extended to just under 10 kilometers.[6] With this upgrade, the battalion's 81mm mortars can be used in a scheme of maneuver to counter armor, if provided the right targeting support.

Targeting remains the primary issue, as hitting a moving vehicle requires use of a targeting laser, which is an active system that can be counter targeted. The danger of ground teams using laser does not preclude their use, however, as UAS platforms have the capability to lase. While UAS can be shot down, it would be extremely difficult for any opponent to completely deny all UAS in theater, and they can be flown in airspace too risky for manned aircraft. With semi-active laser designators onboard, UAS ranging in size and scope from Group 2 platforms like the ScanEagle to Group 5 aircraft such as the Triton could provide guidance onto moving or halted armor.[7] If the guidance system was altered to activate only upon reaching the targeting laser basket, the laser could be used to strike several targets in quick succession.

In order to affect armor, however, the 81mm mortar would require a further upgrade. Even with a direct top-turret hit, no modern main battle tank would be destroyed by existing 81mm rounds. However, creating a HEAT round for the mortar would not be an exceptionally complex task, and the system is already designed for top attack. Though testing would, of course, be required, 81mm HEAT rounds impacting the top of a turret would very likely result in at least neutralizing effects, and multiple rounds fired simultaneously could reduce the effectiveness of reactive armor.

Each mortar squad could be reduced to four mortarmen, including a squad leader, a gunner, an assistant gunner, and an ammo man. The MRZR could carry a four-man team, in addition to the tube, and more ammunition than would be feasible to carry on foot. Operating the mortar platoon as split sections would provide mutually supporting fire assets without degrading performance or depriving each unit of leadership. Each section would operate with a three-man fire direction center, including a chief and two plotters, under the command of either the platoon commander or platoon sergeant. In addition, a four-man security element would travel with each section, equipped with an M240, Stingers, and an M32 in addition to personal weapons. With each squad and fire direction center getting its own MRZR, transporting the entire platoon would take 12 MRZRs, which could be airlifted by 6 V-22s. UAS would prosecute potential target locations and push them to each section, which would then occupy a firing position and fire once UAS were in position. In addition, if any other elements took contact, 81s could conduct a hip shoot to provide suppression in order to let the engaged unit withdraw.

Suppression Enabling Offensive Air Support (OAS)

Between the missiles, mortars, and UAS, suppression of enemy air defense would be possible, which, in conjunction with local air superiority, would enable the employment of OAS. While the ranges involved would be longer, and the corresponding fires timelines would be more difficult to create, the use of precision munitions would permit accurate engagement and potentially destruction criteria on enemy anti-aircraft assets. The fire support team could operate from ship using the ARG's communications assets or could use an MRZR to move forward with the hunter teams. To engage an enemy column with aircraft, an engagement area would be determined by the fire support team, which could then position the hunter teams, missile trucks, and 81mm mortars to facilitate their use. From there, the series could proceed as a suppression of enemy air defense mission, with a missile truck providing suppression and an 81mm section providing marking and additional suppression. Since the missile truck is a precision weapon, suppression would be more effective than from an unguided asset and require less logistical assistance. This fires engagement area development process could be repeated as often as terrain and airspace permitted, able to reset as quickly as aircraft could come on station.

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Concept of Insertion

This style of defense in depth requires only the presence of the MEU in the area, air superiority at time of insert, and sufficient lead time to conduct an air insert before enemy armor can disrupt establishing the defensive positions. While any defense requires time and space to prepare, this style of defense could be set as quickly as an air insert could be conducted. The entire team could be inserted by V-22s from the ARG in two waves. The first four V-22s would each insert two hunter teams with their MRZRs. The next four would each insert a missile truck, externally carried, to landing zones behind the forward line of the hunter teams, from which they would drive up into range. The next three would insert an 81s section with their security element, which would be positioned on the enemy's most-likely avenue to provide suppression to the hunter teams. The last remaining V-22 would be able to insert scout snipers or reconnaissance elements. The second wave would consist of three V-22s carrying the remaining 81s section, with the remaining nine available to provide resupply or create fuel and missile caches to the rear of the forward elements. This method of insert would provide immediate insertion into a friendly or neutral area of operations and allow for rapid deployment of antitank assets. As with any air assault, air superiority at time of insert would be a necessary prerequisite, which would require coordination with other theater assets at the MEU level.

