

Artillery's role in sea-based expeditionary Fires

By Maj. Adam Ropelewski

Fire support and maritime history was made in late October 2017 during exercise Dawn Blitz 2017. R Battery, 5th Battalion, 11th Marine Regiment supported the 1st Marine Expeditionary Brigade and Expeditionary Strike Group 3 by successfully demonstrating the ability to fire a Guided Multiple Launch Rocket-Unitary (GMLRS-U) from an M142 High Mobility Artillery Rocket System (HIMARS) off the flight deck of the USS Anchorage (LPD-23), an LPD-17 San Antonio Class Amphibious Ship.

There were two training objectives for the sea-based expeditionary Fires (S-BEF) demonstration: the successful launch of one GMLRS-U rocket from an amphibious platform and the successful engagement of a land-based target at the range of 70 kilometers. Both were achieved. This successful demonstration of S-BEF identified a cross-domain capability that can be utilized by a task force to precisely strike enemy targets from the sea.

The scenario for the S-BEF demonstration required an enemy island-based coastal defense cruise missile (CDCM) site to be neutralized. This would allow the amphibious task force (ATF) to maneuver into position to attack additional targets on the island and establish expeditionary advanced bases to support the ATF's future operations. As the enemy force was identified on the southern portion of the island, the ATF determined all available assets would be required to destroy the defending enemy force. Intelligence, surveillance and reconnaissance identified the targets for the S-BEF, as Naval Surface Fires Support from Arleigh Burke Class Destroyer, a rotary-wing attack aircraft, as well as Joint Strike Fighters from amphibious ships. The S-BEF was sequenced to fire first in order to neutralize the CDCM and allow for other ATF assets to position themselves and attack the remaining enemy forces. Upon identification, S-BEF destroyed the CDCM's radar, with the newfound freedom to maneuver, the ATF's ships repositioned as required.

Prior to demonstrating this capability, approval to stow, transport and live-fire

off a Navy combat ship was required from the Navy's Weapon System Explosive Safety Review Board (WSESRB). A variant of the HIMARS fire control software was developed by Lockheed Martin Company to enable firing from a moving platform. Approval to use this, yet-to-be widely fielded software on a Navy ship, was required from the Navy's Software Safety and Technical Review Process. Lockheed also developed a blast pad to protect the Anchorage's flight deck. One of the intents behind the demonstration was to leave the ship undamaged and able to fully participate in the remainder of the exercise. Due to the complexity of the exercise, our window to execute the demonstration was small, and with a busy air plan, if we fouled the flight deck it would have thrown off the timing and events of the exercise. Both the software and blast pad acted as advertised. The software ran without error and the blast pad preserved the deck. Only a small amount of residue remained on the flight deck after the live fire. We were constrained by the WSESRB to only fire one rocket, but since we had a nominal firing event, we could have used the blast pad for additional rounds.

Getting the HIMARS and blast pad into position required training and multiple rehearsals to ensure we were prepared to execute once the ship was in position and we had permission from the range control authorities to fire. The HIMARS and rocket pod were embarked via Landing Craft Air Cushioned through in-stream on load. While the blast pad could have been stored in the bed of a resupply vehicle (RSV), it was stored in the hangar bay to increase setup response time, and the HIMARS was stowed in the upper vehicle stowage area of the well deck alongside other Marine vehicles that would later be disembarked. The rehearsals identified that the HIMARS could be stowed on any of the ship's stowage decks, but the upper vehicle stowage area, had the easiest and quickest access to the flight deck.

The rocket pod was stored in the ship's magazine. We used the ship's organic material handling equipment to transport the rocket pod from and to the launcher and

magazine. It was important for us to use the ship's organic systems to move the rocket pod, so we could demonstrate to the force the transportability of the rocket pod within an LPD-17 class amphibious ship. No special or unusual steps were required by the HIMARS section to load the rocket pod and the selected stowage point provided sufficient room to load the pod without moving it too far from the elevator.

Once the HIMARS was loaded, it was driven to the flight deck and secured. All system initiation steps were recorded for purposes of the demonstration evaluation. Before initialization, the HIMARS and blast pad were secured to the flight deck by a combination of the ship's organic chains and straps the battalion provided to secure the axles. The use of the ship's organic chains proved the HIMARS could be secured to any ship that has similar tie-down points to an LPD-17. Next, the ship traveled to the predetermined coordinates as the amphibious force and range control cleared the surface and airspace of the entire surface danger zone (SDZ). The WSESRB prohibited any personnel or equipment from being within the SDZ. Due to the demonstration's nature, the SDZ was quite large and clearing it required the use of multiple Navy and Coast Guard air and watercraft. Range control identified a five-mile course along which the Anchorage could travel and the HIMARS could fire. The ship reached it and maintained the appropriate speed, roll and pitch parameters required by the updated fire control software. The fire mission was pre-scripted to observe the administrative constraints, but an F-35 Joint Strike Fighter from the USS Essex (LHD-2) was present and spotted the rocket's impact and could have easily been incorporated as the fire mission's observer. Further, the administrative constraints required the battery fire direction center to verbally send the fire mission to the HIMARS section, but multiple rehearsals proved the battery's ability to digitally control the S-BEF Fires. The GMLRS-U was fired at a replicated radar site on land at a range of 70 kilometers. The rocket destroyed the 10 foot by 10 foot fiberglass dome. Our assessment showed it

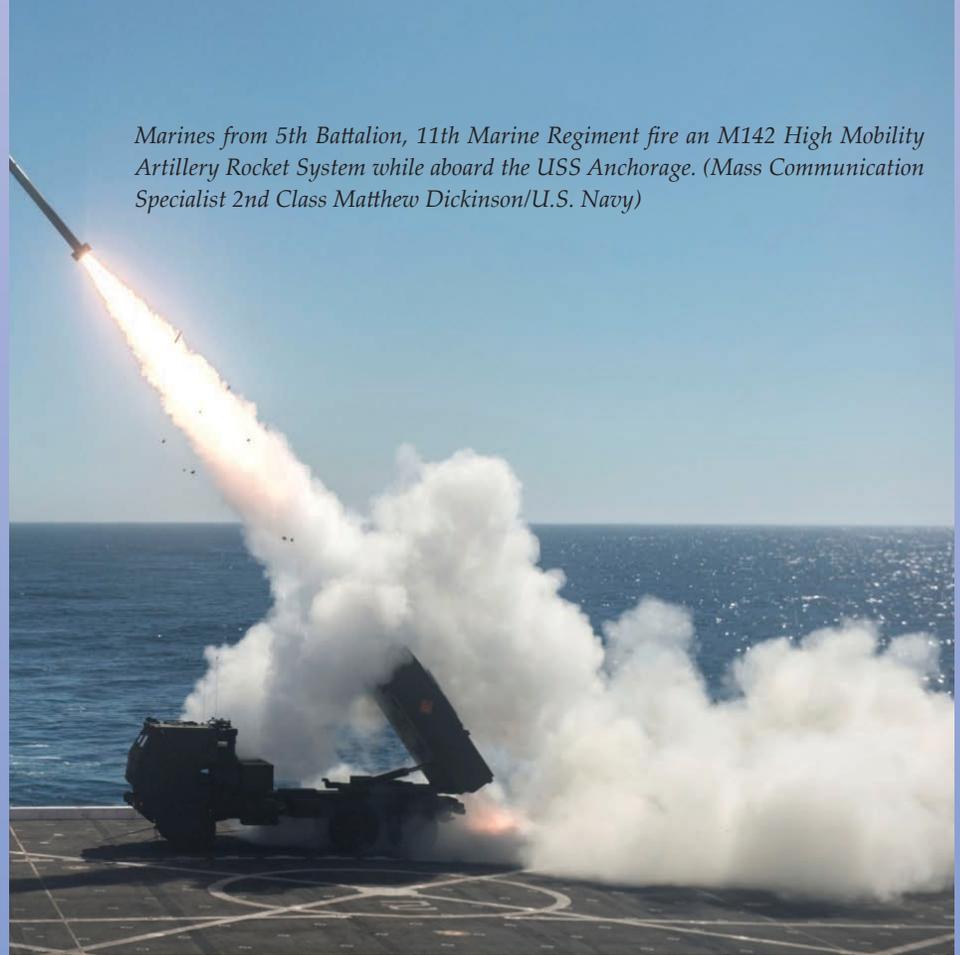
struck within the munition's circle error of probability.