Concept of Battle

Adversary armor disperses as much as possible across their maneuver corridor to avoid our fires. To counter this, eight hunter teams would be evenly dispersed across the frontage along the path of advancing forces or concentrated along key avenues of movement, based on the battalion commander's analysis. Teams would set up in hide sites which would allow them to observe and provide targeting on approaching armor and observe in place until approached or sent elsewhere. If found or approached by hostile dismounted forces, they would withdraw to the next concealed position and report the enemy presence. In addition to the targeting, this would provide the MEU commander situational awareness across the entire frontage. Four missile trucks would move to 20 kilometers back from the forward line, evenly spaced so as to provide overlapping fires to each team as necessary. They would prepare a firing position clear of mask and move from a concealed cold position to an unmasked hot position to fire missiles, then move positions immediately to avoid counterbattery fire. Battalion 81s would operate split section upon insert, using intelligence generated by any UAS in the area transmitted verbally or as video via organic radio capability to determine where enemy forces were massing. When they had received a target, they would occupy hasty firing positions and conduct attacks by fire designed to destroy the lead vehicles, then exit and move to another firing position before counterbattery could respond. They would also provide suppressive fires for teams which came under fire, enabling withdrawal. All elements would be connected via HF and VHF, retransmitted by other elements, and UAS and would bound back in sector, with the intent to attrite enemy vehicles and delay enemy movement until reinforcements could be brought forward. From the ARG or from forward, the FiST would coordinate the creation of engagement areas, tying any available firing agencies into the series to provide the effects necessary to use air.

Marines will have access to fires needed to block enemy armor. *(Photo by Monique Randolph.)*

Why an Infantry Company?

While this concept sounds closer to the mission set of reconnaissance teams, there are several reasons why this defense can and should be executed by teams from the MEU's infantry battalion. The overall mission-essential tasks are simple—creating and maintaining a hasty hide site, using an UTV, observing and identifying threat armor, and using HF and VHF communications. While it would be necessary to hone these basic skills, all of them could be easily taught during the battalion's workup. The specific mission-essential tasks for each force would be MOS-specific skills, pairing 0352s to the networked CLU, 0341s to their 81mm mortars, and CAAT to the HMMWVs or joint light tactical vehicles. This would prevent a need for difficult cross-training, keeping all involved proficient in their MOS. Furthermore, while the hunter team mission resembles that of the reconnaissance team, inserting via V-22 and using UTVs is a simple task and a poor use of such a highly trained asset. Using the battalion would free up the MEU's reconnaissance assets to conduct their primary mission of reconnaissance, beyond the capabilities of the battalion. In the case of mechanized invasion, such units would be better utilized in deep reconnaissance beyond the forward line of troops, directing deep air support on enemy logistic and C^2 (command and control) nodes to disrupt their ability to sustain and control operations.

Additional Considerations

There are a number of other considerations for this type of defense. The integration of scout snipers, reconnaissance teams, and Marine Special Operations Command elements would need to be examined to determine best practices, thoroughly integrated, and de-conflicted in the planning process. While they could serve as force multipliers if diligently integrated, if not, they would pose a blue-on-blue threat. Similarly, the use of rifle platoons organic to the battalion would need to be integrated as well but would present opportunities to disrupt enemy counterattack through the use of raids and patrolling. The most obvious enemy counter would be inserting squad- to platoon-sized elements forward of the advance of armor to attempt to clear the hunter teams out, which would both slow the movement of armor and render both armor and infantry vulnerable to counterattack.

Resupply and maintaining communications with the battalion would require significant planning consideration. Logistics support would have to operate primarily using air resupply, potentially also using existing U.S. Navy riverine assets to provide support in lit-

toral environments. It would be necessary to coordinate forward refueling for the MRZRs and missile trucks, most likely via V-22 carrying fuel bladders or preplanned caches. Communication and optic batteries could be charged by the forward elements, either by solar like the solar portable alternative communications energy system or with a power adapter on the MRZRs, but battery resupply would be a contingency the MEU staff would have to plan for. Similarly, with every unit traveling with vehicles, the need to provide water and MREs would be less frequent but still necessary.

The concepts are not overly complex or different from any other distributed operations, but they would require considerable coordination with the air wing and accurate threat assessment to run. Communications would be more complicated, with a need to ensure that all elements in the area of operations shared a common net over ranges of up to hundreds of miles, which they could access from a concealed hide site, maintain while moving between positions, and disassemble quickly while under fire. One possible solution is the use of HF and the field expedient antenna, which, with some training, can be used to provide communications out to hundreds of miles but does require the user to be stationary to ground the radio and set the antenna. Another is mesh networking, the relaying of signals using other units, and UAS platforms in the area to create a continuous network of coverage. This provides continuous, accessible communications while on the move but might provide an electronic signature which could be exploited by enemy signals intelligence. Some combination of these two will likely be needed to provide C^2 for such a dispersed force, which would have to be extremely robust given that the primary source of fires requires the transmission of CLU-2 data up to 30 kilometers.

All of this technology either already exists or is evolutionary and already well under development. Most of the key components could be manufactured within the next few years, with the networked CLU being the critical component that is the furthest behind.

Attack by force will be conducted from hasty firing positions. *(Photo by Sgt Michelle Reif.)*

The beauty of this is that we can begin testing the feasibility of key techniques now, particularly MRZR employment and communications propagation. Furthermore, all of these technologies are or will be organic to the infantry battalion or the MEU and will not require a significant adjustment in training to employ. During the work-up, it will simply require a re-organization prior to deploying on the MEU and several training exercises to refine and train the capability. Finally, all of these capabilities are within the skill sets of personnel in the battalion and will not require major retraining. The MRZR is organic to the infantry regiment, and battalion personnel are training on it; the networked CLU should be organic to the battalion when it arrives. Already, 81mm mortar platoons will be incorporating the ACERM and PUMA technologies over the next several years, combined anti-armor team personnel are familiar with the HMMWV and Javelin, and UAS and mesh networking are being worked into the capabilities of battalions. This defense will allow the MEU commander to put together existing pieces into a formidable and survivable anti-armor capability capable of being deployed as quickly as he can get his V-22s in the air, as far forward as they can fly.

Notes

1 Headquarters Marine Corps, *Amphibious Ready Group and Marine Expeditionary Unit Overview,* (Washington, DC: 2014).

2. "Polaris Defense MRZR 2 & MRZR 4 Fact Sheet," *Polaris Industries, Inc.,* (Online: 2016), available at https://cdn1.polaris.com.

3. Staff, "Shtora-1 System," *Defense Update Magazine,* (Online: October 2005), available at http://defense-update.com.

4. The networked CLU contract was awarded to Toyon Research Corp in 2006, and research was suspended due to concerns about GPS spoofing. I spoke with Dr. Kenan Ezal, the program manager, and was informed that while the project had transitioned toward an inertial sensor approach, he believed that a multi-sensor fusion approach would be more flexible and effective. Information available at https://www.sbir.gov.

5. "V-22 Osprey Guidebook," *Boeing Defense, Space & Security,* (Online: 2011), available at http://www.boeing.com.

6. Office of Naval Research, *Precision Urban Mortar Attack Fact Sheet,* (Washington, DC: Undated), available at https://www.onr.navy.mil.

7. S.L. Steelmen, *Enhanced Expeditionary Engagement Capability: Advanced Capability Extended Range Mortar (ACERM),* (Online: May 2014), available at http://www.dtic.mil.