Upon completion of the fire mission, the flight deck was inspected for damage and foreign objects were mapped and documented. With the minimum amount of debris from the launch, the officer in charge of the flight deck was satisfied that the deck was safe for flight operations. The HIMARS and blast pad were recovered to the upper vehicle stowage area and hangar bay and flight operations resumed within 30 minutes of the live fire.

The purpose of the S-BEF demonstration was "to allow the fleet to assess HIMARS as a potential future candidate for integration as a sea-based Fires alternative." We linked our purpose to the Marine Corps Operating Concept published in September 2016 and the Navy's Littoral Operations in a Contested Environment. After the successful S-BEF demonstration, it is fair to ask "What's next?" And "Is this a capability we want to further develop?"

There were a series of administrative constraints, which should be removed for future training. The removal of these constraints will allow for the rehearsal of S-BEF as the delivery function of a digital kill chain. It would also allow the HIMARS section and ship's crew to work at a rapid pace and the after action review would shape future S-BEF capability developments and tactics, techniques and procedures. Future evolutions could look at the possibility of firing other munitions from the MLRS family of munitions (MFOM), particularly the Army Tactical Missile System (ATACMS). The range and explosive power of the ATACMS would provide the amphibious force a tremendous long range sea-based Fires alternative. If the MFOM were expanded to include an anti-ship missile, the addition of that capability to S-BEF would provide the amphibious commander with a complement to the AGM-84 Harpoon Missile. The anti-ship capability would also invite experimentation with the kill chain. If a sensor identified an enemy surface combatant, S-BEF could serve in an anti-ship role as the primary or alternate shooter. Or, a time on target could be chosen for multiple platforms to mass on the surface target.

The type of headquarters S-BEF could support opens the discussion to one of requirements and embarked trade-offs. The command structure of Dawn Blitz 2017, combined the 1st MEB and ESG-3 staffs into Amphibious Force 3. S-BEF was organic and general support to AF-3, but it



Marines from 5th Battalion, 11th Marine Regiment fire an M142 High Mobility Artillery Rocket System while aboard the USS Anchorage. (Mass Communication Specialist 2nd Class Matthew Dickinson/U.S. Navy)

could just as easily have been organic to a multi-domain task force and general support to a geographic or functional commander. S-BEF could also have been direct support to any of the task force's subordinate warfare commanders or the battalion landing team.

Accounting for its mission, the Marine Expeditionary Unit and Amphibious Ready Group commanders would have to survey the missions and decide if the stowage requirements, and area of operations (AO) is right for adding S-BEF to the MEU's table of organization. Necessary redundancy would be required if S-BEF were deployed, likely two HIMARS. As previously stated, the blast pad(s) could be stowed in the RSVs, but ammunition must be stored in a magazine. The rocket pod's size could quickly overcome a magazine. How much room is reserved for the rocket pods depends on what else is embarked aboard that ship, but it is a serious consideration that must be taken into account. Further, commanders must decide if the AO requires precision Fires from the sea. Traditionally, those Fires would be provided by the embarked UH-1 detachment, but if the air defense threat prohibited their use, S-BEF could be a possible answer to unilaterally destroy that threat or as part of sequenced Fires with the UH-1's against the threat. Tactics, tech-

niques and procedures would need to be developed to ensure the flight deck was not fouled in case an UH-1 needed to recover to a flight deck. Perhaps another ship's deck would be used if the HIMARS were still top-side, or it could land near the HIMARS between fire missions and be recovered into the hangar bay. These procedures require development, and flight deck management would require multiple staff elements to work through contingencies, especially if the HIMARS were required to fire multiple missions. S-BEF provides the amphibious commander the first rocket system that is reloadable while underway, a capability that should not be discounted.

The S-BEF demonstration during Dawn Blitz 2017 proved that HIMARS can be safely and effectively fired from the flight deck of an LPD-17 Class amphibious ship as an alternative sea-based Fires capability. With further development, it could be incorporated as organic Fires for a task force that requires a capability to provide fire support from the sea while retaining the option to send the asset ashore where it could continue to provide deep Fires.

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